

# **BASIC ASSESSMENT REPORT**

**FOR THE PROPOSED DEVELOPMENT OF PORTION 260 (A PORTION OF PORTION 114) OF THE FARM RIETFONTEIN 189 IQ AND ASSOCIATED ROADS AND SERVICES ON SURROUNDING PROPERTIES**

## **FINAL**

**Proponent:**

Hocom Properties (Pty) Ltd.

**Project Reference:**

21949-Ptn 260 Rietfontein 189

**Report Date:**

November 2020




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21949-BAR-2

## DOCUMENT CONTROL

<b>Project Name</b>	Proposed development of Portion 260 (a Portion Of Portion 114) of The Farm Rietfontein 189 IQ as well as associated roads and services on Surrounding Properties
<b>Report Title</b>	Basic Assessment Report
<b>Authority Reference Number</b>	GAUT 002/19-20/E2532
<b>Report Status</b>	Final

<b>Applicant Name</b>	Hocom Properties (Pty) Ltd
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	<b>Name</b>	<b>Signature</b>	<b>Date</b>
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27/11/2020	21949-BAR-02	21949-BAR-2	Minor amendments; Finalise report

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# EXECUTIVE SUMMARY

## 1. Overview

The proposed development of Portion 260 of the Farm Rietfontein 189 IQ involves a mix use development which includes a broad range of uses including Business 1 and Commercial Uses. This aims to serve growing residential areas around the area. The following primary rights are being applied for:

- Erf 1 – 4 | Business 1 (As per Scheme: Shops, Office use, Dwelling Units, Residential Use, Hotel and Restaurant)
- Erf 5 | Commercial (As per Scheme: - Warehousing and Distribution)
- Erf 6-7 | Business 1 As per Scheme: Shops, Office use, Dwelling Units, Residential Use, Hotel and Restaurant)

Necessary roads and services required for the development will also be put in place.

## 2. Process to Date

In order to provide context to the report, a summary of the process undertaken to date is provided below.

### a.) Desktop Investigation

A detailed desktop investigation was undertaken to understand the potential sensitivities. A site visit was also undertaken to better understand the current status of the site.

### b.) Specialist Studies

Based on the desktop investigation, a number of specialist studies were identified as being necessary. The terms of reference for these studies were drawn up and the appropriate specialist appointed. All specialists then performed the necessary field and desktop investigations and compiled a report to present their findings.

### c.) Compilation of the Basic Assessment Report

The Basic Assessment Report (BAR) was duly compiled on the basis of the technical information on the proposed development, findings of the specialist studies and information determined during the desktop investigation. The BAR included a detailed impact assessment which identified a number of important mitigation measures required to reduce the significance of impacts. A detailed Environmental Management Programme (EMPr) was also compiled and aimed to ensure that the necessary mitigation measures would be implemented.

### d.) Initial Registration and Public Review of the Basic Assessment Report

A combined registration and public review of the Basic Assessment Report was undertaken. As part of this, the following was done:

- In line with the new Permitting Regulations (GN 650 of 5 June 2020), a Public Participation Plan was compiled and submitted to GDARD on 19 June 2020. The plan was subsequently approved on 5 July 2020 (refer to Appendix I4). Subsequently, the Country has moved to Level 2 and thus the Directions are no longer applicable. However, all public participation was undertaken in terms of the required safety measures.
- A potential I&AP database was compiled and included Adjacent Landowners, Ward Councillors, Authorities and Potential I&APs. Potential I&APs were also contacted telephonically to confirm their details and to determine their preferred means of communication.
- Authorities were also contacted to confirm whether they will accept hard copies or whether the use of electronic documents will suffice.
- A Background Information Document (BID) was compiled and included information on the proposed development, services and roads and included a map showing all these components. The BID provided information on the initial registration period (from **7 September 2020**). In addition, the BID provided a link to download the Basic Assessment Report and included details of the 30-day review of the document which was scheduled to start 2 weeks after the initial notification (from **21 September 2020 to 22 October 2020**).
- An advert was placed in the Star Newspaper on **7 September 2020**. As with the BID, the advert included the link to download the BAR and included the dates associated with the public review of the report.
- Three (3) site notices showing a map of the proposed development and associated components were placed on and around the site on **7 September 2020**. The site notice also included the link to download the BAR and included the dates associated with the public review of the report.
- The BIDs were emailed, or messaged to adjacent landowners, landowners, potential I&APs and authorities on **7 September 2020** (preferred means of communication based on what was determined telephonically).
- Hard copies and/or electronic copies (USB Flashdrive) of the BAR were submitted to competent and commenting authorities including the Gauteng Department of Agriculture and Rural Development (GDARD), the Mogale City Local Municipality (MCLM), West Rand District Municipality, and Department of Human Settlements, Water and Sanitation (DHSWS). A copy has also been uploaded to the South African Heritage Resources Information System (SAHRIS) to facilitate the review and comment by the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Agency of Gauteng (PHRA-G).

During the initial registration as well as the review period of the BAR, a number of comments, concerns and queries were received regarding the development and the associated infrastructure required. In addition, formal comments were received from the Gauteng

Department of Agricultural and Rural Development (GDARD), the Mogale City Local Municipality (MCLM) and the West Rand District Municipality (WRDM).

All comments received are captured in the Comments and Responses Report in **Appendix E6**.

However, in summary, the main comments and concerns include the following:

- Request to be registered;
- Requests for more information on Road A and Road B;
- Concern regarding the impact of Road B on affected property owners;
- Concern regarding the impact of the sewer line on affected property owners;
- Impact of Road B on the wetland (from MCLM); and
- Queries regarding the alternatives assessed (from GDARD).

In order to deal with these, a number of stakeholder engagements were undertaken as follows:

- Focus group meeting with Mr. Alan Beadle and Mrs Diana Beadle on 10 September 2020;
- Focus group meeting with affected landowners on 7 October 2020; and
- Microsoft Teams meeting with the Case officer from the Gauteng Department of Agricultural and Rural Development (GDARD).

As a result of these interactions and comments and in response to the concerns raised, two changes to the proposed development and the associated BAR are applicable:

- The Floor Area Ratio (FAR) of the development was reduced from 0.8 to 0.4. The main implication of this, is that it resulted in a reduced traffic impact and thus a much smaller section of road B is required (from Beyers Naude Drive along the southern boundary of the site to the western corner of the site).
- Two additional alternatives are included in the Assessment:
  - Proposed Layout (Proposal) with a FAR of 0.4
  - Alternative Layout with a FAR of 0.8.

These changes are not substantial in that they do not increase the level of impact but rather reduce it and are undertaken as a response to comments received. In order to aid the review of the final submission, all changes between the BAR that was made available for review and the final submission to the Department are shown as underlined. A copy of the Final submission is also been made available to I&APs so that they can see how their comments have been addressed.

### **3. Project Description**

**Figure 1** provides the proposed layout of the development and is followed by preliminary site plan. The aim of this preliminary plan is to provide an indication of the development footprint

and its relationship to environmental sensitivities (in this case the wetland buffer). It should however be noted that this SDP can only be finalized during the townplanning approval process. **A copy of the final SDP will then be submitted to GDARD.**

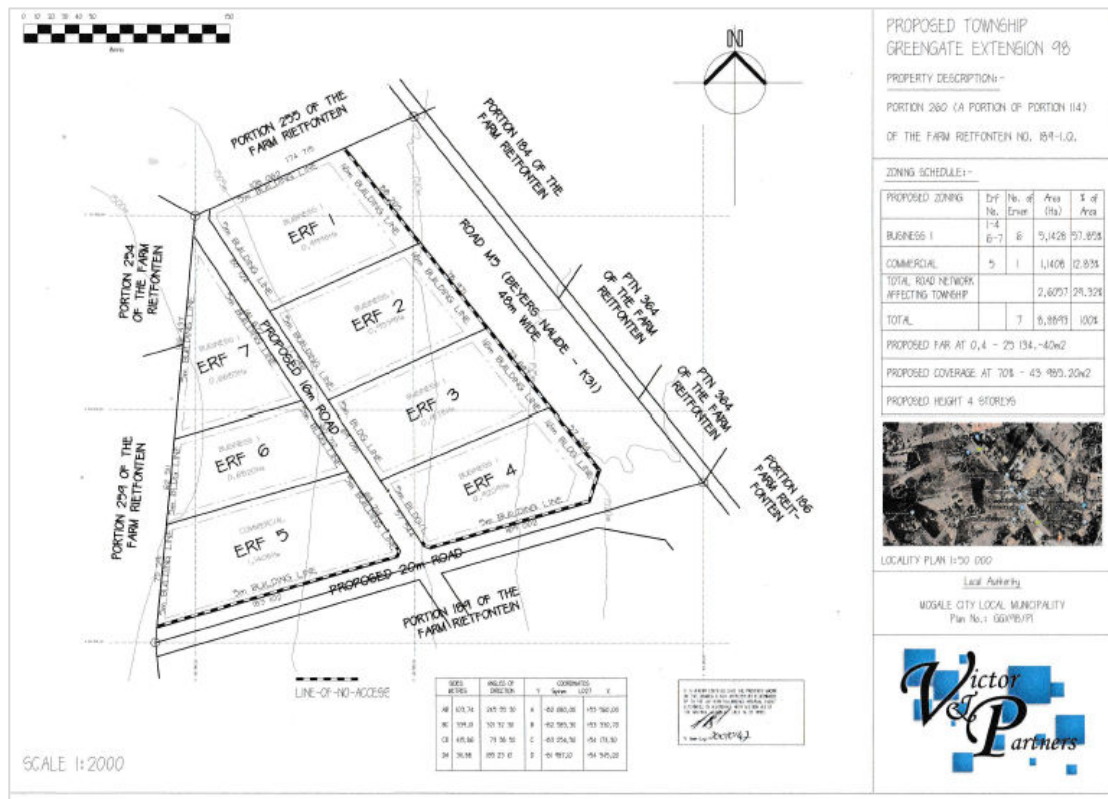


Figure 1: Development Layout with FAR of 0.4.

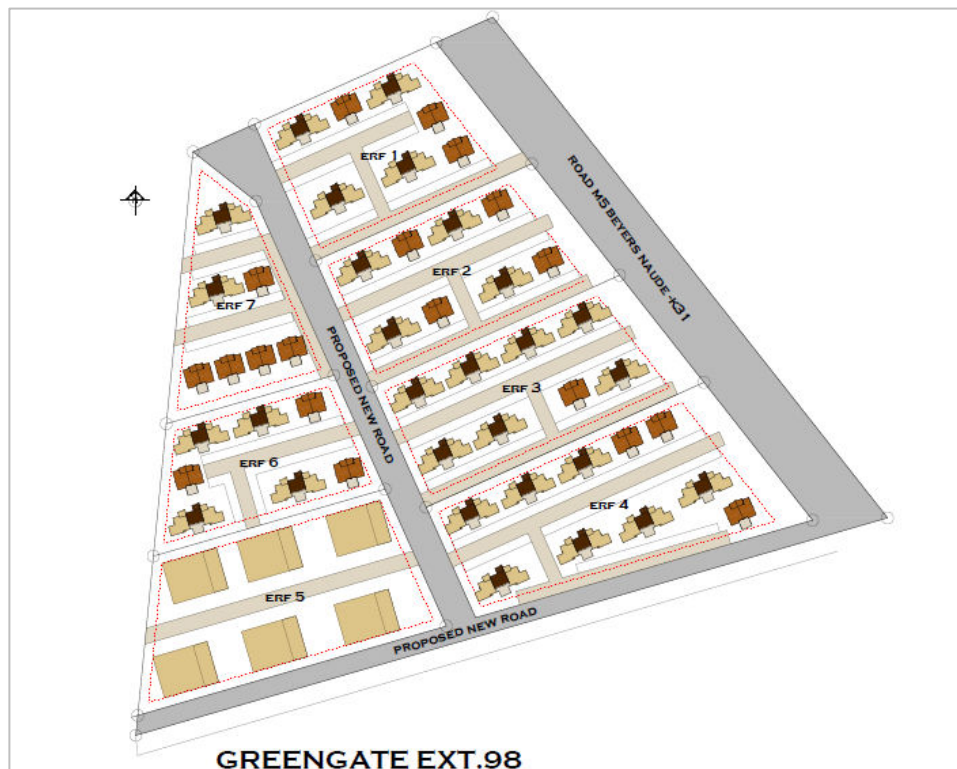


Figure 2: Preliminary Site Plan

Table 1 provides an overview of the planned uses and developmental controls whilst Figure 3 shows an overview of the project locality.

Table 1: Proposed Land Use

	Erf 1 -4	Erf 5	Erf 6-7
<b>Use Zone</b>	Business 1	Commercial	Business 1
<b>Primary Rights</b>	As per Scheme - Shops, Office use, Dwelling Units, Residential Use, Hotel and Restaurant	As per Scheme - Warehousing and Distribution	As per Scheme: Shops, Office use, Dwelling Units, Residential Use, Hotel and Restaurant
<b>Uses with Special Consent</b>	As per Scheme - Place of Instruction, Place of Amusement, Service Industry, Commercial Use, Public Garage, <i>Filling Station*</i> , Place of Public Worship, Social Hall, Parking Garage and Special Use	As per Scheme	As per Scheme - Place of Instruction, Place of Amusement, Service Industry, Commercial Use, Public Garage, Filling Station, Place of Public Worship, Social Hall, Parking Garage and Special Use
<b>Density</b>	No density applicable	No density applicable	A maximum of 70 Dwelling units per hectare
<b>Coverage</b>	Shall not exceed 60%	Shall not exceed 60%	Shall not exceed 60%
<b>Floor Area Ratio</b>	<u>Shall not exceed 0,4</u>	<u>Shall not exceed 0,4</u>	<u>Shall not exceed 0,4</u>
<b>Height</b>	4 storeys	4 storeys	4 storeys

\*Please note that should a filling station be required at a later stage, a separate application will be undertaken.

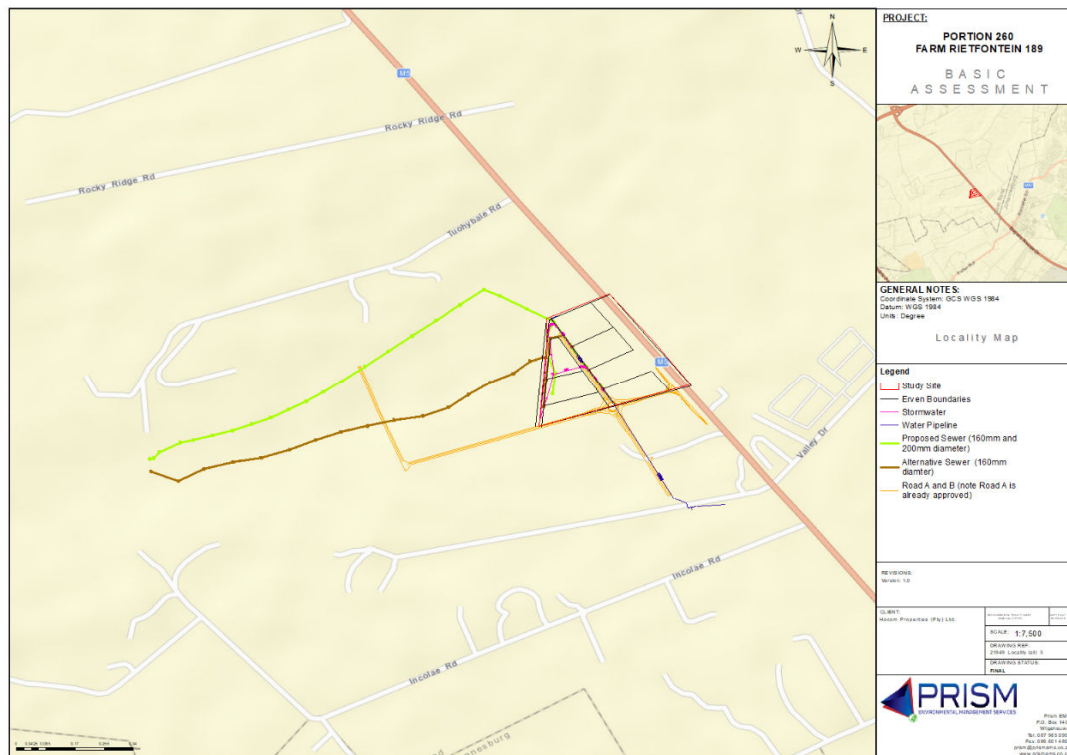


Figure 3: Locality Map showing both the proposals and alternatives (note alternative layout results in 0.8 FAR and thus results in the full extent of Road B)

#### 4. Services

In support of the development, the following bulk and internal services will be put in place.

- Water
  - An existing 110mm dia. municipal water pipeline traverses the proposed development parallel to Beyers Naude Drive. This line will be abandoned and a new 160mm dia. municipal water pipeline will be installed in the new service road connecting to the existing 160mm dia. municipal water pipeline located in Valley Road.
  - The average daily demand for the proposed township is 307.2 kl/day.
- Sewer
  - No existing municipal sewer infrastructure is located adjacent to the proposed development. The nearest connection point is situated approximately 1.3 km west from the proposed township. A new 160mm and 200mm dia. external sewer network will be constructed to connect to this existing line.
  - Dry Weather Flow (DWF) for the proposed township is 230.4 kl/day
- Stormwater
  - Stormwater attenuation will be provided for the 1:5 as well as the 1:25 year storm event such that the pre-development runoff is not exceeded. An industry guideline of 350 m<sup>3</sup>/ha will be used for the sizing of the attenuation ponds.
  - The stormwater network will be designed in order to safely channel the runoff from a 1:10 year storm event, to the nearby natural drainage course.
  - The internal roads will be provided with kerb inlets at strategic points to catch stormwater runoff from the development.
  - The underground system will consist of “Interlocking Joint” concrete pipes with a minimum diameter of 450mm (up to 675mm diameter) and discharged in the bio-retention pond.
  - The bio-retention pond will include an earth berm with crest protect with stone pitching and vegetation will be put in place to promote sheet flow into the wetland.
- Electricity
  - The proposed development will require approximately 3639 kVA electrical capacity.
  - Preliminary information suggests that the township will be supplied by Eskom from the existing 86 KV Dalkeith Substation from the 11kV Kromdraai feeder line which is adjacent to the property. The substation and line both have spare capacity.
  - Internal services will consist of an 11KV underground cable supplying miniature substations.

**Table 2** provides an overview of the properties affected by the associated services required for the development of Portion 260 of the Farm Rietfontein 189 IQ. It should be noted that whilst

the sewer line (both the proposal and alternative) is below the threshold indicated in Listed Activity 10 of Listing Notice 1, parts occurs within the delineated wetland and therefore triggers a number of separate activities. The stormwater pipe required for the development is however greater than the threshold indicated in Listed Activity 9 of Listing Notice 1 and therefore does require authorisation.

**Table 2: Properties associated with services**

21-digit code	Property Description	Services
T0IQ00000000018900255	Portion 255 of the Farm Rietfontein 189	Sewer (Proposal)
T0IQ00000000018900254	Portion 254 of the Farm Rietfontein 189	
T0IQ00000000018900253	Portion 253 of the Farm Rietfontein 189	
T0IQ00000000018900252	Portion 252 of the Farm Rietfontein 189	
T0IQ00000000018900251	Portion 251 of the Farm Rietfontein 189	
T0IQ00000000018900007	Portion 7 of the Farm Rietfontein 189	
T0IQ00000000018900258	Portion 258 of the Farm Rietfontein 189	Sewer (Alternative)
T0IQ00000000018900257	Portion 257 of the Farm Rietfontein 189	
T0IQ00000000018900632	Portion 632 of the Farm Rietfontein 189	
T0IQ00000000018900256	Portion 256 of the Farm Rietfontein 189	
T0IQ00000000018900217	Portion 217 of the Farm Rietfontein 189	
T0IQ00000000018900260	Portion 260 of the Farm Rietfontein 189	Stormwater attenuation and stormwater pipe
		Internal sewer
T0IQ00000000018900189	Portion 189 of the Farm Rietfontein 189	Internal water and water pipeline (in road reserve of Road A which is already approved).
T0IQ00000000018900188	Portion 188 of the Farm Rietfontein 189	
T0IQ00000000018900222	Portion 222 of the Farm Rietfontein 189	

## 5. Roads and Access

A Traffic Impact Assessment has been undertaken to better understand the traffic impact of the development as well as to identify the necessary road upgrades required by the proposed development.

Initially, based on the FAR of 0.8 (Alternative Layout 1), the expected trip generation of the application was ±965 vehicle trips during the weekday morning (AM) peak hour and ±2,293 vehicle trips during the weekday afternoon (PM) peak hour (based on COTO TMH 17, the South African Trip Data Manual). However, based on the amended FAR of 0.4 (Proposed Layout), the Morning (AM) Peak Hour was expected to be 519 (313 in / 206 out) and Afternoon (PM) Peak Hour 1,352 (664 in / 687 out).

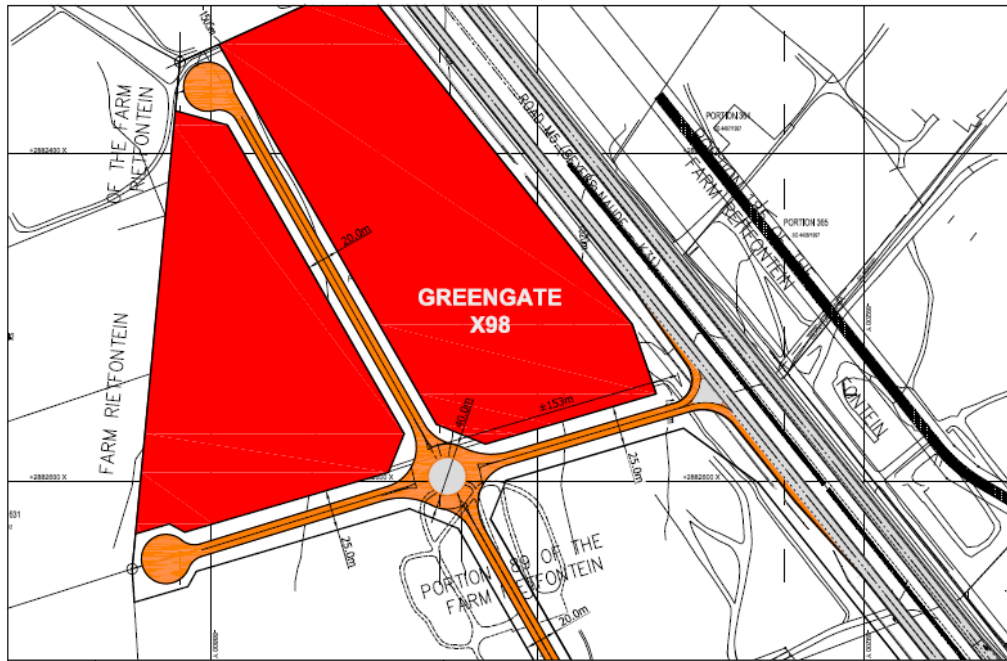
In order to cater for this, construction of the following roads will be required:

- Road A The construction of a new Class 5a (commercial local) road – 7.4m wide in a 20m road reserve.



- Road B The construction of a new Class 4a (commercial collector) road – 7.4m wide in a 25m road reserve (along the southern boundary of the application site, terminating at the western corner).

**Figure 4** provides an overview of the proposed access arrangements.



**Figure 4: Proposed Access Arrangements**

It should be noted however that Road A was assessed and approved as part of the upgrade of Beyers Naude Drive as they are associated roads (GAUT 002/16-17/E01222)

In addition, the following intersection improvements are required:

- Intersection 4: Valley Road – Ibis Lane / Beyers Naude Drive
  - The construction of a second exclusive right-turn lane (90m) on the southern approach.
- Intersection 7: Boland Road – Indaba Lane /Beyers Naude Drive
  - The implementation of traffic signals and the construction of exclusive turning lanes (60m) on the northern and southern approaches.
- Intersection 8: Planned K56 / Beyers Naude Drive
  - The implementation of traffic signals and the construction of exclusive turning lanes (60m) on the northern and southern approaches.
- Intersection 9: Road B / Beyers Naude Drive
  - The construction of a marginal intersection with an exclusive left-turn lane on the eastern approach.
- Intersection 11: Road B / Road A
  - The construction of a single-lane roundabout (40m inscribed diameter).

**Please note that the necessary upgrades to Beyers Naude Drive fall within the existing provincial road reserve and have been approved as part of a separate project GAUT 002/16-17/E01222.**

Access to the application site will be obtained from Beyers Naude Drive in accordance with the Road Master Plan via the intersection with Valley Road – Ibis Lane and a new Class 5 road (i.e. Road A). Additional access is also proposed from Beyers Naude Drive via a proposed new marginal access (Class 4a road) with Beyers Naude Drive on the eastern boundary of the site (i.e. Road B).

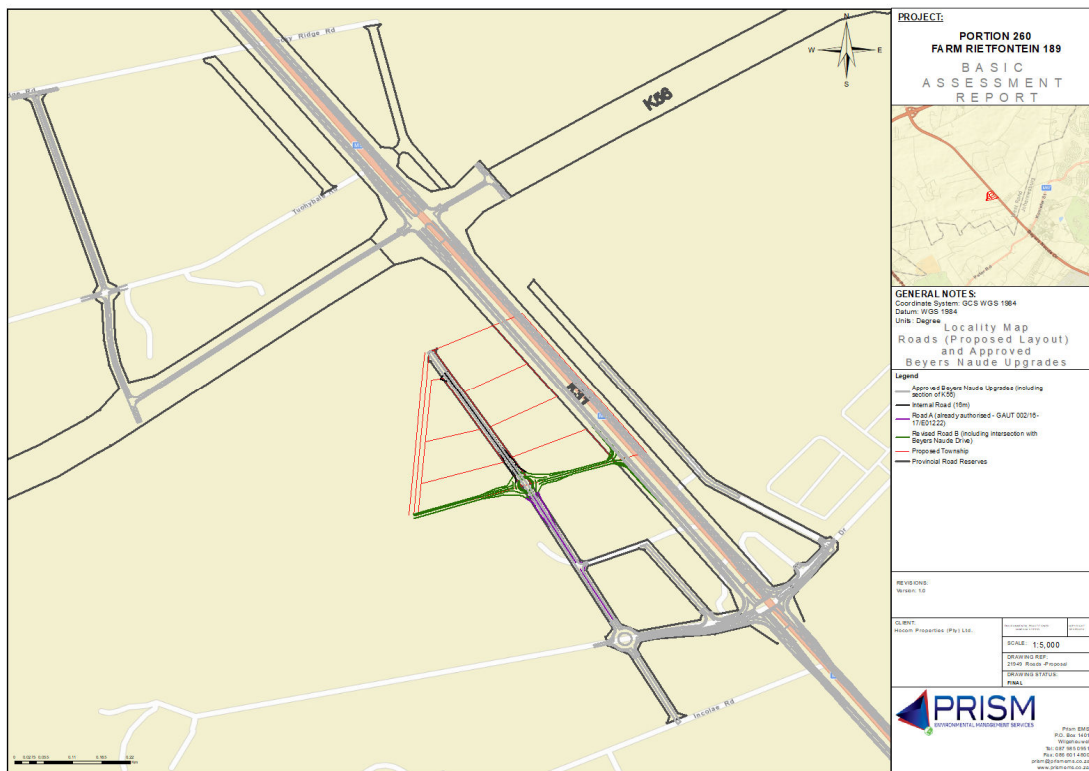
An internal road will also be put in place and will be 16m in width.

**Table 3** provides the properties associated with the two new roads (Road A and B). However, as mentioned Road A and part of Road B have been previously assessed and do not require authorisation. This table has been updated to show the properties associated with the proposed layout (FAR =0.4) as well as the alternative layout (FAR = 0.8). With the proposed layout which is recommended, a much smaller extent of Road B is required at this time.

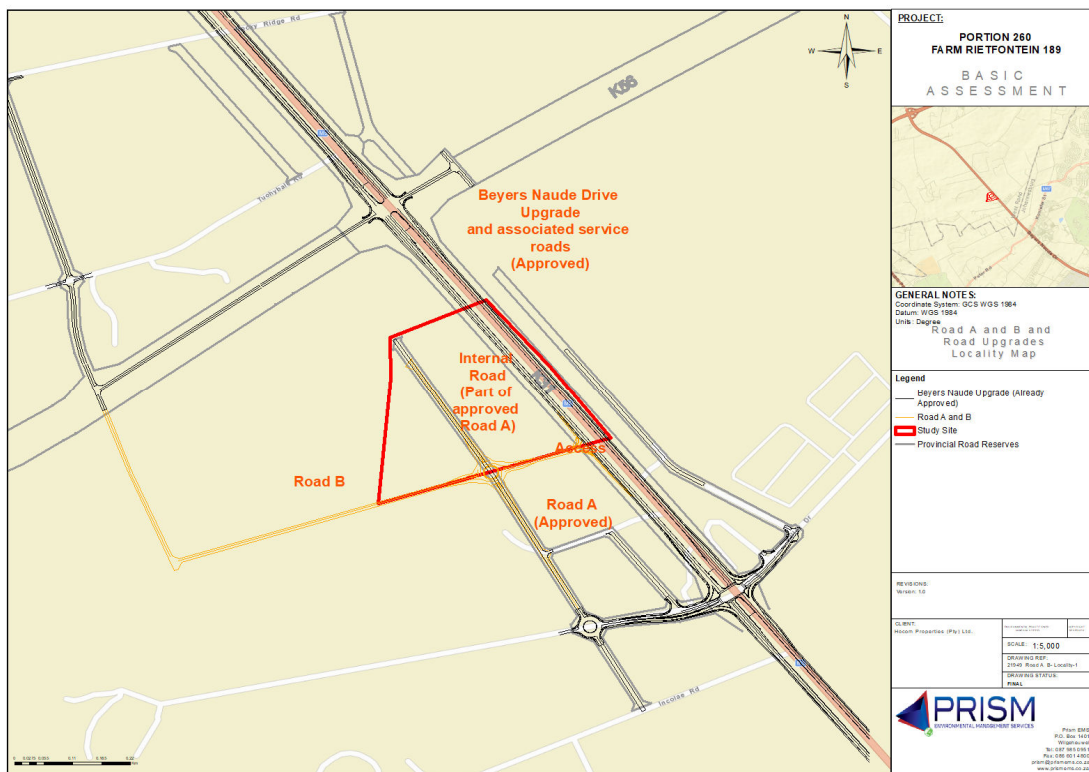
**Table 3: Properties associated with new roads**

21-digit code	Property Description	Services	Sections Requiring Authorisation
T0IQ0000000018900189	Portion 189 of the Farm Rietfontein 189	Road A	No (will be partially constructed as part of contract DRT 24-02-2018)
T0IQ0000000018900188	Portion 188 of the Farm Rietfontein 189	Road A	
T0IQ0000000018900189	Portion 189 of the Farm Rietfontein 189	Road B required as part of the Proposed Layout (FAR = 0.4)	Yes
T0IQ0000000018900260	Portion 260 of the Farm Rietfontein 189	Road B required as part of the alternative layout (FAR = 0.8)	No, alternative layout is not recommended
0IQ0000000018900646	Portion 646 of the Farm Rietfontein 189		
T0IQ0000000018900631	Portion 631 of the Farm Rietfontein 189		
T0IQ0000000018900258	Portion 258 of the Farm Rietfontein 189		
T0IQ0000000018900257	Portion 257 of the Farm Rietfontein 189		
T0IQ0000000018900253	Portion 253 of the Farm Rietfontein 189	K56	No (will be constructed as part of contract DRT 24-02-2018)
T0IQ0000000018900248	Portion 248 of the Farm Rietfontein 189		
T0IQ0000000018900250	Portion 250 of the Farm Rietfontein 189		
T0IQ0000000018900254	Portion 254 of the Farm Rietfontein 189		
T0IQ0000000018900255	Portion 255 of the Farm Rietfontein 189		

**Figure 5** provides an overview of the roads required in terms of the Proposed Layout and those authorised by the Beyers Naude Road Upgrade whilst **Figure 6** provides an overview of the roads required in terms of the Alternative Layout



**Figure 5: Roads and Approved Beyers Naude Upgrade – Proposed Layout**



**Figure 6: Roads and Approved Beyers Naude Upgrade – Alternative Layout**

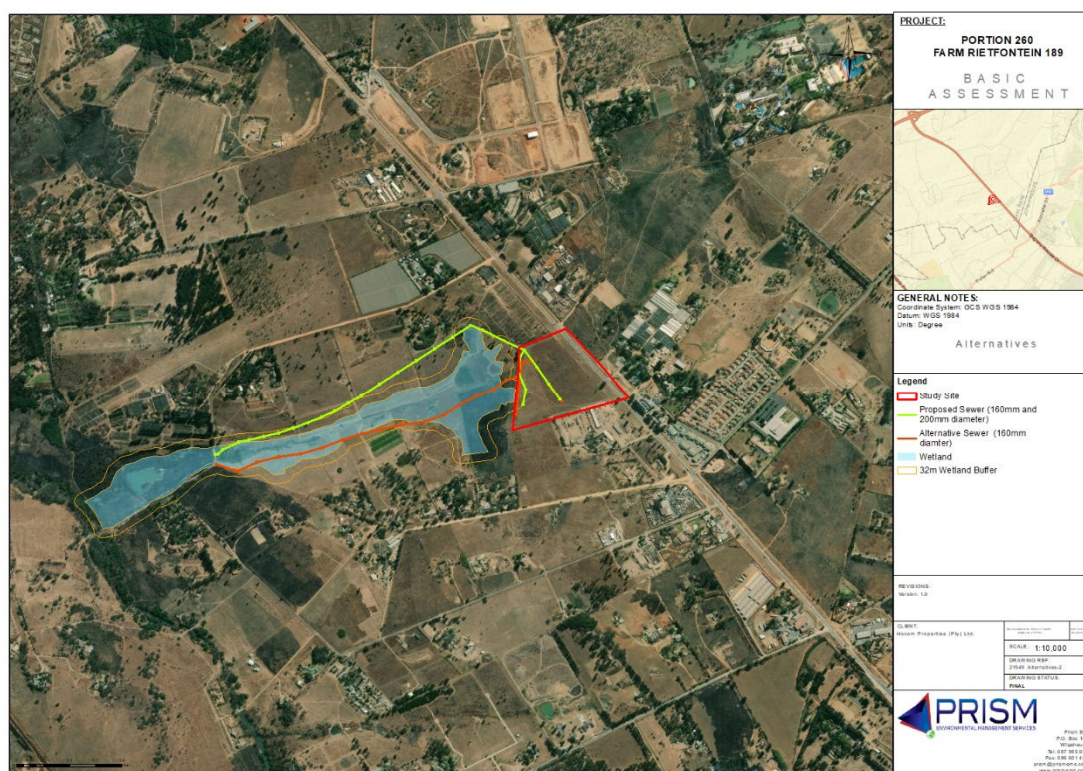
## 6. Alternatives

As mentioned above, a sewer line is required to connect to the existing sewer line which is approximately 1km away from the development. Two alternative routes for the sewer line have been investigated as follows:

- Proposal
- Alternative 1.

The proposal involves the development of approximately 1.3km 160mm and 200mm diameter pipelines which travels to the north of the wetland and crosses the wetland buffer in two locations before entering the wetland area to connect to the existing line.

In contrast, with Alternative 1, the 160mm line is shorter (only 1.1km) but almost completely traverses the wetland and thus has a much larger and direct impact due to modified flow and loss of wetland vegetation.



**Figure 7: Sewer Proposal and Alternative**

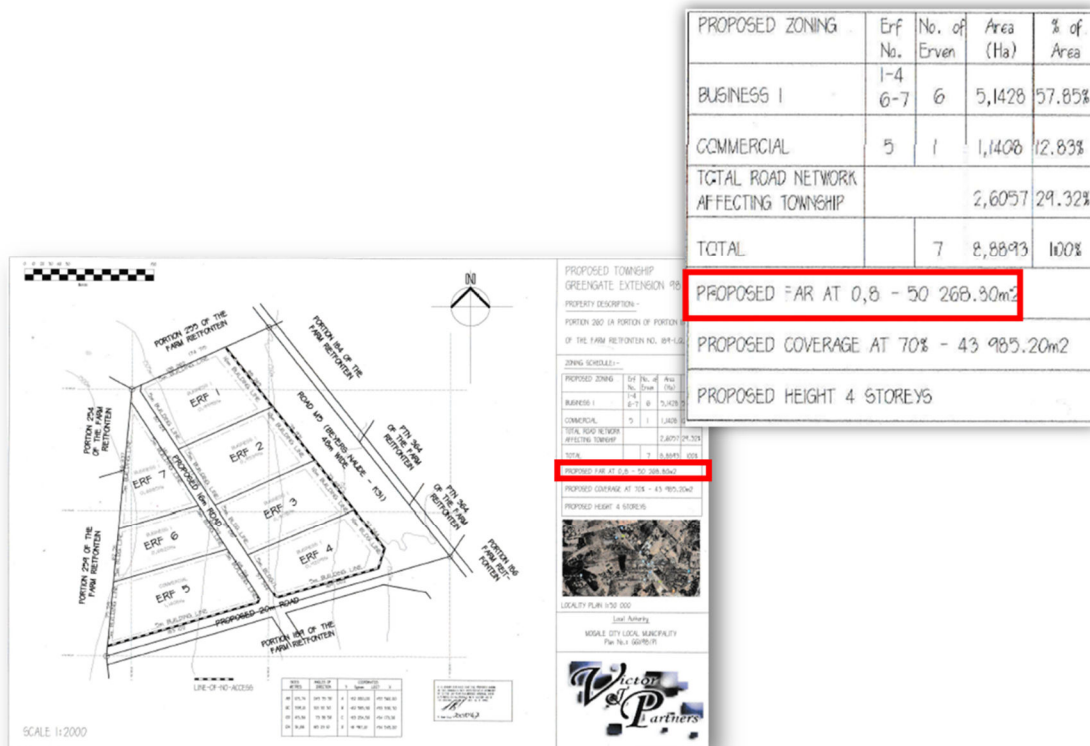
In addition, GDARD raised concerns that the sewer alternatives assessed were not related to the development as a whole. Whilst this is not the case (as the alternatives provided deal with how the development as a whole will deal with sewer), two additional alternatives have been added and assessed as part of the BAR. These include:

- Proposed Layout (Proposal) – FAR = 0.4; and
- Alternative Layout – FAR = 0.8.

**Figure 8 and Figure 9** provide an overview of the two alternatives. Whilst the layout themselves look similar, the different FAR is an important component as it influences the usage of the site and the number of trips generated.

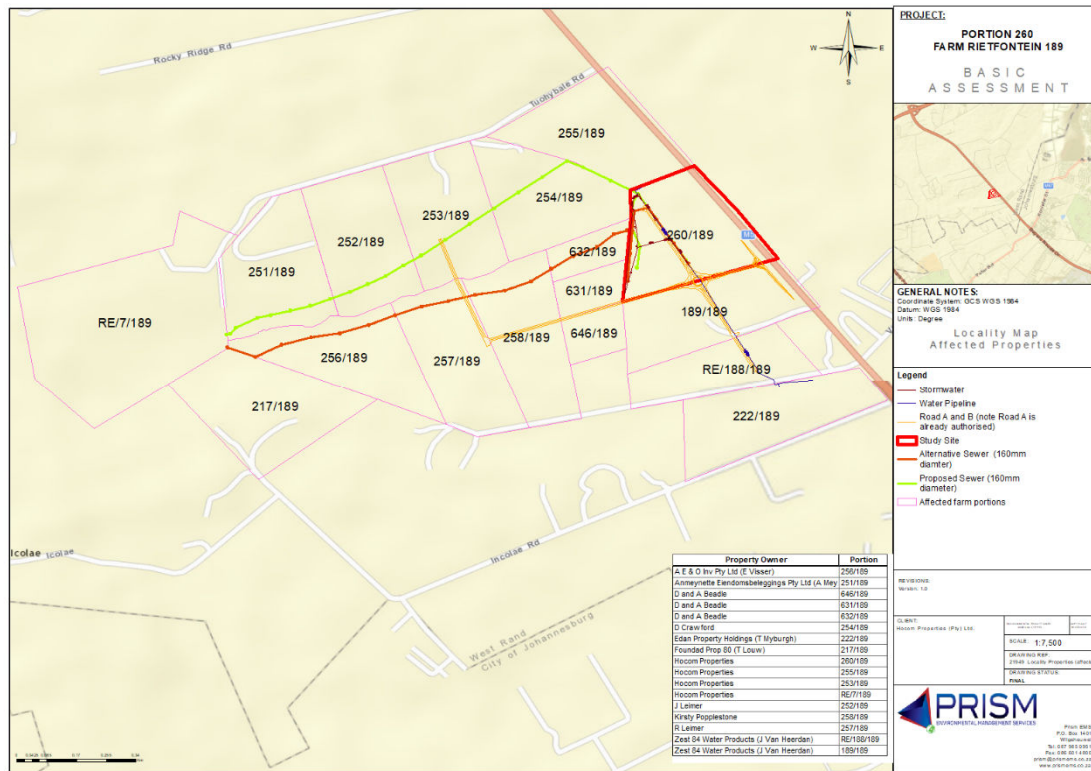


**Figure 8: Proposed Layout (FAR = 0.4)**



**Figure 9: Alternative Layout (FAR = 0.8)**

The properties affected by the roads (both the full extent of Road B required by the Alternative and the reduced extent required by the Proposed Layout), water and sewer (proposal and alternative) are illustrated in **Figure 10**. The affected landowners have all been notified of the development and have been provided with an opportunity to review and comment on the Basic Assessment Report.



**Figure 10: Affected Properties (both alternatives included)**

## 7. Listed Activities

In terms of the EIA Regulations and Listed Activities, 2014, the activities that are triggered under the Listing Notices for this proposed development are provided in Table 4.

**Table 4.: Description of the Listed Activities.**

Listing Notice	Activity	Description of Listed Activity	Interpretation
GN R 983 4 December 2014 (As amended)	9 (i)	<p><i>The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water—</i></p> <p><i>(i) with an internal diameter of 0,36 metres or more; or</i></p> <p><i>(ii) with a peak throughput of 120 litres per second or more;</i></p> <p><i>excluding where—</i></p> <p><i>(a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or</i></p> <p><i>(b) where such development will occur within an urban area.</i></p>	<p>The proposed development requires the development of a stormwater system which will include “Interlocking Joint” concrete pipes with a minimum diameter of 450mm (up to 675mm diameter). The development occurs in Zone 4 of the GPEMF and is therefore not within the urban development boundary.</p>
	12 (ii)(a)(c)	<p><i>The development of—</i></p> <p><i>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or</i></p> <p><i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</i></p> <p><i>where such development occurs—</i></p> <p><i>(a) within a watercourse;</i></p> <p><i>(b) in front of a development setback; or</i></p> <p><i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —</i></p> <p><i>excluding—</i></p> <p><i>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</i></p> <p><i>(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</i></p> <p><i>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</i></p> <p><i>(dd) where such development occurs within an urban area;</i></p> <p><i>(ee) where such development occurs within existing roads, road reserves or railway line reserves; or</i></p>	<p>Part of the proposed mixed-use development occurs within 32m of a wetland. Further, with both the proposal and the alternative routes, the sewer line traverses (to varying degrees), the wetland area. These components will thus result in more than 100m<sup>2</sup> of infrastructure within 32m of a wetland.</p>

Listing Notice	Activity	Description of Listed Activity	Interpretation
		<i>(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.</i>	
	19 (i)	<p><i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from-</i></p> <p><i>(i) a watercourse;</i>  <i>(ii) the seashore; or</i>  <i>(iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving-</i></p> <p><i>(a) will occur behind a development setback;</i>  <i>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or</i>  <i>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.</i></p>	<p>The proposed development involves construction within a watercourse (for infrastructure such as the sewer line) and will thus involve excavation of more than 10 cubic metres from the watercourse as well as the infilling of more than 10 cubic metres of material into the watercourse.</p>
	24 (ii)	<p><i>The development of a road—</i></p> <p><i>(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or</i></p> <p><i>(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road—</i></p> <p><i>(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;</i>  <i>(b) where the entire road falls within an urban area; or</i>  <i>(c) which is 1 kilometre or shorter.</i></p>	<p>A number of internal and external roads are required as part of the development: These are of varying sizes including:</p> <ul style="list-style-type: none"> <li>• 16 m wide internal road</li> <li>• Road B - 7.4m wide in a 25m road reserve (<u>limited to in the section adjacent and to the south of the development</u>)</li> </ul>



Listing Notice	Activity	Description of Listed Activity	Interpretation
	27	<p><i>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</i></p> <p><i>(i) the undertaking of a linear activity; or</i></p> <p><i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p>	<p>The proposed development is approximately 8.8 ha in extent. Whilst the site is degraded and parts have been used for agriculture, more than 1 ha of indigenous vegetation will be cleared.</p>
	28 (ii)	<p><i>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</i></p> <p><i>(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or</i></p> <p><i>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</i></p> <p><i>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</i></p>	<p>The proposed development may have historically used for some ad hoc planting of fields (although it is currently dormant). As the site is greater than 1 ha, this activity has been included.</p>
GN R 985 4 December 2014	4 (c)(v)	<p><i>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</i></p> <p><i>(c) Gauteng</i></p> <p><i>i. A protected area identified in terms of NEMPAA, excluding conservancies;</i></p> <p><i>ii. National Protected Area Expansion Strategy Focus Areas;</i></p> <p><i>iii. Gauteng Protected Area Expansion Priority Areas;</i></p> <p><i>iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</i></p> <p><b><i>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);</i></b></p> <p><i>vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;</i></p> <p><i>vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas;</i></p>	<p>A number of internal and external roads are required as part of the development: These are of varying sizes. The proposed development site occurs in an area which is noted as Egoli Granite Grassland (although degraded).</p>

Listing Notice	Activity	Description of Listed Activity	Interpretation
		<p>viii. Important Bird and Biodiversity Area (IBA);  ix. Sites or areas identified in terms of an international convention;  x. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;  xi. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or  xii. Sites zoned for conservation use or public open space or equivalent zoning</p>	
	12 (c)(i)	<p>The clearance of an area of 300m<sup>2</sup> or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>C. Gauteng  <b>i. Within any critically endangered or endangered ecosystem listed in terms of Section 52 of NEMBA or prior to the publication of such list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment, 2004.</b>  ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;  iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</p>	The proposed development involves the development of approximately 8.8 ha in area that is degraded Egoli Granite Grassland.
	14 (c)(v)	<p>The development of-</p> <p>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or  (ii) infrastructure or structures with a physical footprint of 10 square metres or more</p> <p>where such development occurs-</p> <p>a) within a watercourse;  (b) in front of a development setback; or</p>	Part of the proposed mixed-use development occurs within 32m of a wetland. Further, with both the proposal and the alternative routes, the sewer line traverses (to varying degrees), the wetland area. These components will thus result in more than 10m <sup>2</sup> of infrastructure within 32m of a wetland.

Listing Notice	Activity	Description of Listed Activity	Interpretation
		<p><i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; -</i></p> <p><i>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</i></p> <p><i>c. Gauteng</i></p> <p><i>i. A protected area identified in terms of NEMPAA, excluding conservancies;</i></p> <p><i>ii. National Protected Area Expansion Strategy Focus Areas;</i></p> <p><i>iii. Gauteng Protected Area Expansion Priority Areas;</i></p> <p><i>iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</i></p> <p><b><i>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);</i></b></p> <p><i>vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;</i></p> <p><i>vii. Sites or areas identified in terms of an international convention;</i></p> <p><i>viii. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;</i></p> <p><i>ix. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or</i></p> <p><i>x. Sites zoned for conservation use or public open space or equivalent zoning.</i></p>	

## **8. Need and Desirability**

The proposed development is a mixed-use development which includes Business 1 and Commercial uses. This is in line with the Muldersdrift Precinct Plan (Mogale City Local Municipality, 2011) as it falls within the mixed use zone area. The mixed land use district will invest in and strengthen existing communities and achieve more balanced regional development and facilitate the provision of a variety of transportation choices.

The development is located adjacent to Beyers Naude Drive which is a major arterial and will allow access to necessary transportation to and from work for employees. This is in line with the Transit Oriented Development (TOD) Principles. This is especially pertinent in that there are current and future residential components planned in the area and thus there will be a demand for business orientated land uses that can provide for the needs of these communities. For this reason, abundant office space is required for in the proposed township.

In addition, from a town planning point of view and in terms of good urban design it is desirable to have mixture of use along Beyers Naude Drive not only to buffer the existing agricultural holdings and farm portions but to support other residential neighbourhoods both existing and upcoming also to grow certain areas where the need for alternative land use is wanted. The site is also currently vacant and degraded and thus development in line with the Local Municipalities plans for the area will be beneficial and allow the full potential of the area to be met.

Lastly the proposed development will provide numerous economic benefits. Firstly, during construction, there will be a direct CAPEX of R15 million. Secondly, 150 construction related employment opportunities will be created. During operation, 100 permanent positions will be created. This will also have a number of economic multiplier effects for the local economy.

## **9. Public Participation**

A combined registration and public review of the Basic Assessment Report is being undertaken. As part of this, the following has been undertaken:

- In line with the new Permitting Regulations (GN 650 of 5 June 2020), a Public Participation Plan was compiled and submitted to GDARD on 19 June 2020. The plan was subsequently approved on 5 July 2020 (refer to Appendix I4). Subsequently, the Country has moved to Level 2 and thus the Directions are no longer applicable. However all public participation was undertaken in terms of the required safety measures.
- A potential I&AP database was compiled and included Adjacent Landowners, Ward Councillors, Authorities and Potential I&APs. Potential I&APs were also contacted telephonically to confirm their details and to determine their preferred means of communication.
- Authorities were also contacted to confirm whether they will accept hard copies or whether the use of electronic documents will suffice.

- A Background Information Document (BID) was compiled and included information on the proposed development, services and roads and included a map showing all these components. In addition, the BID provided a link to download the Basic Assessment Report and included details of the 30-day review of the document which was scheduled to start 2 weeks after the initial notification (from **21 September 2020 to 22 October 2020**).
- An advert was placed in the Star Newspaper on **7 September 2020**. As with the BID, the advert included the link to download the BAR and included the dates associated with the public review of the report.
- Three (3) site notices showing a map of the proposed development and associated components were placed on and around the site on **7 February 2020**. The site notice also included the link to download the BAR and included the dates associated with the public review of the report.
- The BIDs were emailed, or messaged to adjacent landowners, landowners, potential I&APs and authorities on **7 February 2020** (preferred means of communication based on what was determined telephonically).
- Hard copies and/or electronic copies (USB Flashdrive) of the BAR were submitted to competent and commenting authorities including the Gauteng Department of Agriculture and Rural Development (GDARD), the Mogale City Local Municipality (MCLM), West Rand District Municipality, and Department of Human Settlements, Water and Sanitation (DHSWS). A copy has also been uploaded to the South African Heritage Resources Information System (SAHRIS) to facilitate the review and comment by the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Agency of Gauteng (PHRA-G).
- The Comments and Responses register was opened and all requests to register and/or comments received have been included.
- The I&AP Database has also been updated to include those who have requested registration or provided comments.

The BAR has been updated with comments received during this period and then submitted to GDARD for review and decision making. All registered I&APs will be notified of the decision.

## **10. Environmental Sensitivity**

In order to better understand the environmental sensitivity and the potential impacts related to the development the following specialist studies have been undertaken:

- Wetland Assessment;
- Baseline Ecological Habitat Assessment; and
- Heritage Impact Assessment.

Copies of the reports are included in Annexure G. In summary, the following was noted:

- Wetland Assessment
  - The development site is not directly affected by the wetland, but the wetland buffer encroaches slightly onto the development site on the western boundary.

- In addition, the infrastructure installations and connections to the external services will impact on this wetland.
- The details of this wetland are as follows:
- A valley bottom wetland was identified on site (GG98\_UCVB – Unchanneled Valley Bottom Wetland - was found on the valley floor at the head of the catchment, draining towards the West)).
- The wetland attained a moderate overall PES (Present Ecological State) as the wetland was found to moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact. This wetland system is impacted by historical activities both in the catchment as well as directly on the wetland system where the impacts are continues. It forms part of a larger wetland system. The trajectory of change for the wetland ecological status is predicted that conditions are likely to deteriorate slightly over the next 5 years without major intervention.
- The wetland attained a Moderate Ecological Importance and Sensitivity (EIS) score. The wetland is considered ecologically important and sensitive on a local scale. The biodiversity of this wetland is generally not sensitive to flow and habitat modifications. It plays a small role in moderating the quantity and quality of water of major rivers. The system drains into further downstream wetland and streams before reaching major rivers. The Ecological Importance and Sensitivity (EIS) for this system is thus considered to be Moderate.
- The wetland Recommended Ecological Classification (REC) classification was rated as Category C. The wetland will be impacted to some extent by the proposed development activities. This impact will be localised and at the transitional point leading from the development and infrastructure installations into the wetland and buffer area. It will in all likelihood regress slightly in terms of its current Ecological Category if not managed in specific during the construction period. Stormwater management for the site is required in specific the construction phase. This will mitigate the impact on the wetlands. Rehabilitation of the impacts and maintenance of the system will further mitigate the impacts and could improve the sustainability of the system.
- The specialist found that the construction activities will in all likelihood impact slightly on the wetland system but can be mitigated to satisfactory standards if all mitigatory actions are implemented with due care. It is key to preserve water quality and supply to the downstream aquatic resources.
- Further, the rehabilitation of the wetland is vital to recover some ecological function. The wetland drivers must be enhanced as part of the rehabilitation of the affected areas. In respect of the construction phase, it is important to ensure that the required erosion protection measures linked to the wetland intersection sections be carefully designed and installed.

- The specialist therefore concluded that the project can be supported, should all the mitigation measures be implemented and monitored against to ensure compliance and protection of the aquatic resource.
- Baseline Ecological Habitat Assessment
  - From a desktop perspective, the proposed development occurs within the Egoli Granite Grassland (Endangered) vegetation type. According to the Gauteng Conservation Plan, the proposed sewer line and Road A and B traverses a small section of an Ecological Support Area (ESA) and Zone 3 of the GPEMF.
  - The site was actively surveyed to determine the current status of the habitats on site. Two main habitat types were identified within the study site, namely:
    - Wetland with associated 32m buffer; and
    - Secondary vegetation with scattered patches of alien invasive plant species.
  - The habitats identified were identified as having a medium to low sensitivity.
  - The development footprint of the development itself falls within the disturbed area which is not representative of Egoli Granite Grassland.
  - Two SCC were identified on site, namely *Hypoxis hemerocallidea* and *Boophone disticha*. Whilst these species are classified as “Least Concern” in terms of Red Data List, GDARD has confirmed that they should be considered as “Orange List” species in Gauteng due to provincial level pressures. Therefore, in order to mitigate impacts to these species, a Search and Rescue and Relocation Plan has been devised and included in Appendix E of the Baseline Ecological Assessment. Impacts to these species are expected to be low with the implementation of the necessary mitigation.
- Heritage Impact Assessment
  - A Heritage Impact Assessment was undertaken. The specialist noted however that access restrictions resulted that some sections of the sewer line and road infrastructure was not physically surveyed. Based on environmental sensitivities and a desk-based assessment of these sections the areas are not considered to be of heritage sensitivity;
  - Further, no surface evidence of heritage resources was identified during the survey;
  - Based on the SAHRIS Paleontological Sensitivity Map, the area is of insignificance paleontological sensitivity and no further action is required for this aspect;
  - No grave sites were identified in the study area although known graves occur in the greater area;
  - Both the preferred and alternative option for the sewer line is acceptable from a heritage perspective;
  - The study area is surrounded by industrial and residential developments and road infrastructure developments and the proposed development will not impact negatively on significant cultural landscapes or viewscales.
  - The impact of the proposed project on heritage resources is considered low. It is therefore recommended that the proposed project can commence on the condition

that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- A heritage walk down of all linear developments must be conducted prior to development;
- Confirmation of any burial sites within the study area during the public participation process; and
- Implementation of a chance find procedure.

## 11. Recommendation of the Practitioner

Based on the findings of the specialist studies and impact assessment and taking into account the successful implementation of the EMPr, it is felt that the following alternatives be authorised:

- Proposed Sewer Line;
- Proposed Layout (FAR = 0.4).

The reasons for this opinion are discussed are as follows:

- The Proposed Sewer Line involves the development of approximately 1.3km of 160mm and 200mm diameter pipeline which travels within the property and crosses the buffer slightly before exiting the property to the north, and then crossing the wetland and wetland buffer before entering the wetland area to connect to the existing line.
- In contrast with the alternative, the proposal limits the impact to the wetland as for most of its length it occurs outside the delineated wetland. This reduces impacts to wetland interflows.
- It also reduces potential water quality issues.
- Lastly, the proposal does not encroach on the ESA and Zone 3 of the GPEMF whilst the alternative does. The proposal therefore reduces the impact to the ESA and GPEMF area.
- The proposed layout (FAR = 0.4) has a reduced FAR and thus reduces the expected number of trips for the development. This reduces the traffic impact of the development.
- It also reduces the need for the full length of Road B at this time as only a small section to the south of the site (up until the western corner) will be developed.
- The reduced length of Road B reduces the impact to the wetland, ESA and Zone 3 of the GPEMF as it no longer extends into this area
- Most importantly, it is also in line with the comments received from affected landowners who were not in favour of the full development of Road B through their properties.

The following are recommended conditions for inclusion in the EA:

- The **proposed sewer line (Proposal)** should be implemented;
- **The proposed Layout (FAR =0.4) should be implemented;**
- The final Site Development Plan (SDP) should be submitted to GDARD once it has been finalised through the townplanning process. No stormwater nfastructure or buildings to be developed within the wetland buffer.



- Rehabilitation of the wetland as per the requirements of the wetland study and rehabilitation plan must be undertaken.
- An Environmental Control Officer (ECO) should be appointed to ensure compliance to the authorisation and EMPr. Bimonthly monitoring and monthly reporting together with six-monthly full environmental audits are recommended;
- As required by the Baseline Ecological Habitat Assessment, the following should be undertaken:
  - Construction and laydown areas should be established outside of the wetland 32m buffer.
  - Fires shall only be permitted in specially designated areas and under controlled circumstances.
  - Killing of fauna on or adjacent to the study area are strictly prohibited. Should any fauna species be found on site, the ECO should be conducted asap to provide recommendation or mitigation measures.
  - Clearing of vegetation is not allowed within the 32m buffer of the wetland area other than for those activities authorised.
  - It is recommended that all *Hypoxis hemerocallidea* and the one *Boopane disticha* species should be removed prior to construction activities and either relocated to a similar type of environment or implemented within the landscaping plan of the proposed development. A Search, Rescue and Relocation plan has been compiled and should be implemented.
  - Trenches and other linear barriers should not be kept open for too long, especially not staying open overnight.
  - Stormwater, sewer and road infrastructure should be designed in such a way that it will have minimal impact on the environmental, especially the wetland area.
  - Construction must be restricted to hours of 07:00 and 17:00. Should construction activities need to continue over a weekend/public holiday or is expected to be excessively noisy, all Interested and Affected Parties and the ECO must be notified in advance.
  - Construction must be restricted to hours of 07:00 and 17:00. Should construction activities need to continue after hours is, all Interested and Affected Parties and the ECO must be notified in advance. Excessive lighting during construction should be avoided.
  - Fire extinguishers must be placed on the property.
- As required by the Heritage Impact Assessment:
  - Heritage walk down of all linear developments prior to development;
  - Confirmation of any burial sites within the study area during the public participation process;
  - Implementation of a chance find procedure as outlined below. The stormwater management system included in the Stormwater Management Plan must be implemented and maintained;

- The requirements of the Traffic Impact Assessment must be implemented.
- An updated Stormwater Management Plan should be developed and submitted to the Department prior to construction. Stormwater attenuation and outlets should remain outside the 32m wetland buffer
- Access to private property must be by agreement only.
- A landowner liaison officer should be appointed and contact with the landowners must be made before any entry to the private property is made.
- Should electric fencing or fencing need to be removed this must be agreed to by affected landowners. All electric fencing/fencing must be replaced as soon as construction in the property is completed.
- An Issues Register should be set up and all comments, queries and complaints should be noted. Details on how these issues have been resolved should be noted.
- Where possible the construction of the pipeline will be undertaken in sections in line with property boundaries. Based on discussions with the engineer, it is understood that the excavation, laying of pipeline and closing of the excavation of approximately 300m will take 1 week. It is therefore feasible that the pipeline be developed property by property so to limit the time that each property is impacted. Grazing would therefore be limited for a short period only.
- The right of way/servitude for the pipeline is 3m. No additional clearing of excavation will be permitted.
- During site preparation, topsoil and subsoil must be stripped separately from each other and must be stored separately from spoil material for use in the rehabilitation phase.
- Programme the backfill of excavations so that subsoil is deposited first, followed by the topsoil.
- Monitor backfilled areas for subsidence (as the backfill settles) and fill depressions using available material.
- Execute top soiling activity prior to the rainy season or any expected wet weather conditions.
- Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter. Replace topsoil to the original depth.
- Place topsoil in the same area from where it was stripped.
- Rip and/or scarify all areas following the application of topsoil to facilitate mixing of the upper most layers.
- No litter, rubble or any other construction material shall remain on site once the pipeline is completed.
- ECO to undertake a rehabilitation audit at the completion of the pipeline and then again in 6 months to ensure that rehabilitation has been undertaken as necessary and to ensure no undue alien invasive plant species are establishing.



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

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### **Kindly note that:**

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.
2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.**
4. **A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.**
5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
8. An incomplete report may lead to an application for environmental authorisation being refused.
9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**
10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.
11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

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### **DEPARTMENTAL DETAILS**

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

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

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

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(For official use only)

<b>NEAS Reference Number:</b>						
<b>File Reference Number:</b>						
<b>Application Number:</b>						
<b>Date Received:</b>						

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

Not Applicable.

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

N/A

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

Not Applicable

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

✓

The Basic Assessment Report was made available for a 30-day public review between 21 September 2020 and 22 October 2020. Copies of the report were provided to the following Departments:

- GDARD;
- DHSWS;
- MCLM;
- WRDM; and
- SAHRA.

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

✓

If no, state reasons for not attaching the list.

Not Applicable

Have State Departments including the competent authority commented?

✓

If no, why?

Comments have been received from the following:

- GDARD;
- MCLM; and
- WRDM.

# SECTION A: ACTIVITY INFORMATION

## 1. Proposal or Development Description

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

Proposed Development of Portion 260 of the farm Rietfontein 189 IQ and associated roads and services on surrounding properties, Mogale City Local Municipality, Gauteng

Select the appropriate box

The application is for an upgrade of an existing development

The application is for a new development

Other, specify

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

YES	NO
✓	

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

A Water Use Licence in terms of Section 21 (c) and (i) of the National Water Act, 1998 is required. An application will be submitted on the EWULAAS System.

An integrated process will be undertaken and a copy of the WULA Technical Report, Monitoring and Rehabilitation Plan is included in **Appendix F1** and is available for review and comment.

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

YES	NO
✓	
YES	NO
	✓

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

## 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:
<i>National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).</i>	<i>National &amp; Provincial</i>	<i>27 November 1998</i>
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)	National (DEFF) Provincial (GDARD)	4 December 1996
National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended	National (DEFF) Provincial (GDARD)	18 December 2014
Environmental Impact Assessment Regulations (GN R 982 of 4 December 2014) (as amended by GN 326 of 7 April 2017)	National (DEFF) Provincial (GDARD)	8 December 2014 (as amended on 7 April 2017)
Listing Notice 1 (GN R 983 of 4 December 2014) (as amended by GN 327 of 7 April 2017)	National (DEFF) Provincial (GDARD)	8 December 2014 (as amended on 7 April 2017)
Listing Notice 3 (GN 985 of 4 December 2014) (As amended by GN 324 of 7 April 2017)	National (DEFF) Provincial (GDARD)	8 December 2014 (as amended on 7 April 2017)
Need & Desirability Guideline (Notice 891 of 2014)	National (DEFF) Provincial (GDARD)	20 October 2014
Public Participation Process Guideline (GN R 807 of 10 October 2012)	National (DEFF) Provincial (GDARD)	10 October 2012
National Heritage Resource Act (NHRA), 1999 (Act No. 25 of 1999)	South African Heritage Resources Agency (SAHRA)  Provincial Heritage Resources Agency – Gauteng (PHRA-G)	28 April 1999
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [as amended] (NEMBA)	DEFF	1 September 2004

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
Alien and Invasive Species Regulations, 2014	DEFF	1 August 2014
Alien and Invasive Species Lists, 2016	DEFF	29 July 2016
Gauteng Spatial Development Framework (SDF) The Gauteng Spatial Development Framework 2030	GDARD	2011
Gauteng Provincial Environmental Management Framework (EMF) (GN 164 of 2 March 2018)	GDARD	2014
Adoption of the Gauteng Provincial Environmental Framework Standard and Exclusion of Associated Activities from the requirement to obtain environmental authorisation in terms of Section 24(2)(d) and 24(10)(a) Read in conjunction with Section 24(1)(d) of NEMA, 1998 for the implementation of the Gauteng Provincial Environmental Management Framework	GDARD	2018
Notice of the requirements to submit a report generated by the National Web Based Environmental Screening Tool in terms of Section 24(5)(h) of the National Environmental Management Act, 1998 and Regulation 18(1)(b)(v) of the EIA Regulations, 2014 (as amended (GN 960 of 5 July 2019)	DEFF GDARD	2019
GDARD C-PLAN v3	GDARD	-

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

Legislation, policy of guideline	Description of compliance
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)	<p><i>Section 24 of the Constitution states that –</i></p> <p><i>“Everyone has the right to –</i></p> <p><i>a) an environment that is not harmful to their health or well-being; and</i></p> <p><i>b) have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that – (i) Prevent pollution and ecological degradation;</i></p> <p><i>(ii) Promote conservation; and</i></p> <p><i>(iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</i></p> <ul style="list-style-type: none"> <li>• <b>A Basic Assessment Process including an Impact Assessment has been undertaken to ensure that negative impacts on the environment can be mitigated satisfactorily</b></li> </ul>
National Environmental Management Act, 1998 (NEMA) (Act No. 107 of 1998), as amended	<p>The NEMA is the umbrella framework for all environmental legislation primarily to assist with implementing the environmental rights of the Constitution. The NEMA provides fundamental principles required for environmental decision making and to achieve sustainable development. It also makes provision for duty of care to prevent, control and rehabilitate the effects of significant pollution and environmental degradation, and prosecute environmental crimes. These principles must be adhered to and taken into consideration during the impact assessment phase.</p> <p>Section 24D and 24(2) of the NEMA makes provision for the publication of list and associated regulations containing activities identified that may not commence without obtaining prior environmental authorisation from the competent authority.</p> <p>The Act also requires that no person may commence an activity listed or specified unless the competent authority has granted an environmental authorisation of that activity.</p>

Legislation, policy or guideline	Description of compliance
	<ul style="list-style-type: none"> <li>• <b>A Basic Assessment Process including an Impact Assessment has been undertaken to ensure that negative impacts on the environment can be mitigated satisfactorily. This assessment is in line with the requirements of NEMA and the associated EIA Regulations.</b></li> <li>• <b>Further, other important aspects of NEMA such as sustainability principles such as the “Polluter Pays” and “the Precautionary Principle” have also been considered in the assessment of the impacts of the proposed development.</b></li> <li>• <b>The commencement of the activity will not take place unless authorised by the competent authority.</b></li> </ul>
<p>EIA Regulations (GN R 982 of 4 December 2014) (as amended by GN 326 of 7 April 2017)</p>	<p>The purpose of the EIA Regulations, 2014 is to regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts.</p> <ul style="list-style-type: none"> <li>• <b>The Basic Assessment Process undertaken for the proposed development is in line with the requirements of the EIA Regulations, 2014 (as amended)</b></li> </ul>
<p>Listing Notice 1 (GN R 983 of 4 December 2014) (as amended by GN 327 of 7 April 2017)</p>	<p>In terms of Listing Notice 1, the proposed development triggers <b>Activity 9, 12, 19, 24, 27 and 28.</b></p> <ul style="list-style-type: none"> <li>• <b>In line with the requirements of Listing Notice 1 of the EIA Regulations, 2014 (as amended), these activities have been included in the Application.</b></li> <li>• <b>A Basic Assessment Process in line with the requirements of the EIA Regulations, 2014 (as amended) is being undertaken.</b></li> </ul>
<p>Listing Notice 3 (GN 985 of 4 December 2014) (As amended by GN 324 of 7 April 2017)</p>	<p>In terms of Listing Notice 3, the proposed development triggers <b>Activity 4, 12, and 14.</b></p> <ul style="list-style-type: none"> <li>• <b>In line with the requirements of Listing Notice 3 of the EIA Regulations, 2014 (as amended), these activities have been included in the Application.</b></li> <li>• <b>A Basic Assessment Process in line with the requirements of the EIA Regulations, 2014 (as amended) is being undertaken.</b></li> <li>• <b>Due to the potential sensitivities on site, an Ecological Assessment and Wetland Assessment have been undertaken and are included in Appendix G of this Report.</b></li> </ul>
<p>Notice 891 of 2014</p>	<p>The Department of Environmental Affairs (DEA) published a guideline on determining the need and desirability of a proposed development. This document provides information and guidance considering the need and desirability in terms of NEMA, the EIA Regulations, the NEM: AQA, and NEM: WA.</p>



Legislation, policy of guideline	Description of compliance
	<p>It also aims to assist Environmental Assessment Practitioners (EAPs) to prepare a well-structured and complete application and reports in order, and to assist the competent authorities to ensure that need and desirability are given due consideration during every EIA application, to expedite and ensure well-informed decision-making.</p> <ul style="list-style-type: none"> <li>• <b>Section E, Part 9 of this report includes an assessment of the need and desirability of the proposed development which takes into account the Guidelines</b></li> </ul>
GN R 807 of 10 October 2012)	<p>The DEA also published guidelines for public participation. However, these specifically relate to the EIA Regulations, 2010.</p> <ul style="list-style-type: none"> <li>• <b>Section C of this report provides information on the public participation process. Where applicable, the guideline assisted in ensuring all the necessary I&amp;APs were identified. However, as mentioned, these guidelines specifically relate to the EIA Regulations, 2010.</b></li> </ul>
GN 650 of 5 June 2020	<p>Due to the current Covid-19 pandemic and the associated National State of Disaster, the Department published directions regarding the permitting process that must be followed in regards to Environmental Authorisation processes. In particular, public participation plans must be submitted to the Competent Authority and public participation must be undertaken in a way that limits risk but ensure fair consultation.</p> <ul style="list-style-type: none"> <li>• <b>A public participation plan (PP Plan) was submitted to GDARD on 19 June 2020 and was subsequently approved on 5 July 2020. A copy of the PP Plan and associated email from GDARD is included in Appendix I4. It should be noted that subsequently, the Country has moved to Alert Level 2 and the Directions are no longer applicable. Public participation however has been undertaken with the greatest attention to safety.</b></li> </ul>
National Heritage Resource Act (NHRA), 1999 (Act No. 25 of 1999)	<p>The National Heritage Resources Act (25 of 1999) was promulgated for the protection of National Heritage Resources and the empowerment of civil society to conserve their heritage Resources.</p> <p>In terms of Section 38 of this act, certain listed activities require authorisation from provincial agencies including “any development or other activity which will change the character of a site— (i) exceeding 5 000 m<sup>2</sup> in extent.”.</p> <ul style="list-style-type: none"> <li>• <b>A Heritage Impact Assessment Report has been compiled and is included in Appendix G.</b></li> <li>• <b>A copy of the Basic Assessment Report including the Heritage Impact Assessment has been uploaded on the SAHRIS website for review and comment.</b></li> </ul>

Legislation, policy of guideline	Description of compliance
<p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [as amended] (NEMBA)</p> <p>Alien and Invasive Species Regulations, 2014</p> <p>Alien and Invasive Species Lists, 2016</p>	<p>NEMBA aims to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA. The purpose of NEMBA is to protect ecosystems and the species within as well as the promoting of sustainable use of indigenous biodiversity.</p> <p>During any environmental authorisation process the following regulations are considered and researched if at any stage the following regulations are applicable:</p> <ul style="list-style-type: none"> <li>• <i>Alien and Invasive Species Regulations, 2014;</i></li> <li>• <i>Alien and Invasive Species List, 2016.</i></li> <li>• <b>In terms of this environmental authorisation process, due to the disturbed nature of the site, measures to control alien and invasive species have been included in the Environmental Management Programme for the construction and operation of the proposed development.</b></li> <li>• <b>In addition, an Ecological Assessment has been undertaken as included in Appendix G.</b></li> </ul>
<p>Gauteng Spatial Development Framework (SDF) The Gauteng Spatial Development Framework 2030</p>	<p>The Gauteng Spatial Development Framework, 2011 was among others, compiled to specify a clear set of spatial objectives for municipalities to achieve to ensure realisation of the future provincial spatial infrastructure; and to enable and direct growth.</p> <p>The SDF aims to articulate the spatial objectives of the Gauteng Spatial Development Framework (SDF) The Gauteng Spatial Development Framework 2030 The Gauteng Spatial Development Framework, 2011 was among others, compiled to specify a clear set of spatial objectives for municipalities to achieve to ensure realisation of the future provincial spatial infrastructure; and to enable and direct growth. The SDF aims to articulate the spatial objectives of the Gauteng region to assist the alignment of neighbouring municipalities' spatial plans.</p> <ul style="list-style-type: none"> <li>• <b>The Gauteng SDF has been considered in Section B9 and E7 of this Basic Assessment Report to ensure that the development is in line with framework</b></li> </ul>
<p>Gauteng Provincial Environmental Management Framework (GPEMF)</p>	<p>The objective of the GPEMF is to guide sustainable land use management within the Gauteng Province. The GPEMF, inter alia, serve the following purposes:</p> <ul style="list-style-type: none"> <li>• To provide a strategic and overall framework for environmental management in Gauteng;</li> <li>• Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng;</li> <li>• Determine geographical areas where certain activities can be excluded from an EIA process; and</li> <li>• Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making.</li> <li>• <b>As part of the Basic Assessment Process, the site was assessed in terms of the GPEMF, and it was determined that the site</b></li> </ul>

Legislation, policy or guideline	Description of compliance
	<p><b>falls within Zone 4: Normal Control Zone. The sewer line and Road B also traverse Zone 3: High Control Zone outside the Urban Development Zone. The Baseline Ecological Habitat Assessment however found that the development footprint of the altered and can be classified as secondary grassland with scattered aliens and thus recommended that the project proceed. Further, a wetland assessment was also undertaken and has included numerous mitigation measures to minimize impacts to the wetland.</b></p> <ul style="list-style-type: none"> <li>• <b>The proposed sewer line also mitigates impacts to the wetland as it reduces the impact to wetland.</b></li> </ul>
<p>Adoption of the Gauteng Provincial Environmental Framework Standard and Exclusion of Associated Activities from the requirement to obtain environmental authorisation in terms of Section 24(2)(d) and 24(10)(a) Read in conjunction with Section 24(1)(d) of NEMA, 1998 for the implementation of the Gauteng Provincial Environmental Management Framework (GN 164 of 2 March 2018)</p>	<p>The GPEMF Standard, 2018 provides for a number of activity exclusions in certain zones (for example, Zone 1 and Zone 5). The aim of this is streamline development in areas that are earmarked for development. In this way, the Standard promotes densification and infill.</p> <ul style="list-style-type: none"> <li>• <b>The proposed development occurs within Zone 4 and as such, the GPEMF Standard does not apply.</b></li> </ul>
<p>Notice of the requirements to submit a report generated by the National Web Based Environmental Screening Tool in terms of Section 24(5)(h) of the National Environmental Management Act, 1998 and Regulation 18(1)(b)(v) of the EIA Regulations, 2014 (as amended (GN 960 of 5 July 2019)</p>	<p>GN960 of 5 July 2019 made it compulsory for the report generated on the DEFF online screening tool to be submitted as part of the Application for Environmental Authorisation. The aim of this is to ensure that a certain level of standardized information is provided to the Competent Authorities as well as I&amp;APs.</p> <ul style="list-style-type: none"> <li>• <b>As per the requirements of GN 960 of 5 July 2019, a report was generated on the National Screening tool and is submitted in Appendix I.</b></li> </ul>
<p>C-PLAN v3</p>	<p>Gauteng Conservation Plan (C-Plan) 3.3. is based on the systematic conservation protocol developed by Margules &amp; Pressey (2000) and is based on the principles of complementarity, efficiency, defensibility and flexibility, irreplaceability, retention, persistence and accountability.</p> <p>The main purpose of C-Plan 3.3 is to serve as the primary decision support tool for the biodiversity component of the EIA process, to inform protected area expansion and biodiversity stewardship programmes in the province and to serve as a basis for development of Bioregional Plans in municipalities within the province.</p> <p>According the Gauteng C-Plan, Road B and the sewer line traverse the Ecological Support Area. .</p> <ul style="list-style-type: none"> <li>• <b>In order to determine the impacts of the proposed development. A Baseline Ecological Habitat Assessment has been undertaken. The Baseline Ecological Habitat Assessment however found that the development footprint of the altered and can be classified as secondary grassland with scattered aliens and thus recommended that the project proceed</b></li> </ul>

Legislation, policy of guideline	Description of compliance
	Please refer to Appendix G for more information

### 3. Alternatives

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

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

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

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

As part of the development planning process for the proposed development, several technical assessments have been undertaken including the following:

- Geotechnical Study;
- Outline Scheme Report;
- Traffic Impact Assessment; and
- Stormwater Management Plan.

Discussions with the technical team as well as the wetland specialist were then undertaken to determine the requirements of the development and to ensure that the concept of sustainability was taken into account. As part of this, discussions on how the proposed development would handle sewer took place and it was determined that the proposed development would need to connect to an existing sewer line approximately 1.1.km to the west. Two sewer pipeline routes were therefore developed as follows:

- Proposed sewer line (Proposal); and
- Alternative sewer line (Alternative 1).

Furthermore, during the public review of the Basic Assessment Report, landowners affected by the associated infrastructure raised concerns regarding the impact of Road B in particular, on their properties. Whilst it was noted that Road B forms part of the Gauteng Roads Masterplan and is therefore likely to be developed in the future, its inclusion in the proposed development related to the size of the development and the associated traffic impact which resulted in the need to have two access roads to the site.

In order to take into account, the concerns of the landowners, a new proposal was development. This proposal had a reduced Floor Area Ratio (FAR) of 0.4 from the original 0.8. The Traffic Impact Assessment was updated to take into account the new proposed layout and found that with the amended FAR of 0.4 (Proposed Layout), the traffic was such that the full extent of Road B would not be required.

In addition, GDARD raised concerns that the sewer alternatives assessed were not related to the development as a whole. Whilst this is not the case (as the alternatives provided deal with how the development as a whole will deal with sewer), two additional alternatives have been added and assessed. These include:

- Proposed Layout (Proposal) – FAR =0.4; and
- Alternative Layout – FAR = 0.8.

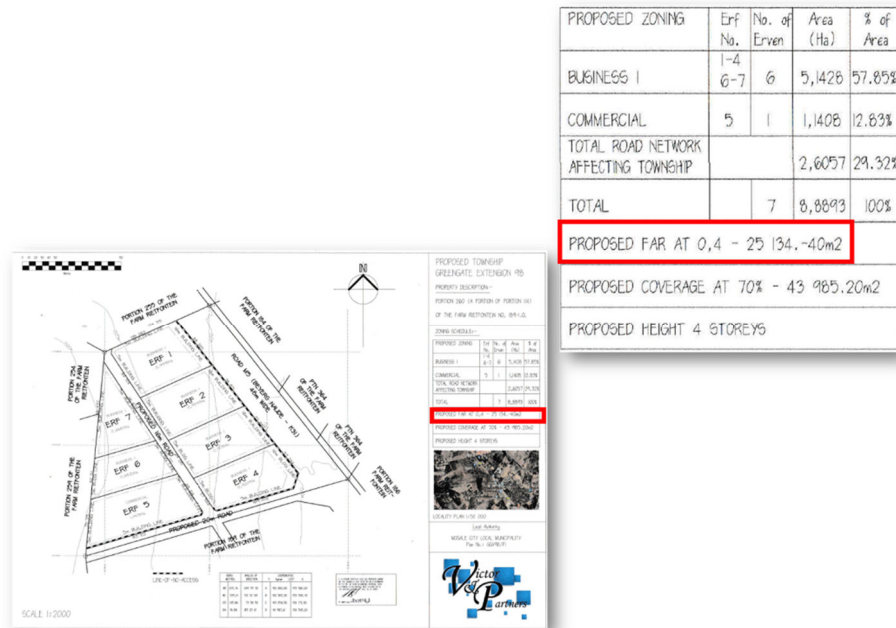
Provide a description of the alternatives considered

No	Alternative type, <sup>1</sup>	Description
1	Proposed Sewer Line	<p>The proposal involves the development of approximately 1.3km of 160mm and 200mm diameter pipeline which travels within the property and crosses the buffer slightly before exiting the property to the north, and then crossing the wetland and wetland buffer before entering the wetland area to connect to the existing line (<b>Figure 11 and Figure 12</b>).</p> <div> </div> <p><b>Figure 11: Proposal</b></p> <div> </div> <p><b>Figure 12: Proposal showing locations of the pipeline within wetland and wetland buffer</b></p>

<sup>1</sup> either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of “other”)



With the Proposal, the FAR of the proposed development is reduced to 0.4 and therefore results in an area of 25 134.4 m<sup>2</sup>. Figure 15 provides the proposed layout.



**Figure 15: Proposed Layout (FAR = 0.4)**


The biggest implication of the reduced FAR is that of traffic and access. The Traffic Impact Assessment was updated to take into account the new proposed layout and found that with the amended FAR of 0.4 (Proposed Layout), the Morning (AM) Peak Hour was expected to be 519 (313 in / 206 out) and Afternoon (PM) Peak Hour 1,352 (664 in / 687 out). Access to the site would therefore be as follows:

- **Road A** The construction of a new Class 5a (commercial local) road – 7.4m wide in a 20m road reserve (*note: this is already approved*).
- **Road B** The construction of a new Class 4a (commercial collector) road – 7.4m wide in a 25m road reserve (**along the southern boundary of the application site, terminating at the western corner**).

Figure 16 shows the proposed access arrangements (from Road B/Beyers Naude and Road A (which later connects to Beyers Naude)).





		<p><b>Figure 16: Access Arrangements for Proposed Layout (FAR = 0.4)</b></p>																									
4	Alternative Layout	<p>In contrast, the Alternative Layout has a FAR of 0.8 which results in an area 50 265.80 m<sup>2</sup>. Refer to <u>Figure 17</u>.</p> <p>The impact of this FAR was initially assessed as part of the original Traffic Impact Assessment which found that the expected trip generation of the application was ±965 vehicle trips during the weekday morning (AM) peak hour and ±2,293 vehicle trips during the weekday afternoon (PM) peak hour (based on COTO TMH 17, the South African Trip Data Manual).</p>  <table border="1"> <thead> <tr> <th>PROPOSED ZONING</th> <th>Erf No.</th> <th>No. of Erven</th> <th>Area (Ha)</th> <th>% of Area</th> </tr> </thead> <tbody> <tr> <td>BUSINESS 1</td> <td>1-4</td> <td>6</td> <td>5,428</td> <td>57.85%</td> </tr> <tr> <td>COMMERCIAL</td> <td>5</td> <td>1</td> <td>1,1408</td> <td>12.83%</td> </tr> <tr> <td>TOTAL ROAD NETWORK AFFECTING TOWNSHIP</td> <td></td> <td></td> <td>2,6097</td> <td>29.32%</td> </tr> <tr> <td>TOTAL</td> <td></td> <td>7</td> <td>8,8893</td> <td>100%</td> </tr> </tbody> </table> <p>PROPOSED FAR AT 0,8 - 50 268,30m<sup>2</sup>  PROPOSED COVERAGE AT 70% - 43 985,20m<sup>2</sup>  PROPOSED HEIGHT 4 STOREYS</p> <p><b>Figure 17: Alternative Layout (FAR = 0.8)</b></p> <p>In order to cater for this, construction of the following roads would be required:</p> <ul style="list-style-type: none"> <li>• <u>Road A</u> The construction of a new Class 5a (commercial local) road – 7.4m wide in a 20m road reserve.</li> <li>• <u>Road B</u> The construction of a new Class 4a (commercial collector) road – 7.4m wide in a 25m road reserve (<b><i>this would extend from Beyers Naude along the southern boundary of the site and then link to the section of the K56 which is being constructed as part of the Beyers Naude Road Upgrade.</i></b>)</li> </ul> <p><u>Figure 18</u> provides an overview of the roads and access required.</p>	PROPOSED ZONING	Erf No.	No. of Erven	Area (Ha)	% of Area	BUSINESS 1	1-4	6	5,428	57.85%	COMMERCIAL	5	1	1,1408	12.83%	TOTAL ROAD NETWORK AFFECTING TOWNSHIP			2,6097	29.32%	TOTAL		7	8,8893	100%
PROPOSED ZONING	Erf No.	No. of Erven	Area (Ha)	% of Area																							
BUSINESS 1	1-4	6	5,428	57.85%																							
COMMERCIAL	5	1	1,1408	12.83%																							
TOTAL ROAD NETWORK AFFECTING TOWNSHIP			2,6097	29.32%																							
TOTAL		7	8,8893	100%																							



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

Not Applicable.

#### 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:

Proposed activity (*Total environmental (landscaping, parking, etc.) and the building footprint*) - Proposed Layout

**Size of the activity:**  
10.6 ha

**Alternatives:**

Alternative Layout 1 (if any)

14.64 ha

Alternative 2 (if any)

Ha/ m<sup>2</sup>

**\*Please note that the development footprint above includes the footprint of the necessary road access as well as the sewer line and stormwater.**

For, for linear activities:

Proposed Sewer line

**Length of the activity:**  
1 647.57 m

**Alternatives:**

Alternative Sewer Line 1 (if any)

1 549. 14 m

Alternative 2 (if any)

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

Proposed Sewer Line

**Size of the site/servitude:**  
4942.71 m<sup>2</sup>

**Alternatives:**

Alternative Sewer Line 1 (if any)

4647.42 m<sup>2</sup>

Alternative 2 (if any)

Ha/m<sup>2</sup>

**The servitude will be 3m wide.**

#### 5. Site Access

**Proposal**

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

YES	NO
	✓
1000 m	

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

Describe the type of access road planned:

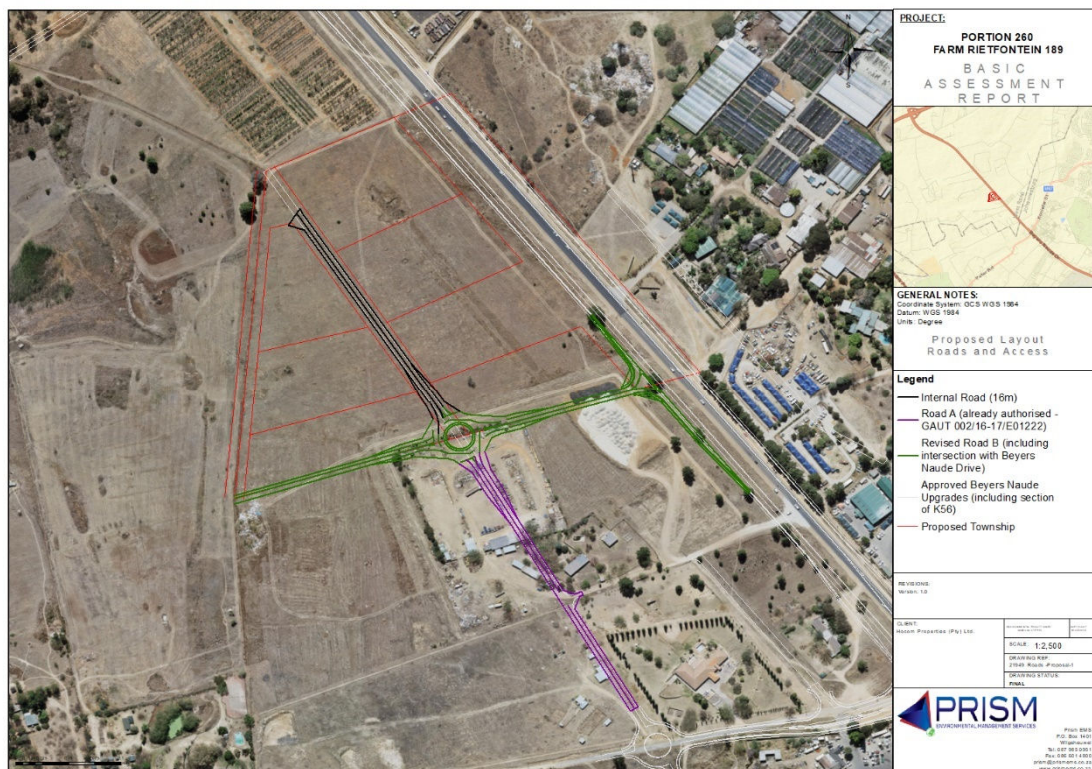
Access to the application site will be obtained from Beyers Naude Drive in accordance with the Road Master Plan via the intersection with Valley Road – Ibis Lane and a new Class 5 road (i.e. Road A). Additional access is also proposed from Beyers Naude Drive via a proposed new marginal access (Class 4a road) with Beyers Naude Drive on the eastern boundary of the site (i.e. Road B).

Overall, these two roads together with the internal road span approximately 1000m.

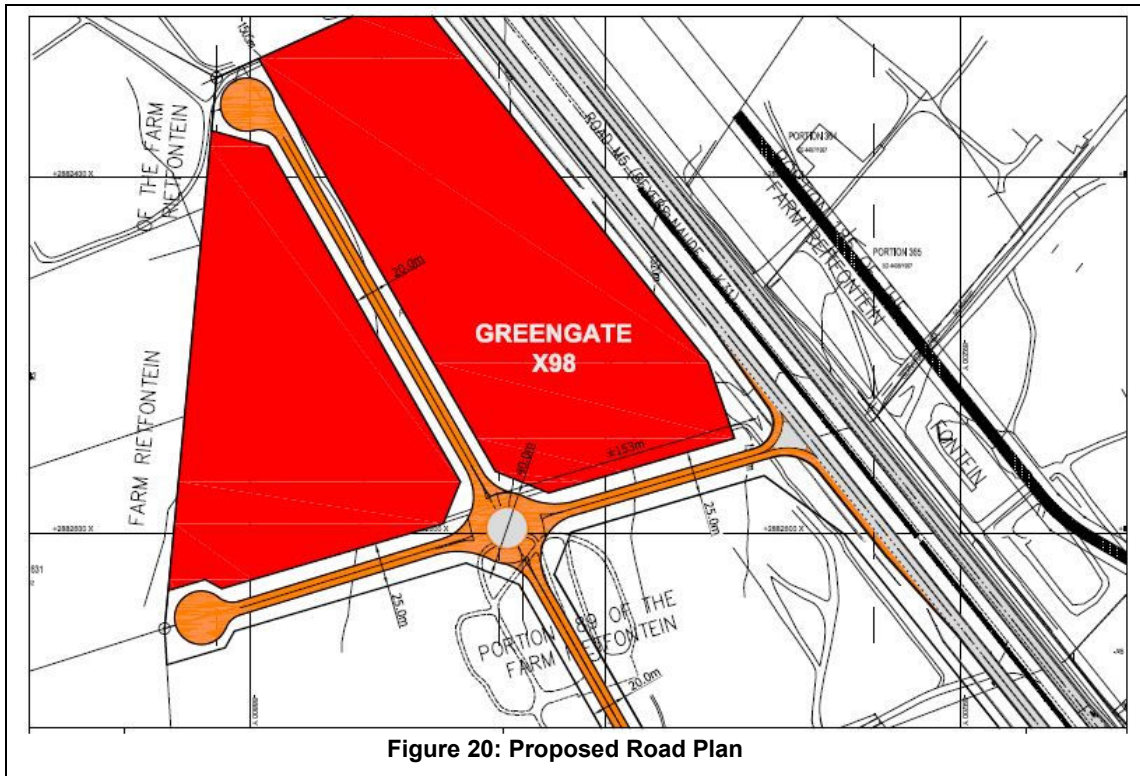
Construction of the following roads will be required:

- Road A The construction of a new Class 5a (commercial local) road – 7.4m wide in a 20m road reserve. This road has been assessed and approved as part of the Beyers Naude (K31) Road Upgrades.
- Road B The construction of a new Class 4a (commercial collector) road – 7.4m wide in a 25m road reserve. Only the section from Beyers Naude Drive south of the property to the western corner of the site will be developed.

An overview of the planned new roads, access and internal road is provided in **Figure 19** below followed by a drawing showing the proposed access arrangements for the site (**Figure 20**).



**Figure 19: Internal Road, Road A and reduced section of Road**



**Figure 20: Proposed Road Plan**

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

**Alternative 1**

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

YES	NO
	✓
1900 m	

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

Describe the type of access road planned:

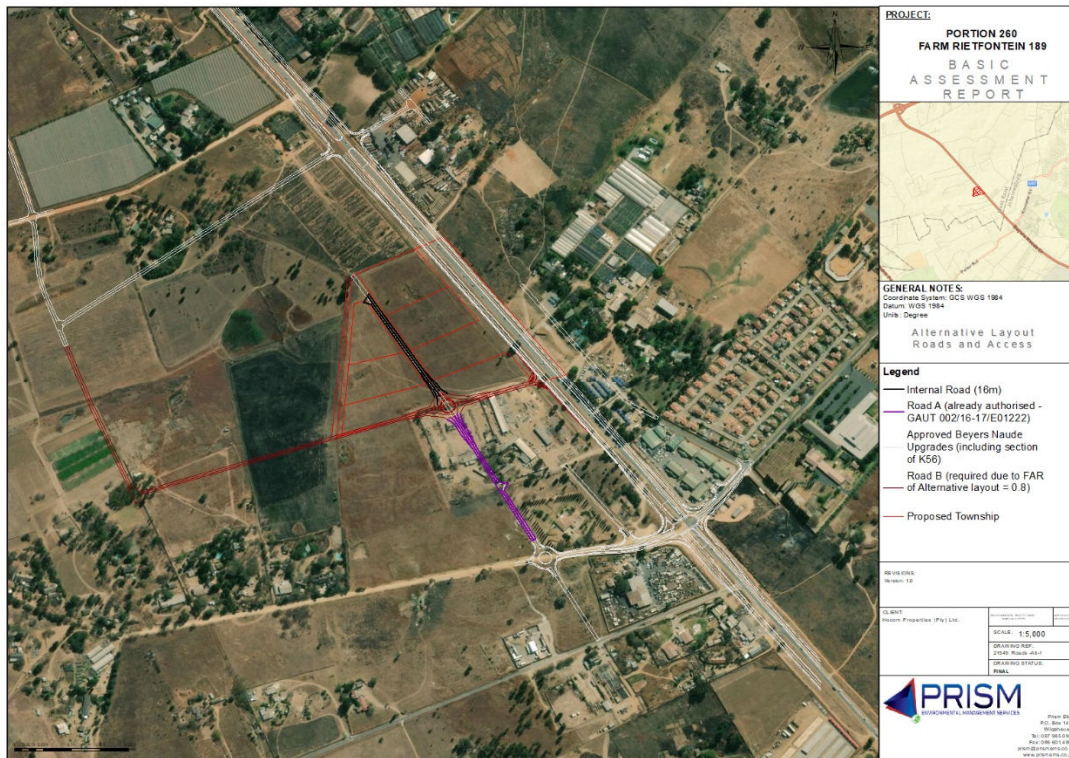
With the Alternative, a greater number of trips are generated and thus additional access is required:

Access to the application site will be obtained from Beyers Naude Drive in accordance with the Road Master Plan via the intersection with Valley Road – Ibis Lane and a new Class 5 road (i.e. Road A). Additional access is also proposed from Beyers Naude Drive via a proposed new marginal access (Class 4a road) with Beyers Naude Drive on the eastern boundary of the site (i.e. Road B) and from planned Route K56 in the south-west. Overall these two roads span approximately 1900m.

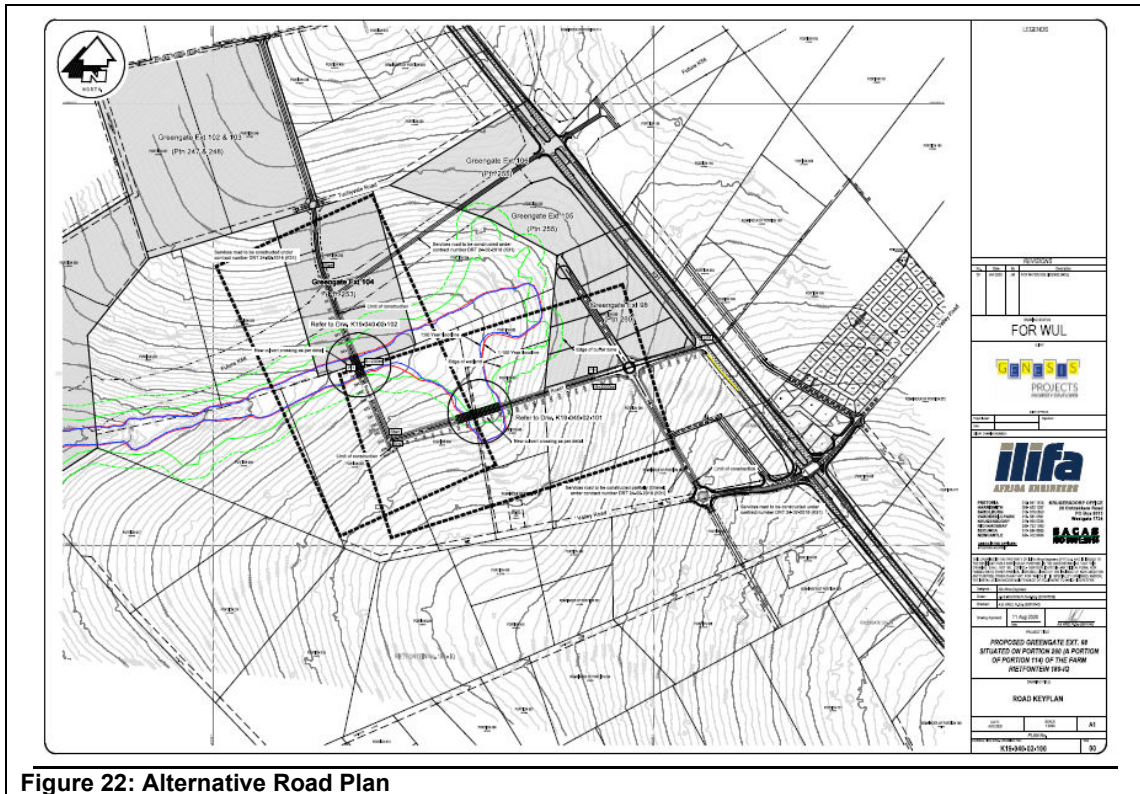
Construction of the following roads will be required:

- Road A The construction of a new Class 5a (commercial local) road – 7.4m wide in a 20m road reserve. This road has been assessed and approved as part of the Beyers Naude (K31) Road Upgrades.
- Road B The construction of a new Class 4a (commercial collector) road – 7.4m wide in a 25m road reserve. The full Road B will be required.

An overview of the planned new roads, access and internal road is provided in **Figure 21** below followed by a drawing showing the proposed access arrangements for the site (**Figure 22**).



**Figure 21: Internal Road, Road A and B and access**



**Figure 22: Alternative Road Plan**

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

**Alternative 2**

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

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

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

Section A 6-8 has been duplicated  Number of times

(only complete when applicable)

Sewer Pipeline Alternatives have been considered but as they are in close vicinity of one another, duplication of Section A (6 to 8) is not required.

**6. Layout or Route Plan**

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

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;

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

Please refer to **Appendix A1** for a copy of the site plan for the Proposal and Alternative sewer lines and layouts.

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

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

Please refer to **Appendix A2** for a copy of the Locality Map. Please note that a number of maps have been provided at different scales to ensure that all information required is indicated. In addition, a number of sensitivity maps are provided in **Appendix A3**.

## **7. Site photographs**

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

Please refer to **Appendix B** for a copy of the necessary site photographs.

## **8. Facility Illustration**

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

Please refer to **Appendix C** for the facility illustrations. These include illustrations of stormwater attenuation and typical bedding details for the sewer pipelines.

# **SECTION B1: DESCRIPTION OF RECEIVING ENVIRONMENT – PROPOSED LAYOUT INCLUDING INTERNAL ROADS, INTERNAL WATER, INTERNAL SEWER AND INTERNAL STORMWATER AS WELL AS REDUCED SECTION OF ROAD B, AND WATER PIPELINE (IN ROAD RESERVE OF ROAD A – ALREADY APPROVED)\***

*\*Please note that this section has been amended to include the Proposed Layout including roads and services.*

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

## **Instructions for completion of Section B for linear activities**

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

Section B has been duplicated for sections of the route  times

## **Instructions for completion of Section B for location/route alternatives**

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

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

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

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

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

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

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

Please note that the activity is not strictly linear activity but involves the development of Portion 260 of the Farm Rietfontein 189 IQ as a mixed-use township. However, a number of services are required in support including a sewer line to connect to existing bulk sewer line as well as Road A and B which are required for access to the site. Therefore, in order to ensure all necessary information is provided, Section B is duplicated 2 times as follows:

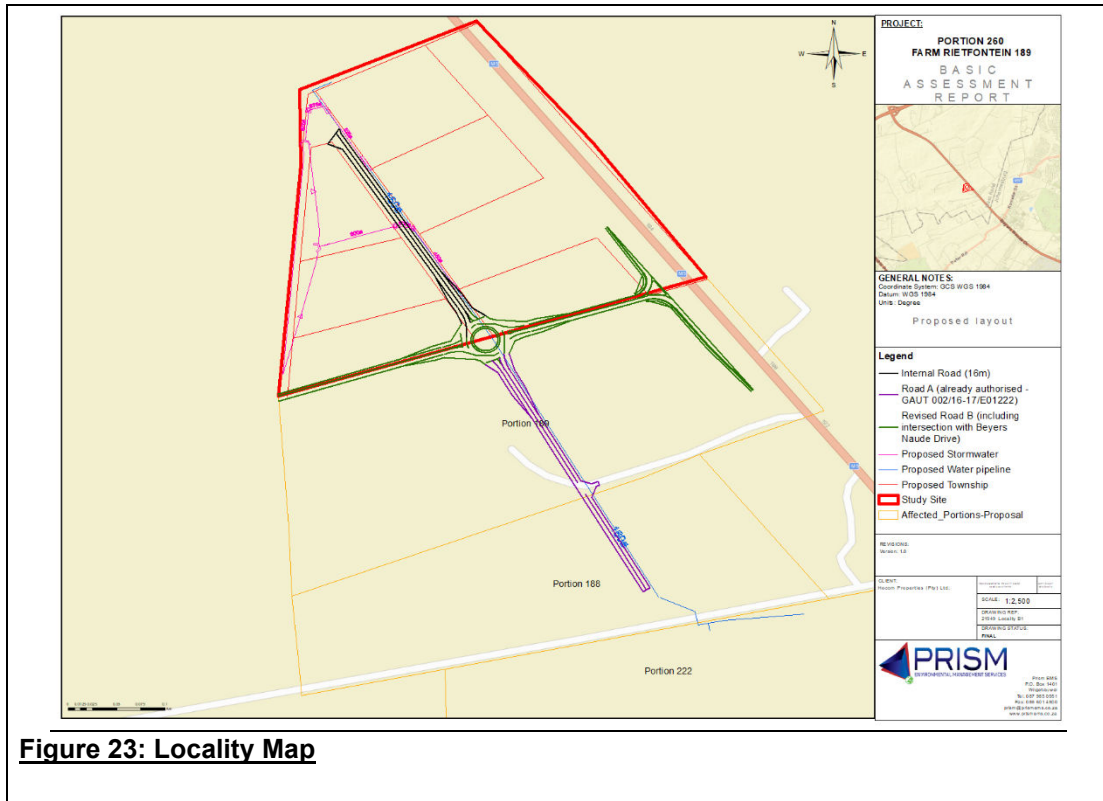
- **Section B1 – Proposed Layout Including Internal Roads, Internal Water, Internal Sewer And Internal Stormwater, section of Road B and water pipeline (in Road A road reserve – note Road A is already approved)\***
- **Section B2 – Alternative Layout Including Internal Roads, Internal Water, Internal Sewer And Internal Stormwater, full development of Road B and water pipeline (in Road A road reserve – note Road A is already approved)**

In addition, to take into account the two sewer line alternatives, Section B is further duplicated another two times as follows:

- Section B3 – Proposal Sewer Line
- Section B4 – Alternative Sewer Line

**Figure 23** shows the locality of the main mixed-use township.





**Figure 23: Locality Map**

## 1. Property Description

<p><b>Property description:</b> (Including Physical Address and Farm name, portion etc.)</p>	<p>The proposed development is located on Portion 260 of the Farm Rietfontein 189 IQ, Mogale City Local Municipality. As part of this, an internal road will also be put in place. The FAR of the proposed layout is 0.4. As part of this, Road A and a small section of Road B will also be developed as per the requirements of the Traffic Impact Assessment. The roads will traverse the following properties:</p>													
	<table border="1"> <thead> <tr> <th>Property</th> <th>Detail</th> <th>Require Authorisation</th> </tr> </thead> <tbody> <tr> <td>Portion 189 of the Farm Rietfontein 189</td> <td>Road A</td> <td>No (will be partially constructed as part of contract DRT 24-02-2018).</td> </tr> <tr> <td>Portion 188 of the Farm Rietfontein 189</td> <td>Road A</td> <td></td> </tr> <tr> <td>Portion 189 of the Farm Rietfontein 189</td> <td>Road B</td> <td>Yes</td> </tr> </tbody> </table>	Property	Detail	Require Authorisation	Portion 189 of the Farm Rietfontein 189	Road A	No (will be partially constructed as part of contract DRT 24-02-2018).	Portion 188 of the Farm Rietfontein 189	Road A		Portion 189 of the Farm Rietfontein 189	Road B	Yes	<p>Please note upgrades to Beyers Naude Drive are not included above as this has been approved separately.</p> <p>In addition to the roads, a 160mm diameter water pipeline will be put in place in the Road Reserve of Road A. The properties associated with this are provided below.</p>
Property	Detail	Require Authorisation												
Portion 189 of the Farm Rietfontein 189	Road A	No (will be partially constructed as part of contract DRT 24-02-2018).												
Portion 188 of the Farm Rietfontein 189	Road A													
Portion 189 of the Farm Rietfontein 189	Road B	Yes												
	<table border="1"> <tbody> <tr> <td>Portion 260 of the Farm Rietfontein 189</td> <td rowspan="4">Internal water and water pipeline (in road reserve of Road A which is already approved).</td> </tr> <tr> <td>Portion 189 of the Farm Rietfontein 189</td> </tr> <tr> <td>Portion 188 of the Farm Rietfontein 189</td> </tr> <tr> <td>Portion 222 of the Farm Rietfontein 189</td> </tr> </tbody> </table>	Portion 260 of the Farm Rietfontein 189	Internal water and water pipeline (in road reserve of Road A which is already approved).	Portion 189 of the Farm Rietfontein 189	Portion 188 of the Farm Rietfontein 189	Portion 222 of the Farm Rietfontein 189								
Portion 260 of the Farm Rietfontein 189	Internal water and water pipeline (in road reserve of Road A which is already approved).													
Portion 189 of the Farm Rietfontein 189														
Portion 188 of the Farm Rietfontein 189														
Portion 222 of the Farm Rietfontein 189														

## 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.

**Proposal - Proposed Layout (FAR – 0.4)**

**Latitude (S):**

**Longitude (E):**

26° 2'53.37"S	27°53'18.09"E
---------------	---------------

**Alternative Layout (FAR = 0.8)**

**Latitude (S):**

**Longitude (E):**

26° 2'53.37"S	27°53'18.09"E
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**In the case of linear activities: Stormwater Pipeline within Property**

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

**Latitude (S):**

**Longitude (E):**

26° 2'55.90"S	27°53'18.71"E
26° 2'49.54"S	27°53'13.75"E
26° 2'57.96"S	27°53'12.83"E

**In the case of linear activities: Road A (Already Approved)**

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

**Latitude (S):**

**Longitude (E):**

26° 3'5.81"S	27°53'24.82"E
26° 3'1.93"S	27°53'19.43"E
26° 2'57.71"S	27°53'19.66"E

**In the case of linear activities: Reduced Extent of Road B**

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

**Latitude (S):**

**Longitude (E):**

26° 2'55.75"S	27°53'25.65"E
26° 2'57.43"S	27°52'57.38"E
26° 2'59.41"S	27°53'12.58"E

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

Addendum of route alternatives attached

The 21 digit Surveyor General code of each cadastral land parcel

<b>PROPOSED</b>	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	1	8	8
<b>LAYOUT</b>	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	1	8	9
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	6	0
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	2	2

<b>ALTERNATIVE</b>	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	1	8	8
<b>LAYOUT</b>	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	1	8	9
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	6	0
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	6	4	6
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	6	3	1
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	8
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	7
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	3
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	4	8
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	0
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	4
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	5
	T	0	1	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	2	2

\*Please refer to Section B3 and B4 for property information for the proposed sewer line and alternative sewer line.

### 3. Gradient of the Site

Indicate the general gradient of the site.

Flat	1:50 – 1:20 ✓	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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### 4. Location in Landscape

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

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain ✓	Undulating plain/low hills	River front
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### 5. Groundwater, Soil and Geological Stability of the Site

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

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies)

Unstable rocky slopes or steep slopes with loose soil

Dispersive soils (soils that dissolve in water)

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

Any other unstable soil or geological feature

***(Potentially collapsible soils – mitigation measures are however provided).***

An area sensitive to erosion

YES	NO ✓
YES	NO ✓
YES	NO ✓
YES	NO ✓
YES	NO ✓
YES	NO ✓
✓	NO
✓	NO

Geotheta (Pty) Ltd undertook a Geotechnical Investigation for Portion 260 of the Farm Rietfontein. The Report is provided in **Appendix G4**. A summary of the main findings is provided below.

- The typical soil strata encountered on site comprised a layer of topsoil underlain by loose to dense transported material overlying loose to dense residual material. Hardpan ferricrete was also encountered in test pit TP6.
- Seven test pits were excavated using a TLB to determine the subsoil conditions. All test pits, with the exception of test pit TP6, were excavated until the maximum reach of the TLB at depths ranging from 2.3m to 2.8m below natural ground level. Test pit TP6 was excavated until refusal of the TLB on hardpan ferricrete at a depth of 1.7m below natural ground level.
- The material excavatability is classed as soft to intermediate, and hard through the hardpan ferricrete.
- No groundwater was encountered in any of the test pits during the investigation.
- Precautions should be taken to protect the foundations from moisture ingress. Adequate storm water control needs to be implemented to direct the water away from excavations and foundations
- The residual granites on site are susceptible to collapse, therefore suitable soil amelioration within the foundation zone of influence is required as specified in this report.
- Piled foundations are necessary for larger structures (greater than two storeys).
- Soil classification of the site in terms of the NHBRC Home Building Manual is C1.

(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)

<b>Latitude (S):</b>	<b>Longitude (E):</b>

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)

<b>Latitude (S):</b>	<b>Longitude (E):</b>

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)

<b>Latitude (S):</b>	<b>Longitude (E):</b>

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

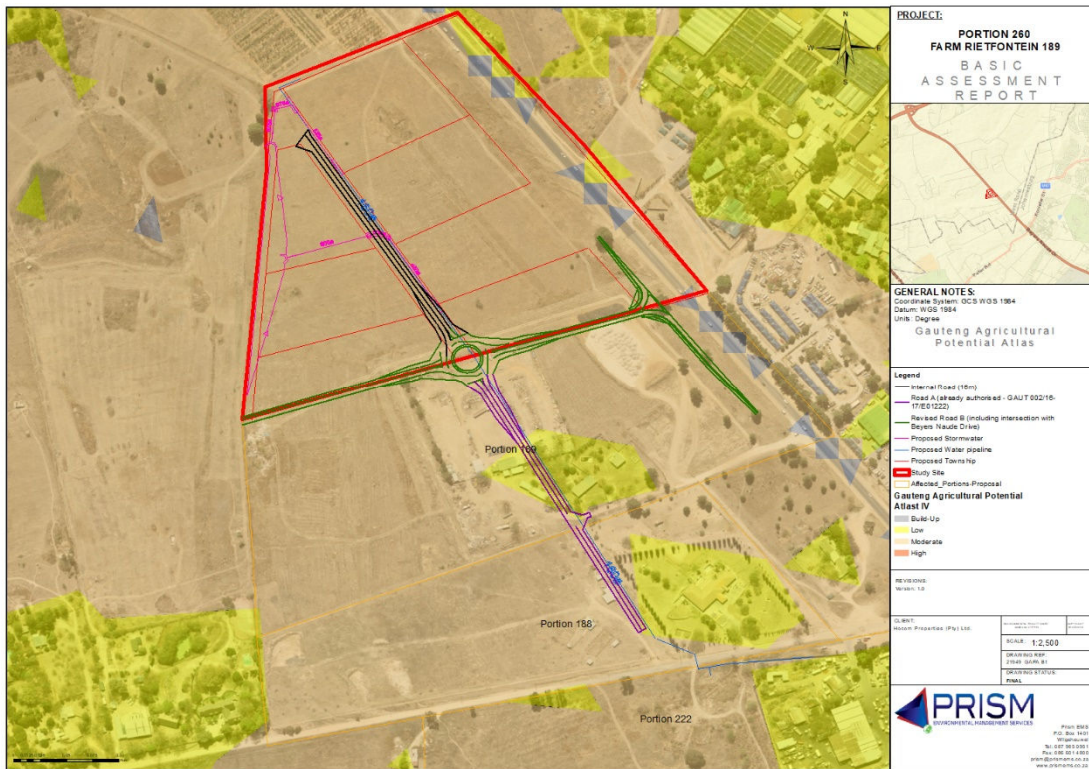
## 6. Agriculture

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

YES	NO
	✓

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

Please note that according to the Gauteng Agricultural Potential Atlas IV, the agricultural potential of the site is moderate and low. The site has not been used for agriculture for many years and is degraded.



**Figure 24: Agricultural Potential in terms of GAPA IV**

## 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

<b>Natural veld - good condition</b> % = 5%	<b>Natural veld with scattered aliens</b> % =80	Natural veld with heavy alien infestation % =0	Veld dominated by alien species % =0	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	<b>Building or other structure</b> % =1%	<b>Bare soil</b> % =14%

**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:

**Please note:**

No red list endangered or rare flora or fauna species were identified by the Ecological Baseline Assessment Study. However, several *Hypoxis hemerocallidea* and a single *Boophone disticha* were identified on site. These are identified as least concern on the Red Data list (Williams et al., 2016) but due to medicinal use are known to be decreasing and are thus species of conservation concern in Gauteng. These species will be relocated within the footprint of the development. Specific mitigation measures regarding this are included in the Environmental Management Programme (EMPr) as well as the Species Search, Rescue and Relocation Plan included in the Ecological Baseline Assessment.

A copy of the study is provided in **Appendix G1**.

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

YES	NO ✓
-----	---------

If YES, specify and explain:

Not Applicable.

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

YES ✓	NO
----------	----

If YES, specify and explain:

A Baseline Ecological Habitat Assessment was undertaken. The findings indicated that the western portion of the site included a wetland buffer area. In addition, whilst from a desktop perspective the site is Egoli Granite Grassland, the site is degraded by historic human activity and is no longer representative of primary vegetation. It was therefore classified as secondary vegetation with scattered alien invasive species.

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:

De Wet Botha	A.E. Van Wyk
M.A. Env. Man.)(PHED) Member of the International Association for Impact Assessors (IAIAsa)(1653) Member of the Gauteng Wetland Forum Member of the South African Wetland Society SACNASP Registered Scientist – Pr.Sci.Nat. (119979) EAPASA – Registered EAP (1209)	BSc. (Biological Sciences)

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1736

Telephone:

087 985 0951

Cell: 083 232 3042

E-mail:

[dewet@prismems.co.za](mailto:dewet@prismems.co.za)

Fax: 086 601 4800

Are any further specialist studies recommended by the specialist?

YES	NO ✓
-----	---------

If YES, specify: Not applicable.

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

N/A

If YES list the specialist reports attached below

Pleas refer to **Appendix G1** for a copy of the Ecological Habitat Status Assessment.

Signature of specialist:



De Wet Botha    AE. Van Wyk

Date:

7 April 2020

**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

<b>1. Vacant land</b>	<b>2. River, stream, wetland</b>	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	<b>7. Agriculture</b>	8. Low density residential	<b>9. Medium to high density residential</b>	10. Informal residential
11. Old age home	<b>12. Retail</b>	13. Offices	<b>14. Commercial &amp; warehousing</b>	15. Light industrial
16. Heavy industrial <sup>AN</sup>	<b>17. Hospitality facility</b>	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport <sup>N</sup>	23. Train station or shunting yard <sup>N</sup>	24. Railway line <sup>N</sup>	25. Major road (4 lanes or more) <sup>N</sup>
26. Sewage treatment plant <sup>A</sup>	27. Landfill or waste treatment site <sup>A</sup>	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam <sup>A</sup>	<b>34. Small Holdings</b>	
Other land uses (describe):	<b>35. Main Road (1 lane in each direction)</b> <b>36 Agriculture with some retail (nurseries)</b> <b>37. Storage</b>			

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

	<b>NORTH</b>					
	34,36	34,36	36	1, 7	34	
	34, 36	1, 2, 36	1, 12, 35, 36	1, 17, 36	1, 34, 36	
<b>WEST</b>	2, 34	2, 34		17, 36	7, 9	<b>EAST</b>
	2, 34	2, 34	1, 12, 34	14, 34, 35	14, 34	
	34	34	12, 34	14, 34, 35	34	
	<b>SOUTH</b>					

**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 <sup>"A"</sup> and with an <sup>"N"</sup> respectively.

Have specialist reports been attached

YES ✓	NO
----------	----

If yes indicate the type of reports below

The following environmental specialist studies have been undertaken:

- Wetland Assessment;
- Baseline Ecological Habitat Assessment; and
- Phase 1 Heritage Impact Assessment,.

In addition, the following technical studies have been undertaken:

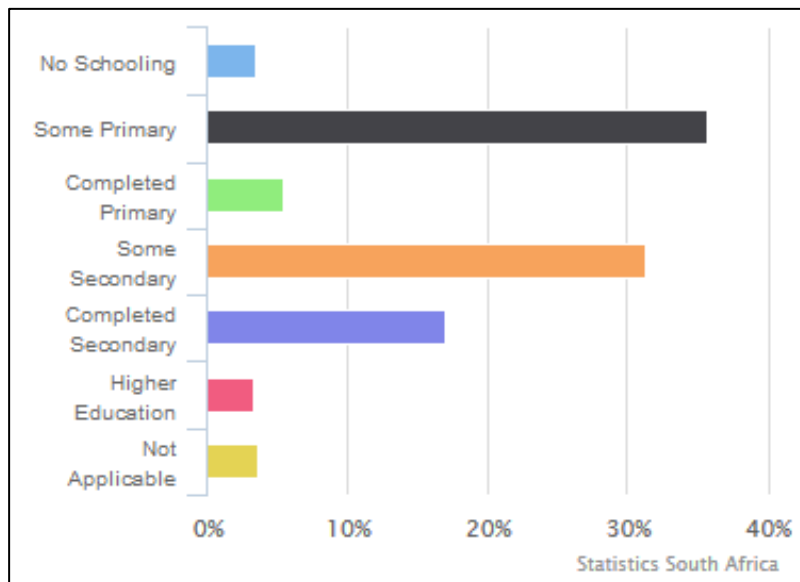
- Traffic Impact Assessment;
- Outline Scheme Report;
- Stormwater Management Plan; and
- Geotechnical Report.

These studies are all included in **Appendix G**.

## 9. Socio-Economic Context

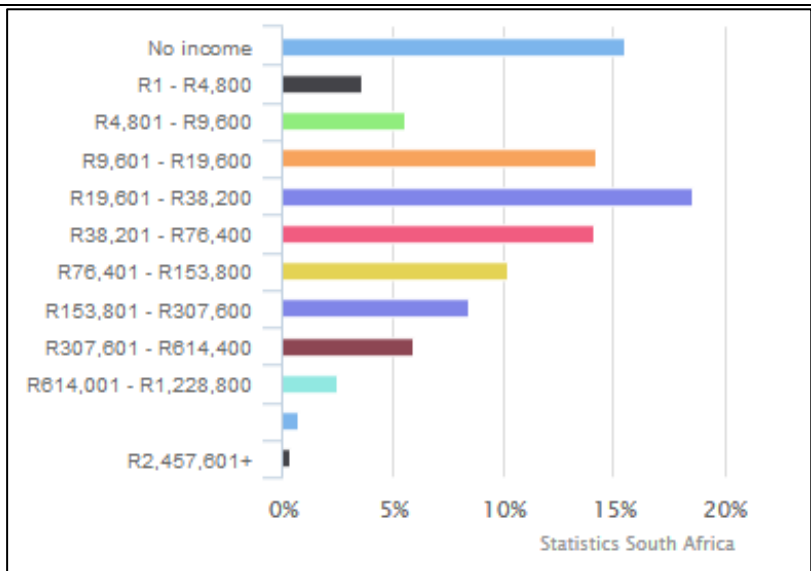
Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

According to Census 2011, Mogale City Local Municipality has a total population of 820 995 of people, of which 75,6% are black African, 21,0% are white, 0,8% are coloured, and 2,2% are Indian/Asian. Of those aged 20 years and older, 4,0% have completed primary school, 35,0% have some secondary education, 32,6% have completed matric, and 14,2% have some form of higher education (Figure 25).



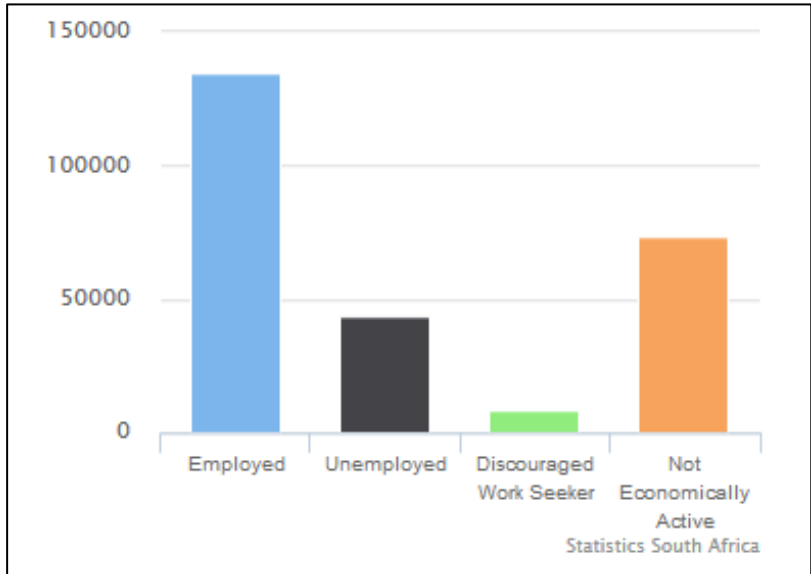
**Figure 25: Highest level of Education in Mogale City (Statistics SA, accessed 2020)**

In terms of household number and size, there are 117 373 households in the municipality with an average of 2,9 persons per household. A total of 54,8% households have access to piped water in their dwelling, 32,5% have water in their yard, and only 2,9% households do not have access to piped water. More than 15% of households have no income (Figure 26).



**Figure 26: Average Household Income (Statistics SA, accessed 2020)**

In addition, according to Census 2011 data, 134 635 people are economically active (employed or unemployed but looking for work), and of these, 24,6% are unemployed. Of the 60 706 economically active youth (15–34 years) in the area, 32,3% are unemployed (Figure 27).



**Figure 27: Employment for those aged 15-64 (Statistics SA, accessed 2020)**



## 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?

YES	NO ✓
-----	---------

If YES, explain:

Not applicable.

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

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

A Phase 1 Heritage Impact Assessment and as part of this, the study area was assessed both on desktop level and by a non-intrusive pedestrian field survey over a period of two days. Key finding of the assessment includes:

- Access restrictions resulted that some sections of the sewer line and road infrastructure was not physically surveyed. Based on environmental sensitivities and a desk-based assessment of these sections the areas are not considered to be of heritage sensitivity;
- No surface evidence of heritage resources was identified during the survey;
- Based on the SAHRIS Paleontological Sensitivity Map, the area is of insignificance paleontological sensitivity and no further action is required for this aspect;
- No grave sites were identified in the study area although known graves occur in the greater area;
- Both the preferred and alternative option for the sewer line is acceptable from a heritage perspective;
- The study area is surrounded by industrial and residential developments and road infrastructure developments and the proposed development will not impact negatively on significant cultural landscapes or views.

The impact of the proposed project on heritage resources is considered low. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- A heritage walk down of all linear developments must be conducted prior to development;
- Confirmation of any burial sites within the study area during the public participation process;
- Implementation of a chance find procedure.

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

YES	NO ✓
YES	NO ✓

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

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

A copy of this BAR and the Heritage Impact Assessment were uploaded to SAHRIS to allow SAHRA and PHRA-G an opportunity to provide comment in terms of section 38 of NRHA. Comments were received on 24 November 2020 and are included in Appendix E.

# **SECTION B2: DESCRIPTION OF RECEIVING ENVIRONMENT – ALTERNATIVE LAYOUT INCLUDING INTERNAL ROADS, INTERNAL WATER, INTERNAL SEWER AND INTERNAL STORMWATER, FULL DEVELOPMENT OF ROAD B AND WATER PIPELINE (IN ROAD A ROAD RESERVE – NOTE ROAD A IS ALREADY APPROVED\***

*\*Please note that this section has been amended to include the Proposed Layout including roads and services.*

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

### Instructions for completion of Section B for linear activities

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

Section B has been duplicated for sections of the route  times

### Instructions for completion of Section B for location/route alternatives

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

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

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

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

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

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

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

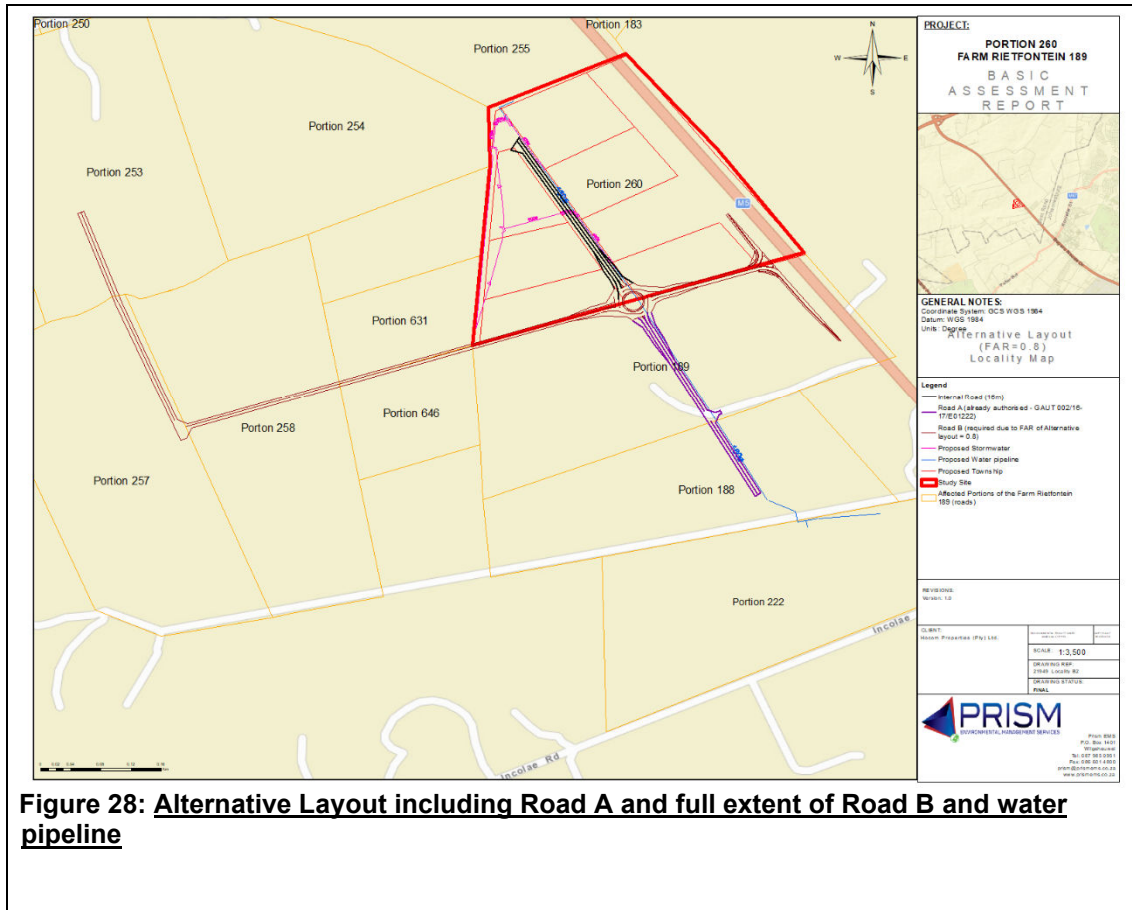
Please note that the activity is not strictly linear activity but involves the development of Portion 260 of the Farm Rietfontein 189 IQ as a mixed-use township. However, a number of services are required in support including a sewer line to connect to existing bulk sewer line as well as Road A and B which are required for access to the site. Therefore, in order to ensure all necessary information is provided, Section B is duplicated 2 times as follows:

- Section B1 – Proposed Layout Including Internal Roads, Internal Water, Internal Sewer And Internal Stormwater, section of Road B and water pipeline (in Road A road reserve – note Road A is already approved)
- **Section B2 – Alternative Layout Including Internal Roads, Internal Water, Internal Sewer And Internal Stormwater, full development of Road B and water pipeline (in Road A road reserve – note Road A is already approved)**

In addition, to take into account the two sewer line alternatives, Section B is further duplicated another two times as follows:

- Section B3 – Proposal Sewer Line
- Section B4 – Alternative Sewer Line

A Locality Map showing the alternative layout is provided in **Figure 28** below.



**Figure 28: Alternative Layout including Road A and full extent of Road B and water pipeline**

## 1. Property Description

<b>Property description:</b> (Including Physical Address and Farm name, portion etc.)	The <u>alternative layout also involves the development</u> of Portion 260 of the Farm Rietfontein 189 IQ, Mogale City Local Municipality. As part of this, an internal road will also be put in place. <u>The FAR of the proposed development will be 0.8 and thus Road A and B will also be developed as per the requirements of the Traffic Impact Assessment.</u> The roads will traverse the following properties:		
	<b>Property</b>	<b>Detail</b>	<b>Require Authorisation</b>
	Portion 189 of the Farm Rietfontein 189	Road A	No (will be partially constructed as part of contract DRT 24-02-2018)
	Portion 188 of the Farm Rietfontein 189	Road A	
	Portion 189 of the Farm Rietfontein 189	Road B	Yes
	Portion 260 of the Farm Rietfontein 189	Road B	
	Portion 646 of the Farm Rietfontein 189	Road B	
	Portion 631 of the Farm Rietfontein 189	Road B	
	Portion 258 of the Farm Rietfontein 189	Road B	
	Portion 257 of the Farm Rietfontein 189	Road B	
	Portion 253 of the Farm Rietfontein 189	Road B	
	Portion 248 of the Farm Rietfontein 189	Road B	
	Portion 250 of the Farm Rietfontein 189	Road B	No (will be constructed as part of contract DRT 24-02-2018)
	Portion 254 of the Farm Rietfontein 189	Road B	
	Portion 255 of the Farm Rietfontein 189	Road B	
Please note upgrades to Beyers Naude Drive are not included above as this has been approved separately (although it shown on the map above for the sake of clarity).			
In addition to the roads, a 160mm diameter water pipeline will be put in place in the Road Reserve of Road A. The properties associated with this are provided below.			
Portion 260 of the Farm Rietfontein 189	Internal water and water pipeline (in road reserve of Road A which is already approved).		
Portion 189 of the Farm Rietfontein 189			
Portion 188 of the Farm Rietfontein 189			
Portion 222 of the Farm Rietfontein 189			

## 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.

### Proposal - Proposed Layout (FAR = 0.4)

<b>Latitude (S):</b>	<b>Longitude (E):</b>
26° 2'53.37"S	27°53'18.09"E

### Alternative Layout (FAR = 0.8)

<b>Latitude (S):</b>	<b>Longitude (E):</b>
26° 2'53.37"S	27°53'18.09"E

### In the case of linear activities: Road A (Already Approved)

	<b>Latitude (S):</b>	<b>Longitude (E):</b>
• Starting point of the activity	26° 3'5.81"S	27°53'24.82"E
• Middle point of the activity	26° 3'1.93"S	27°53'22.45"E
• End point of the activity	26° 2'57.71"S	27°53'19.66"E

### In the case of linear activities: Road B

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

Latitude (S):	Longitude (E):
26° 2'55.61"S	27°53'26.00"E
26° 2'57.31"S	27°52'57.38"E
26° 2'41.23"S	27°53'13.33"E

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

Addendum of route alternatives attached

**See Appendix D1 for Road B coordinates**

The 21 digit Surveyor General code of each cadastral land parcel

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

\*Please note that alternatives assessed relate to the sewer pipeline route (Section B3 and Section B4). Properties related to the proposal and alternative are described there.

### 3. Gradient of the Site

Indicate the general gradient of the site.

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

### 4. Location in Landscape

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

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

## 5. Groundwater, Soil and Geological Stability of the Site

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

Shallow water table (less than 1.5m deep)	YES	NO ✓
Dolomite, sinkhole or doline areas	YES	NO ✓
Seasonally wet soils (often close to water bodies)	YES	NO ✓
Unstable rocky slopes or steep slopes with loose soil	YES	NO ✓
Dispersive soils (soils that dissolve in water)	YES	NO ✓
Soils with high clay content (clay fraction more than 40%)	YES	NO ✓
Any other unstable soil or geological feature <i>(Potentially collapsible soils – mitigation measures are however provided).</i>	YES ✓	NO
An area sensitive to erosion	YES ✓	NO

Geotheta (Pty) Ltd undertook a Geotechnical Investigation for Portion 260 of the Farm Rietfontein. It is assumed that due to the proximity of the sewer line to the Ptn 260, that the findings of the report are applicable. The Report is provided in **Appendix G4**. A summary of the main findings is provided below.

- The typical soil strata encountered on site comprised a layer of topsoil underlain by loose to dense transported material overlying loose to dense residual material. Hardpan ferricrete was also encountered in test pit TP6.
- Seven test pits were excavated using a TLB to determine the subsoil conditions. All test pits, with the exception of test pit TP6, were excavated until the maximum reach of the TLB at depths ranging from 2.3m to 2.8m below natural ground level. Test pit TP6 was excavated until refusal of the TLB on hardpan ferricrete at a depth of 1.7m below natural ground level.
- The material excavatability is classed as soft to intermediate, and hard through the hardpan ferricrete.
- No groundwater was encountered in any of the test pits during the investigation.
- Precautions should be taken to protect the foundations from moisture ingress. Adequate storm water control needs to be implemented to direct the water away from excavations and foundations
- The residual granites on site are susceptible to collapse, therefore suitable soil amelioration within the foundation zone of influence is required as specified in this report.
- Piled foundations are necessary for larger structures (greater than two storeys).
- Soil classification of the site in terms of the NHBRC Home Building Manual is C1.

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

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

YES	NO ✓
-----	---------

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

Latitude (S):	Longitude (E):

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

YES	NO ✓
-----	---------

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

Latitude (S):	Longitude (E):

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

YES	NO ✓
-----	---------

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

Latitude (S):	Longitude (E):

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

### 6. Agriculture

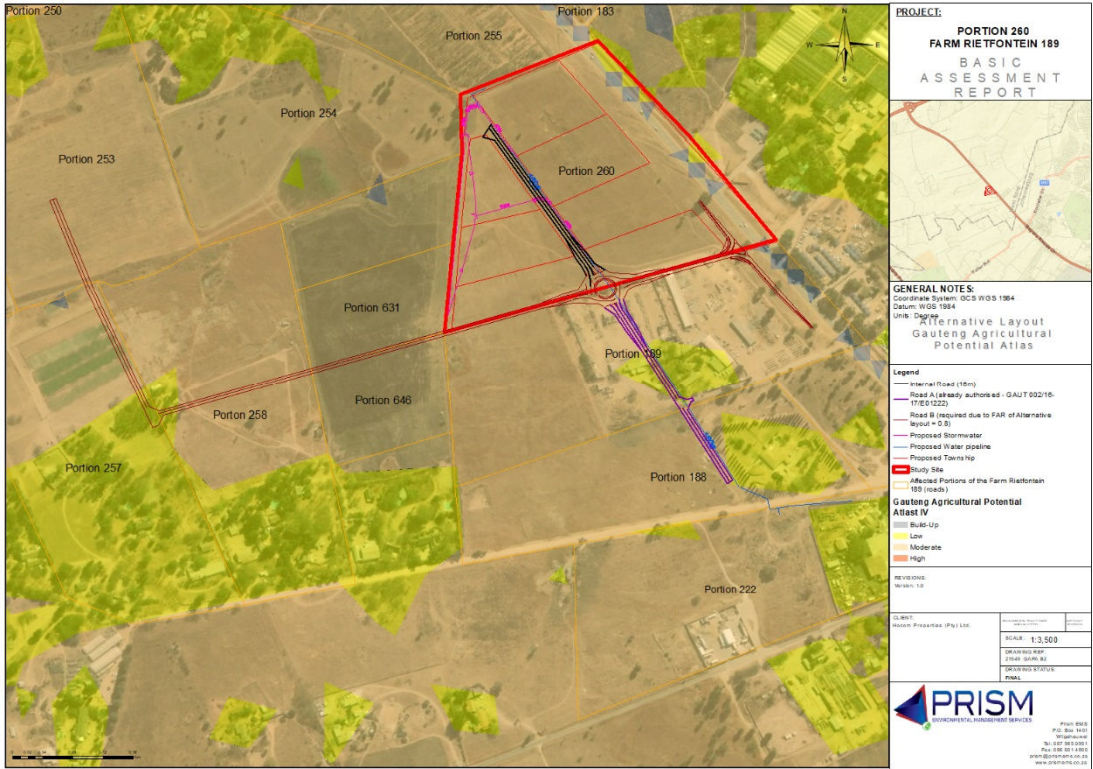
Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?

YES	NO
	✓

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

Please note that according to the Gauteng Agricultural Potential Atlas IV, the area affected by the alternative layout including Road A and B is low and moderate.

Please note however that Road A is already approved.



**Figure 29: Agricultural Potential in terms of GAPA IV**



## 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

<b>Natural veld - good condition</b> % = 10%	<b>Natural veld with scattered aliens</b> % =80	Natural veld with heavy alien infestation % =0	Veld dominated by alien species % =0	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	<b>Building or other structure</b> % =10%	Bare soil % =15

**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:

Not applicable.

**Please note:**

No red list endangered or rare flora or fauna species were identified by the Ecological Baseline Assessment Study. However, several *Hypoxis hemerocallidea* were identified in the wetland and associated buffer area. This species is identified as least concern on the Red Data list (Williams et al., 2016) but due to medicinal use are known to be decreasing and are thus species of conservation concern in Gauteng. The species will be relocated within the footprint of the development. Specific mitigation measures regarding this are included in the Environmental Management Programme (EMPr) as well as the Species Search, Rescue and Relocation Plan included in the Ecological Baseline Assessment.

A copy of the study is provided in **Appendix G1**.

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

YES	NO ✓
-----	---------

If YES, specify and explain:

Not Applicable.

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

YES ✓	NO
----------	----

If YES, specify and explain:

A Baseline Ecological Habitat Assessment was undertaken. The findings indicated that Road B traverses a wetland and wetland buffer area which are also identified as Ecological Support Area (ESA) in terms of the Gauteng Conservation Plan and Zone 3 of the Gauteng Provincial Environmental Management Framework. A Wetland Assessment was undertaken and indicates that the wetland has moderate Present Ecological State (PES) and is moderately modified. In addition, whilst from a desktop perspective the site is Egoli Granite Grassland, the site is degraded by historic human activity and is no longer representative of primary vegetation. It was thus classified as secondary grassland with scattered alien species.

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:

De Wet Botha M.A. Env. Man.)(PHED) Member of the International Association for Impact Assessors (IAIAs)(1653) Member of the Gauteng Wetland Forum Member of the South African Wetland Society SACNASP Registered Scientist – Pr.Sci.Nat. (119979) EAPASA – Registered EAP (1209)	A.E. Van Wyk BSc. (Biological Sciences)
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Fax: 086 601 4800

Are any further specialist studies recommended by the specialist?

YES	NO
	✓

If YES, specify: Not applicable.

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

If YES list the specialist reports attached below

Please refer to **Appendix G1** for a copy of the Ecological Habitat Status Assessment.

Signature of specialist:



De Wet Botha      AE. Van Wyk

Date: 7 April 2020

**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

<b>1. Vacant land</b>	<b>2. River, stream, wetland</b>	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	<b>7. Agriculture</b>	<b>8. Low density residential</b>	<b>9. Medium to high density residential</b>	10. Informal residential
11. Old age home	<b>12. Retail</b>	13. Offices	<b>14. Commercial &amp; warehousing</b>	15. Light industrial
16. Heavy industrial <sup>AN</sup>	<b>17. Hospitality facility</b>	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport <sup>N</sup>	23. Train station or shunting yard <sup>N</sup>	24. Railway line <sup>N</sup>	25. Major road (4 lanes or more) <sup>N</sup>
26. Sewage treatment plant <sup>A</sup>	27. Landfill or waste treatment site <sup>A</sup>	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam <sup>A</sup>	<b>34. Small Holdings</b>	
Other land uses (describe):	<b>35. Main Road (1 lane in each direction)</b> <b>36 Agriculture with some retail (nurseries)</b> <b>37. Storage</b>			

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

NORTH

34,36	34,36	7	2, 7, 34	1, 35, 36	1, 17, 35, 36	1, 34, 36
34, 36	1, 2, 36		2, 7, 34	1	1, 17, 35, 36	1, 34, 36
2, 34	2, 34				35, 36	7, 9
2, 34	2, 34	2, 34	2, 34		14, 34, 35	14, 34
34	34	34	34	12,34	14, 34, 35	34

SOUTH

WEST

EAST

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

= Site **Limited Road Reserves only**

**Note:**

**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 <sup>“AW”</sup> and with an <sup>“AN”</sup> respectively.

Have specialist reports been attached

YES ✓	NO
----------	----

If yes indicate the type of reports below

The following environmental specialist studies have been undertaken:

- Wetland Assessment;
- Baseline Ecological Habitat Assessment; and
- Phase 1 Heritage Impact Assessment,.

In addition, the following technical studies have been undertaken:

- Traffic Impact Assessment;
- Outline Scheme Report;
- Stormwater Management Plan; and
- Geotechnical Report.

These studies are all included in **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.

According to Census 2011, Mogale City Local Municipality has a total population of 820 995 of people, of which 75,6% are black African, 21,0% are white, 0,8% are coloured, and 2,2% are Indian/Asian. Of those aged 20 years and older, 4,0% have completed primary school, 35,0% have some secondary education, 32,6% have completed matric, and 14,2% have some form of higher education (Figure 30).

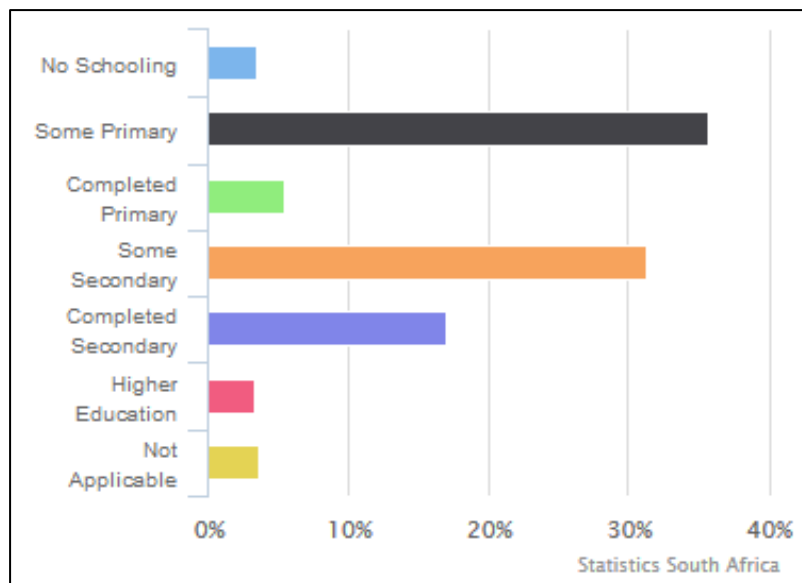


Figure 30: Highest level of Education in Mogale City (Statistics SA, accessed 2020)

In terms of household number and size, there are 117 373 households in the municipality with an average of 2,9 persons per household. A total of 54,8% households have access to piped water in their dwelling, 32,5% have water in their yard, and only 2,9% households do not have access to piped water. More than 15% of households have no income (Figure 31).

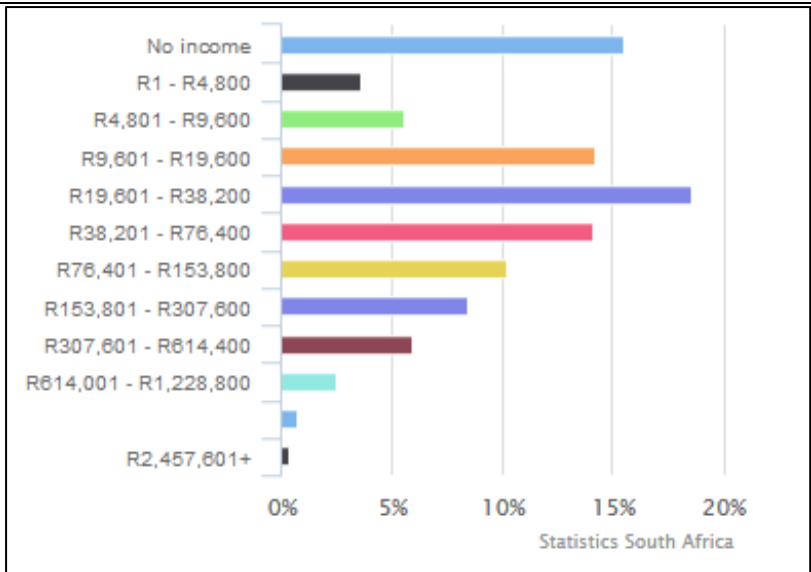


Figure 31: Average Household Income (Statistics SA, accessed 2020)

In addition, according to Census 2011 data, 134 635 people are economically active (employed or unemployed but looking for work), and of these, 24,6% are unemployed. Of the 60 706 economically active youth (15–34 years) in the area, 32,3% are unemployed (Figure 32).

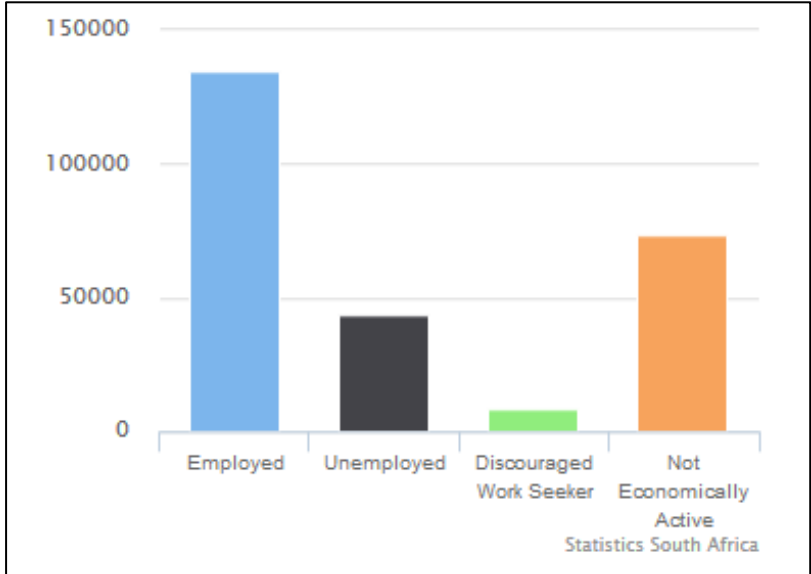


Figure 32: Employment for those aged 15-64 (Statistics SA, accessed 2020)

## 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?

YES	NO ✓
-----	---------

If YES, explain:

Not applicable.

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

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

A Phase 1 Heritage Impact Assessment and as part of this, the study area was assessed both on desktop level and by a non-intrusive pedestrian field survey over a period of two days. Key finding of the assessment includes:

- Access restrictions resulted that some sections of the sewer line and road infrastructure was not physically surveyed. Based on environmental sensitivities and a desk-based assessment of these sections the areas are not considered to be of heritage sensitivity;
- No surface evidence of heritage resources was identified during the survey;
- Based on the SAHRIS Paleontological Sensitivity Map, the area is of insignificance paleontological sensitivity and no further action is required for this aspect;
- No grave sites were identified in the study area although known graves occur in the greater area;
- Both the preferred and alternative option for the sewer line is acceptable from a heritage perspective;
- The study area is surrounded by industrial and residential developments and road infrastructure developments and the proposed development will not impact negatively on significant cultural landscapes or views.

The impact of the proposed project on heritage resources is considered low. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPR and based on approval from SAHRA:

- A heritage walk down of all linear developments must be conducted prior to development;
- Confirmation of any burial sites within the study area during the public participation process;

- Implementation of a chance find procedure.

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

A copy of this BAR and the Heritage Impact Assessment were uploaded to SAHRIS to allow SAHRA and PHRA-G an opportunity to provide comment in terms of section 38 of NRHA. Comments were received on 24 November 2020 and are included in Appendix E.

# SECTION B3: DESCRIPTION OF RECEIVING ENVIRONMENT – SEWER LINE (PROPOSAL)

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

## Instructions for completion of Section B for linear activities

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

Section B has been duplicated for sections of the route  times

## Instructions for completion of Section B for location/route alternatives

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

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

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

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

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

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

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

Please note that the activity is not strictly linear activity but involves the development of Portion 260 of the Farm Rietfontein 189 IQ as a mixed-use township. However, a number of services are required in support including a sewer line to connect to existing bulk sewer line as well as Road A and B which are required for access to the site. Therefore, in order to ensure all necessary information is provided, Section B is duplicated 2 times as follows:

- Section B1 – Proposed Layout Including Internal Roads, Internal Water, Internal Sewer And Internal Stormwater, section of Road B and water pipeline (in Road A road reserve – note Road A is already approved)
- Section B2 – Alternative Layout Including Internal Roads, Internal Water, Internal Sewer And Internal Stormwater, full development of Road B and water pipeline (in Road A road reserve – note Road A is already approved)

In addition, to take into account the two sewer line alternatives, Section B is further duplicated another two times as follows:

- **Section B3 – Proposal Sewer Line**
- Section B4 – Alternative Sewer Line

A Locality Map showing the proposed sewer line is provided in Figure 33 below.



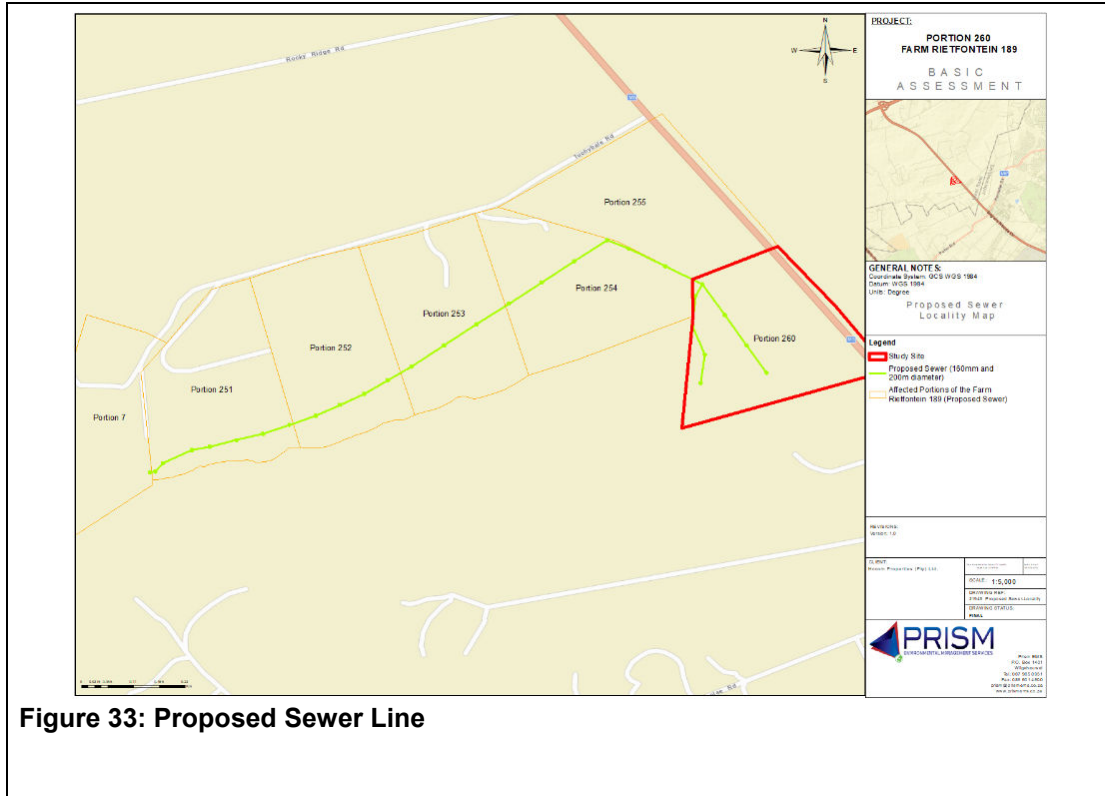


Figure 33: Proposed Sewer Line

## 1. Property Description

<p><b>Property description:</b> (Including Physical Address and Farm name, portion etc.)</p>	<p>The proposed development is located on Portion 260 of the Farm Rietfontein 189 IQ, Mogale City Local Municipality. Internal sewer will be put in this site. In addition, a new sewer pipeline will also be required to connect to the existing bulk sewer and will traverse the following properties:</p> <ul style="list-style-type: none"> <li>• Portion 255 of the Farm Rietfontein 189</li> <li>• Portion 254 of the Farm Rietfontein 189</li> <li>• Portion 253 of the Farm Rietfontein 189</li> <li>• Portion 652 of the Farm Rietfontein 189</li> <li>• Portion 251 of the Farm Rietfontein 189</li> <li>• Portion 7 of the Farm Rietfontein 189</li> </ul>
--	---

## 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.

Proposal

Latitude (S):

Longitude (E):

--	--

Alternative:

Latitude (S):

Longitude (E):

--	--

In the case of linear activities: **Proposed Sewer**

- Starting point of the activity

Latitude (S):

Longitude (E):

26° 2'56.23"S	27°53'13.83"E
---------------	---------------

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

26° 2'53.91"S	27°52'55.89"E
26° 3'2.37"S	27°52'36.01"E

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

Addendum of route alternatives attached

**See Appendix D2 for the Proposed Sewer coordinates**

The 21 digit Surveyor General code of each cadastral land parcel

<b>PROPOSAL</b>	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	6	0
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	5
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	4
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	3
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	6	5	2
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	1
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	0	0	7
<b>ALT. 1</b>	T	0	I	Q	0	0	0	0	0	0	0	0	1	8	9	0	0	2	6	0	
	T	0	I	Q	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	8	
	T	0	I	Q	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	7	
	T	0	I	Q	0	0	0	0	0	0	0	0	1	8	9	0	0	6	3	2	
	T	0	I	Q	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	6	
	T	0	I	Q	0	0	0	0	0	0	0	0	1	8	9	0	0	2	1	7	

### 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

Seasonally wet soils (often close to water bodies)

Unstable rocky slopes or steep slopes with loose soil

YES	NO ✓
YES	NO ✓
YES	NO ✓
YES	NO ✓

Dispersive soils (soils that dissolve in water)

YES	NO ✓
-----	---------

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

YES	NO ✓
-----	---------

Any other unstable soil or geological feature  
**(Potentially collapsible soils – mitigation measures are however provided).**

YES ✓	NO
----------	----

An area sensitive to erosion

YES ✓	NO
----------	----

Geotheta (Pty) Ltd undertook a Geotechnical Investigation for Portion 260 of the Farm Rietfontein. It is assumed that due to the proximity of the sewer line to the Ptn 260, that the findings of the report are applicable. The Report is provided in **Appendix G4**. A summary of the main findings is provided below.

- The typical soil strata encountered on site comprised a layer of topsoil underlain by loose to dense transported material overlying loose to dense residual material. Hardpan ferricrete was also encountered in test pit TP6.
- Seven test pits were excavated using a TLB to determine the subsoil conditions. All test pits, with the exception of test pit TP6, were excavated until the maximum reach of the TLB at depths ranging from 2.3m to 2.8m below natural ground level. Test pit TP6 was excavated until refusal of the TLB on hardpan ferricrete at a depth of 1.7m below natural ground level.
- The material excavatability is classed as soft to intermediate, and hard through the hardpan ferricrete.
- No groundwater was encountered in any of the test pits during the investigation.
- Precautions should be taken to protect the foundations from moisture ingress. Adequate storm water control needs to be implemented to direct the water away from excavations and foundations
- The residual granites on site are susceptible to collapse, therefore suitable soil amelioration within the foundation zone of influence is required as specified in this report.
- Piled foundations are necessary for larger structures (greater than two storeys).
- Soil classification of the site in terms of the NHBRC Home Building Manual is C1.

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

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

YES	NO ✓
-----	---------

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

Latitude (S):  Longitude (E):

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

YES	NO ✓
-----	---------

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

Latitude (S):  Longitude (E):

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

YES	NO ✓
-----	---------

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

Latitude (S):  Longitude (E):

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

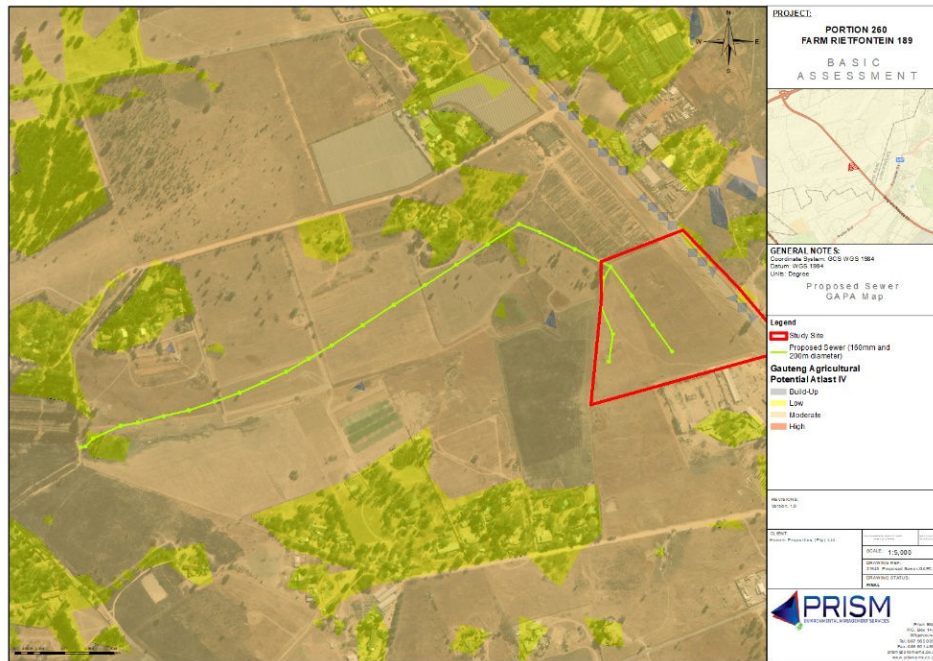
## 6. Agriculture

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

YES	NO
	✓

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

Please note that according to the Gauteng Agricultural Potential Atlas IV, the agricultural potential of the area affected by the sewer line is moderate.



**Figure 34: Agricultural Potential in terms of GAPA IV**

## 7. Groundcover

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

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

Natural veld - good condition % =5%	Natural veld with scattered aliens % =95	Natural veld with heavy alien infestation % =0	Veld dominated by alien species % =0	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =15

**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:

**Please note:**

No red list endangered or rare flora or fauna species were identified by the Ecological Baseline Assessment Study. However, several *Hypoxis hemerocallidea* were identified in the wetland and associated buffer area. This species is identified as least concern on the Red Data list (Williams et al., 2016) but due to medicinal use are known to be decreasing and are thus species of conservation concern in Gauteng. This species will be relocated within the footprint of the development. Specific mitigation measures regarding this are included in the Environmental Management Programme (EMPr) as well as the Species Search, Rescue and Relocation Plan included in the Ecological Baseline Assessment.

A copy of the study is provided in **Appendix G1**.

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

YES	NO ✓
-----	---------

If YES, specify and explain:

Not Applicable.

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

YES ✓	NO
----------	----

If YES, specify and explain:

A Baseline Ecological Habitat Assessment was undertaken. The findings indicated that Sewer Line Proposal traverses a very small section of wetland and wetland buffer area.

It however remains outside the Ecological Support Area (ESA) in terms of the Gauteng Conservation Plan. Further, it remains outside the Zone 3 of the Gauteng Provincial Environmental Management Framework other than at the connection point. A Wetland Assessment was undertaken and indicates that the wetland has moderate Present Ecological State (PES) and is moderately modified. In addition, whilst from a desktop perspective the site is Egoli Granite Grassland, the site is degraded by historic human activity and is no longer representative of primary vegetation. It was thus classified as secondary grassland with scattered alien species.

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:

De Wet Botha	A.E. Van Wyk
M.A. Env. Man.)(PHED) Member of the International Association for Impact Assessors (IAIAsa)(1653) Member of the Gauteng Wetland Forum Member of the South African Wetland Society SACNASP Registered Scientist – Pr.Sci.Nat. (119979) EAPASA – Registered EAP (1209)	BSc. (Biological Sciences)

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087 985 0951

Cell: 083 232 3042

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[dewet@prismems.co.za](mailto:dewet@prismems.co.za)

Fax: 086 601 4800

Are any further specialist studies recommended by the specialist?

YES	NO ✓
-----	---------

If YES, specify: Not applicable.

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

N/A

If YES list the specialist reports attached below

Please refer to **Appendix G1** for a copy of the Ecological Habitat Status Assessment.

Signature of specialist:



De Wet Botha      AE. Van Wyk

Date:

7 April 2020

**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

<b>1. Vacant land</b>	<b>2. River, stream, wetland</b>	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	<b>7. Agriculture</b>	<b>8. Low density residential</b>	<b>9. Medium to high density residential</b>	10. Informal residential
11. Old age home	<b>12. Retail</b>	13. Offices	<b>14. Commercial &amp; warehousing</b>	15. Light industrial
16. Heavy industrial <sup>AN</sup>	<b>17. Hospitality facility</b>	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport <sup>N</sup>	23. Train station or shunting yard <sup>N</sup>	24. Railway line <sup>N</sup>	25. Major road (4 lanes or more) <sup>N</sup>
26. Sewage treatment plant <sup>A</sup>	27. Landfill or waste treatment site <sup>A</sup>	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam <sup>A</sup>	<b>34. Small Holdings</b>	
Other land uses (describe):	<b>35. Main Road (1 lane in each direction)</b> <b>36 Agriculture with some retail (nurseries)</b> <b>37. Storage</b>			

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

	NORTH								
	2, 7, 34	2, 7, 34	34	34	7	7	1, 7	34	
	2, 7, 34	2, 7, 34	34	34	7	7	1, 7	34	
	2, 7, 34	2, 7, 34					1, 17, 36	1, 34, 36	
WEST	2, 7	2, 7	2, 34	2, 34	2, 34	2,34	17, 36	7, 9	EAST
	2, 7	8, 34	2, 34	2, 34	2, 34	2,34	14, 34, 35	14, 34	
	34	2,34	34	34	34	34	14, 34, 35	34	
	SOUTH								

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

= Site **Limited to sewer line only**

**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

The following environmental specialist studies have been undertaken:

- Wetland Assessment;
- Baseline Ecological Habitat Assessment; and
- Phase 1 Heritage Impact Assessment,.

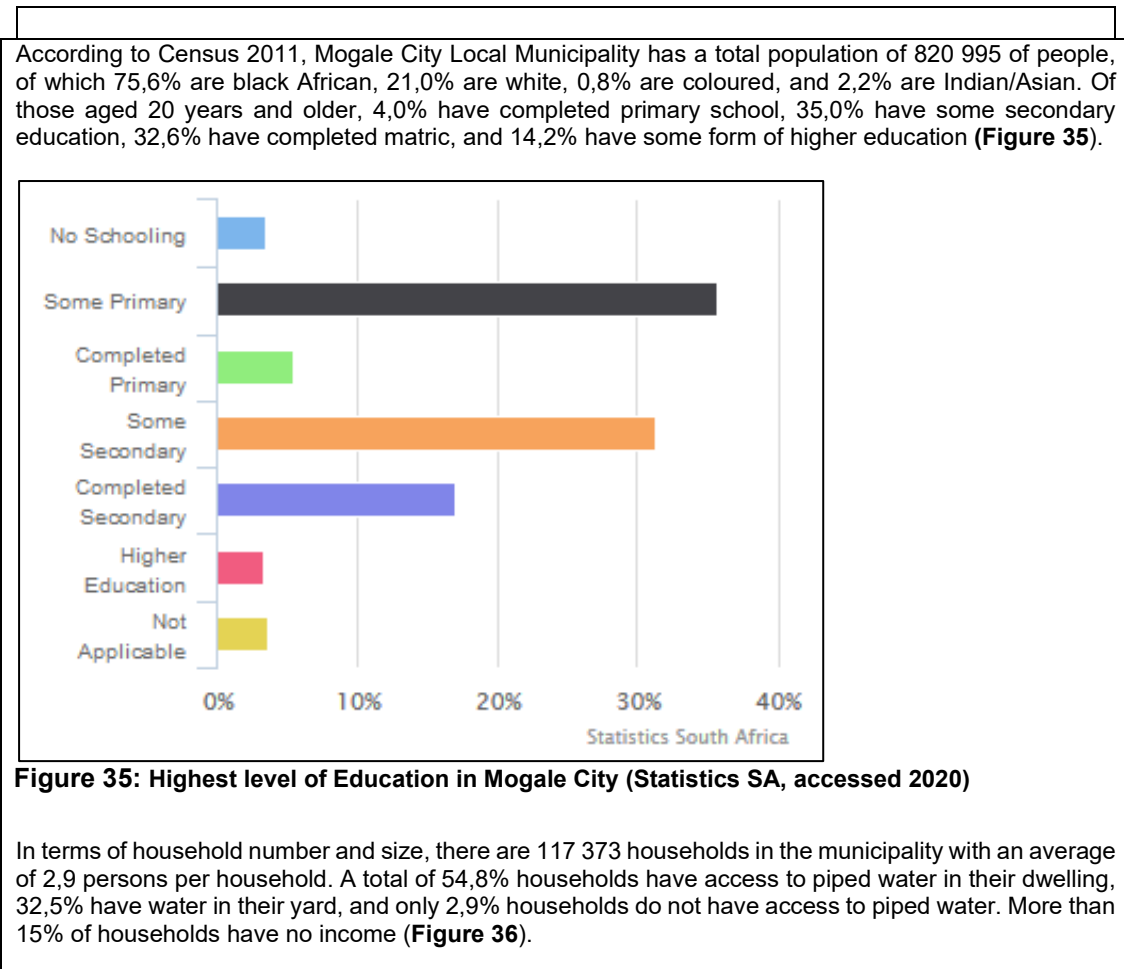
In addition, the following technical studies have been undertaken:

- Traffic Impact Assessment;
- Outline Scheme Report;
- Stormwater Management Plan; and
- Geotechnical Report.

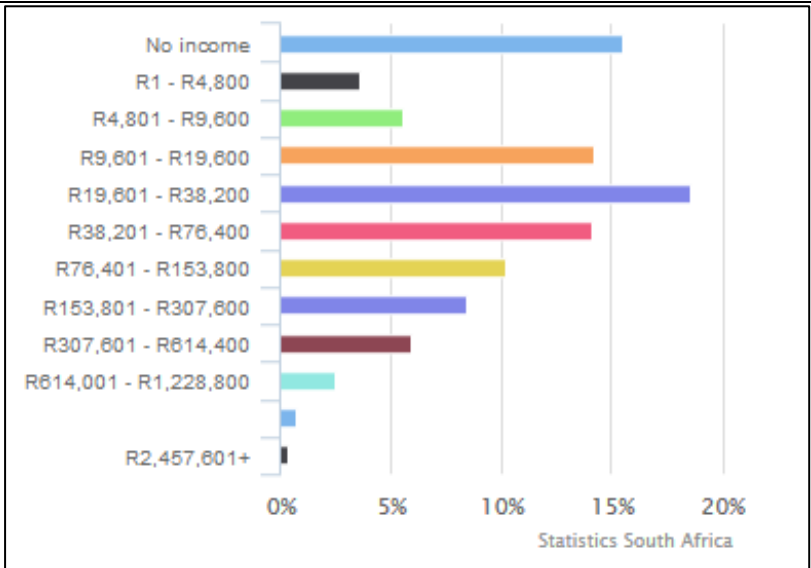
These studies are all included in **Appendix G**.

## 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.

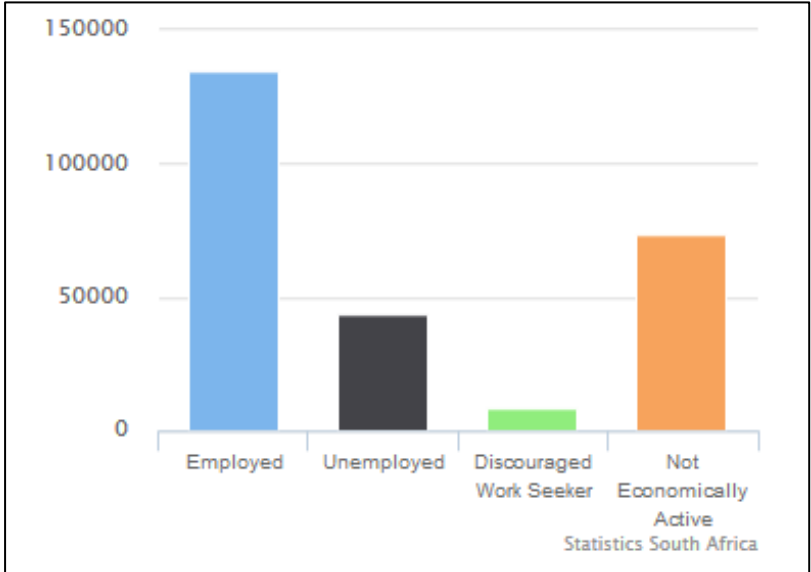






**Figure 36: Average Household Income (Statistics SA, accessed 2020)**

In addition, according to Census 2011 data, 134 635 people are economically active (employed or unemployed but looking for work), and of these, 24,6% are unemployed. Of the 60 706 economically active youth (15–34 years) in the area, 32,3% are unemployed (Figure 37).



**Figure 37: Employment for those aged 15-64 (Statistics SA, accessed 2020)**

## 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?

YES	NO ✓
-----	---------

If YES, explain:

Not applicable.

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

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

A Phase 1 Heritage Impact Assessment and as part of this, the study area was assessed both on desktop level and by a non-intrusive pedestrian field survey over a period of two days. Key finding of the assessment includes:

- Access restrictions resulted that some sections of the sewer line and road infrastructure was not physically surveyed. Based on environmental sensitivities and a desk-based assessment of these sections the areas are not considered to be of heritage sensitivity;
- No surface evidence of heritage resources was identified during the survey;
- Based on the SAHRIS Paleontological Sensitivity Map, the area is of insignificance paleontological sensitivity and no further action is required for this aspect;
- No grave sites were identified in the study area although known graves occur in the greater area;
- Both the preferred and alternative option for the sewer line is acceptable from a heritage perspective;
- The study area is surrounded by industrial and residential developments and road infrastructure developments and the proposed development will not impact negatively on significant cultural landscapes or views.

The impact of the proposed project on heritage resources is considered low. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- A heritage walk down of all linear developments must be conducted prior to development;

- Confirmation of any burial sites within the study area during the public participation process;
- Implementation of a chance find procedure.

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

YES	NO ✓
YES	NO ✓

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

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

A copy of this BAR and the Heritage Impact Assessment were uploaded to SAHRIS to allow SAHRA and PHRA-G an opportunity to provide comment in terms of section 38 of NRHA. No comments have been provided to date

# SECTION B4: DESCRIPTION OF RECEIVING ENVIRONMENT – SEWER LINE (ALTERNATIVE)

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

## Instructions for completion of Section B for linear activities

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

Section B has been duplicated for sections of the route  times

## Instructions for completion of Section B for location/route alternatives

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

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

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

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

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

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

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

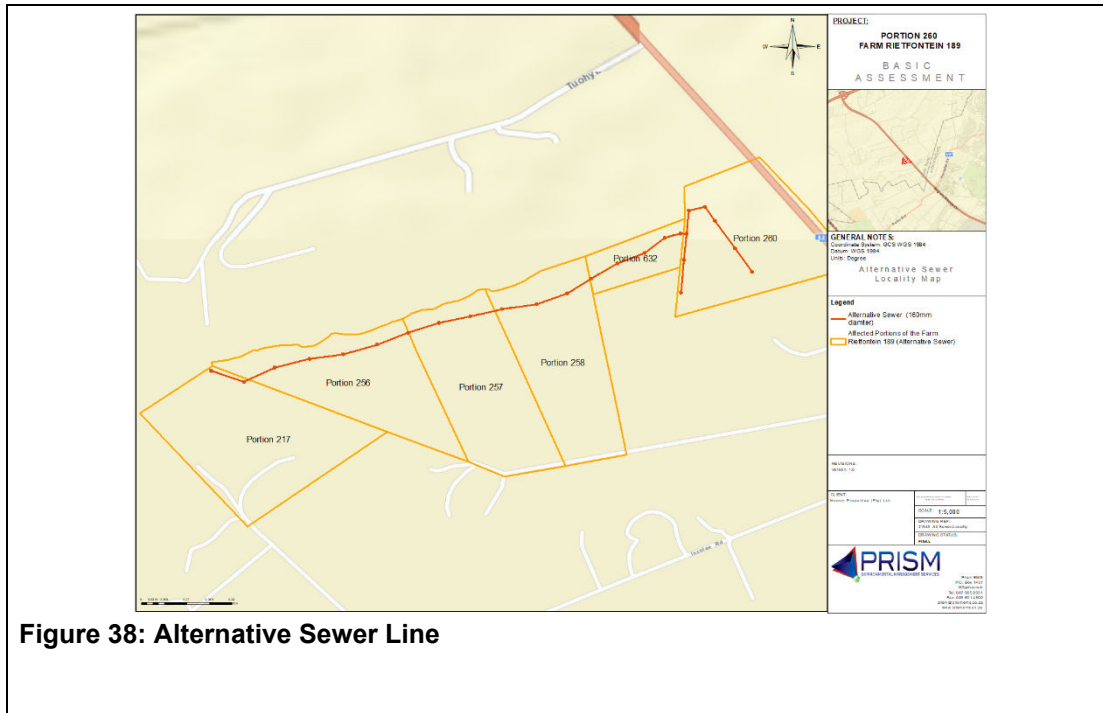
Please note that the activity is not strictly linear activity but involves the development of Portion 260 of the Farm Rietfontein 189 IQ as a mixed-use township. However, a number of services are required in support including a sewer line to connect to existing bulk sewer line as well as Road A and B which are required for access to the site. Therefore, in order to ensure all necessary information is provided, Section B is duplicated 2 times as follows:

- Section B1 – Proposed Layout Including Internal Roads, Internal Water, Internal Sewer And Internal Stormwater, section of Road B and water pipeline (in Road A road reserve – note Road A is already approved)
- Section B2 – Alternative Layout Including Internal Roads, Internal Water, Internal Sewer And Internal Stormwater, full development of Road B and water pipeline (in Road A road reserve – note Road A is already approved)

In addition, to take into account the two sewer line alternatives, Section B is further duplicated another two times as follows:

- Section B3 – Proposal Sewer Line
- **Section B4 – Alternative Sewer Line**

A Locality Map showing the alternative sewer line is provided in Figure 38 below.



**Figure 38: Alternative Sewer Line**

### 1. Property Description

<p><b>Property description:</b> (Including Physical Address and Farm name, portion etc.)</p>	<p>The proposed development is located on Portion 260 of the Farm Rietfontein 189 IQ, Mogale City Local Municipality. Internal sewer will be put in this site.</p> <p>In addition, a new sewer pipeline will also be required. An alternative pipeline route is being assessed and will traverse the following properties:</p> <ul style="list-style-type: none"> <li>• Portion 258 of the Farm Rietfontein 189</li> <li>• Portion 257 of the Farm Rietfontein 189</li> <li>• Portion 632 of the Farm Rietfontein 189</li> <li>• Portion 256 of the Farm Rietfontein 189</li> <li>• Portion 217 of the Farm Rietfontein 189</li> </ul>
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### 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.

<p><b>Proposal</b></p>	<p><b>Latitude (S):</b></p>	<p><b>Longitude (E):</b></p>
<p><b>Alternative:</b></p>	<p><b>Latitude (S):</b></p>	<p><b>Longitude (E):</b></p>

**In the case of linear activities: Sewer**

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

<b>Latitude (S):</b>	<b>Longitude (E):</b>
26° 2'52.84"S	27°53'12.94"E
26° 2'59.85"S	27°52'54.73"E
26° 3'3.62"S	27°52'35.94"E

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

Addendum of route alternatives attached

**Please see Appendix D3 for the coordinates of the alternative sewer**

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	6	0
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	5
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	4
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	3
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	6	5	2
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	1
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	0	0	7
ALT. 1	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	6	0
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	8
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	7
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	6	3	2
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	5	6
	T	0	I	Q	0	0	0	0	0	0	0	0	0	1	8	9	0	0	2	1	7

### 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

Seasonally wet soils (often close to water bodies)

Unstable rocky slopes or steep slopes with loose soil

YES	NO ✓
YES	NO ✓
YES	NO ✓
YES	NO ✓

Dispersive soils (soils that dissolve in water)

YES	NO ✓
YES	NO ✓
YES ✓	NO
YES ✓	NO

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

Any other unstable soil or geological feature  
**(Potentially collapsible soils – mitigation measures are however provided).**

An area sensitive to erosion

Geotheta (Pty) Ltd undertook a Geotechnical Investigation for Portion 260 of the Farm Rietfontein. It is assumed that due to the proximity of the sewer line to the Ptn 260, that the findings of the report are applicable. The Report is provided in **Appendix G4**. A summary of the main findings is provided below.

- The typical soil strata encountered on site comprised a layer of topsoil underlain by loose to dense transported material overlying loose to dense residual material. Hardpan ferricrete was also encountered in test pit TP6.
- Seven test pits were excavated using a TLB to determine the subsoil conditions. All test pits, with the exception of test pit TP6, were excavated until the maximum reach of the TLB at depths ranging from 2.3m to 2.8m below natural ground level. Test pit TP6 was excavated until refusal of the TLB on hardpan ferricrete at a depth of 1.7m below natural ground level.
- The material excavatability is classed as soft to intermediate, and hard through the hardpan ferricrete.
- No groundwater was encountered in any of the test pits during the investigation.
- Precautions should be taken to protect the foundations from moisture ingress. Adequate storm water control needs to be implemented to direct the water away from excavations and foundations
- The residual granites on site are susceptible to collapse, therefore suitable soil amelioration within the foundation zone of influence is required as specified in this report.
- Piled foundations are necessary for larger structures (greater than two storeys).
- Soil classification of the site in terms of the NHBRC Home Building Manual is C1.

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

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

YES	NO ✓
-----	---------

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

Latitude (S):  Longitude (E):

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

YES	NO ✓
-----	---------

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

Latitude (S):  Longitude (E):

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

YES	NO ✓
-----	---------

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

Latitude (S):  Longitude (E):

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

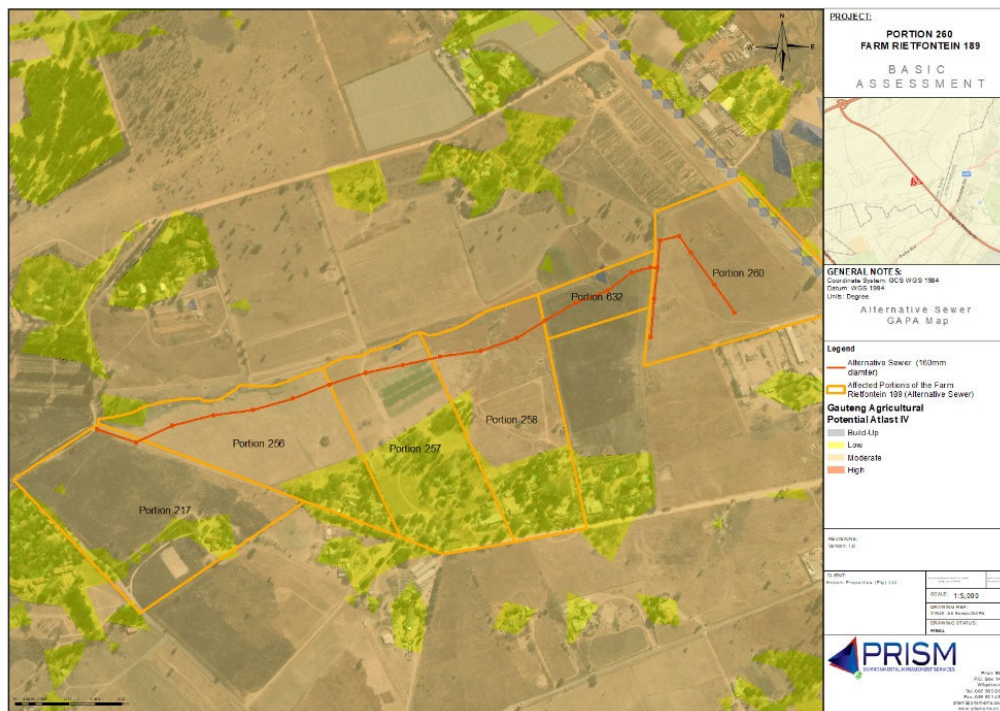
## 6. Agriculture

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

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

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

Please note that according to the Gauteng Agricultural Potential Atlas IV, the agricultural potential of the area affected by the sewer line is moderate.



**Figure 39: Agricultural Potential in terms of GAPA IV**

## 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 % = 90%	Natural veld with scattered aliens % = 10	Natural veld with heavy alien infestation % = 0	Veld dominated by alien species % = 0	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % = 15

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



If YES, specify and explain:

Not applicable.

**Please note:**

No red list endangered or rare flora or fauna species were identified by the Ecological Baseline Assessment Study. However, several *Hypoxis hemerocallidea* were identified in the wetland habitat. This species was identified as least concern on the Red Data list (Williams et al., 2016) but due to medicinal use are known to be decreasing and are thus species of conservation concern in Gauteng. This species will be relocated within the footprint of the development. Specific mitigation measures regarding this are included in the Environmental Management Programme (EMPr) as well as the Species Search, Rescue and Relocation Plan included in the Ecological Baseline Assessment.

A copy of the study is provided in **Appendix G1**.

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

YES	NO ✓
-----	---------

If YES, specify and explain:

Not Applicable.

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

YES ✓	NO
----------	----

If YES, specify and explain:

A Baseline Ecological Habitat Assessment was undertaken. The findings indicated that the alternative sewer line traverses a large part of wetland and associated wetland buffer habitat. It also traverses the Ecological Support Area (ESA) in terms of the Gauteng Conservation Plan and Zone 3 of the Gauteng Provincial Environmental Management Framework. A Wetland Assessment was undertaken and indicates that the wetland has moderate Present Ecological State (PES) and is moderately modified. In addition, whilst from a desktop perspective the site is Egoli Granite Grassland, the site is degraded by historic human activity and is no longer representative of primary vegetation. It was thus classified as secondary vegetation with scattered aliens.

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:

De Wet Botha	A.E. Van Wyk
M.A. Env. Man.)(PHED) Member of the International Association for Impact Assessors (IAIAsa)(1653) Member of the Gauteng Wetland Forum Member of the South African Wetland Society SACNASP Registered Scientist – Pr.Sci.Nat. (119979) EAPASA – Registered EAP (1209)	BSc. (Biological Sciences)

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Telephone:

087 985 0951

Cell: 083 232 3042

E-mail:

[dewet@prismems.co.za](mailto:dewet@prismems.co.za)

Fax: 086 601 4800

Are any further specialist studies recommended by the specialist?

YES	NO ✓
-----	---------

If YES, specify: Not applicable.

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

N/A

If YES list the specialist reports attached below

Please refer to **Appendix G1** for a copy of the Ecological Habitat Status Assessment.

Signature of specialist:



De Wet Botha      AE. Van Wyk

Date:

7 April 2020

**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

<b>1. Vacant land</b>	<b>2. River, stream, wetland</b>	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	<b>7. Agriculture</b>	<b>8. Low density residential</b>	<b>9. Medium to high density residential</b>	10. Informal residential
11. Old age home	<b>12. Retail</b>	13. Offices	<b>14. Commercial &amp; warehousing</b>	15. Light industrial
16. Heavy industrial <sup>AN</sup>	<b>17. Hospitality facility</b>	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport <sup>N</sup>	23. Train station or shunting yard <sup>N</sup>	24. Railway line <sup>N</sup>	25. Major road (4 lanes or more) <sup>N</sup>
26. Sewage treatment plant <sup>A</sup>	27. Landfill or waste treatment site <sup>A</sup>	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam <sup>A</sup>	<b>34. Small Holdings</b>	
Other land uses (describe):	<b>35. Main Road (1 lane in each direction)</b> <b>36 Agriculture with some retail (nurseries)</b> <b>37. Storage</b>			

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

NORTH

2, 7, 34	2, 7, 34	34	34	7	7	1, 7	34
2, 7, 34	2, 7, 34	2, 34	1, 2	2, 7, 34	2,34	1, 17, 36	1, 34, 36
2, 7	2, 7					17, 36	7, 9
2, 7	8, 34	2, 34	2, 34	2, 34	2,34	14, 34, 35	14, 34
34	2,34	34	34	34	34	14, 34, 35	34

SOUTH

WEST

EAST

= Site Limited to  
sewer line only

**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

The following environmental specialist studies have been undertaken:

- Wetland Assessment;
- Baseline Ecological Habitat Assessment; and
- Phase 1 Heritage Impact Assessment,.

In addition, the following technical studies have been undertaken:

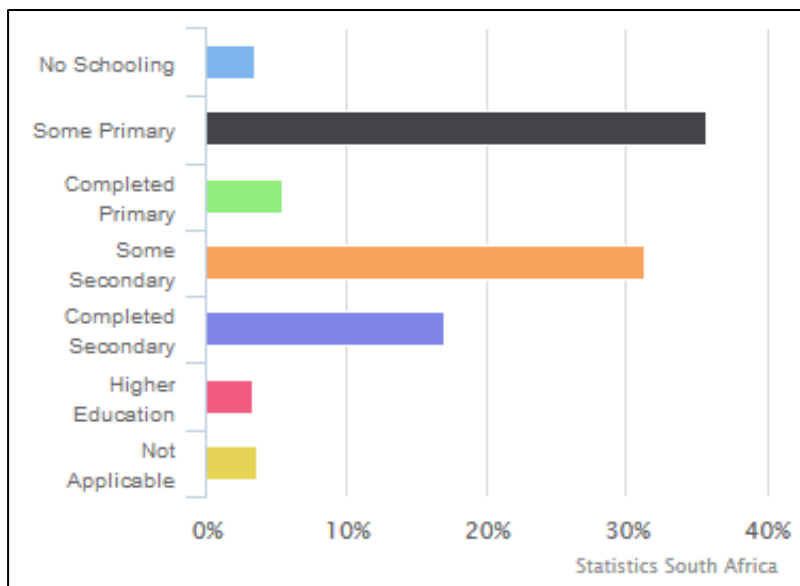
- Traffic Impact Assessment;
- Outline Scheme Report;
- Stormwater Management Plan; and
- Geotechnical Report.

These studies are all included in **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.

According to Census 2011, Mogale City Local Municipality has a total population of 820 995 of people, of which 75,6% are black African, 21,0% are white, 0,8% are coloured, and 2,2% are Indian/Asian. Of those aged 20 years and older, 4,0% have completed primary school, 35,0% have some secondary education, 32,6% have completed matric, and 14,2% have some form of higher education (Figure 40).



**Figure 40: Highest level of Education in Mogale City (Statistics SA, accessed 2020)**

In terms of household number and size, there are 117 373 households in the municipality with an average of 2,9 persons per household. A total of 54,8% households have access to piped water in their dwelling, 32,5% have water in their yard, and only 2,9% households do not have access to piped water. More than 15% of households have no income (Figure 41).

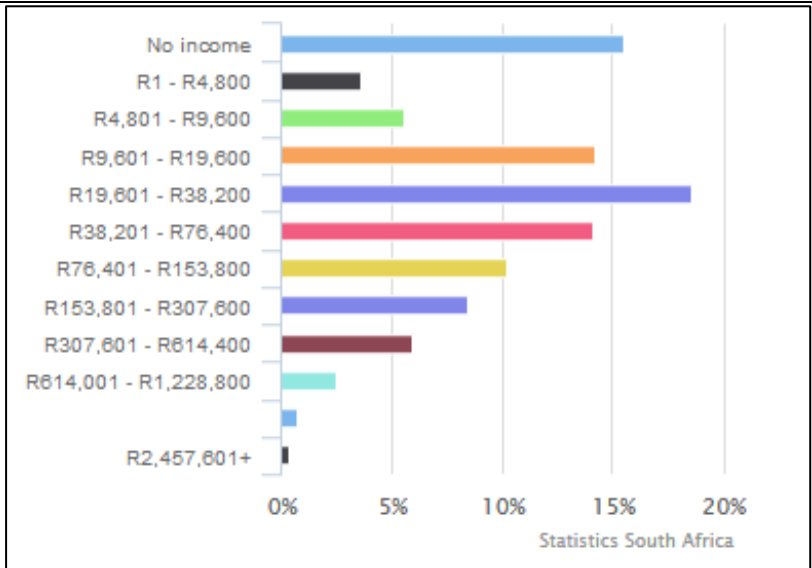


Figure 41: Average Household Income (Statistics SA, accessed 2020)

In addition, according to Census 2011 data, 134 635 people are economically active (employed or unemployed but looking for work), and of these, 24,6% are unemployed. Of the 60 706 economically active youth (15–34 years) in the area, 32,3% are unemployed (Figure 42).

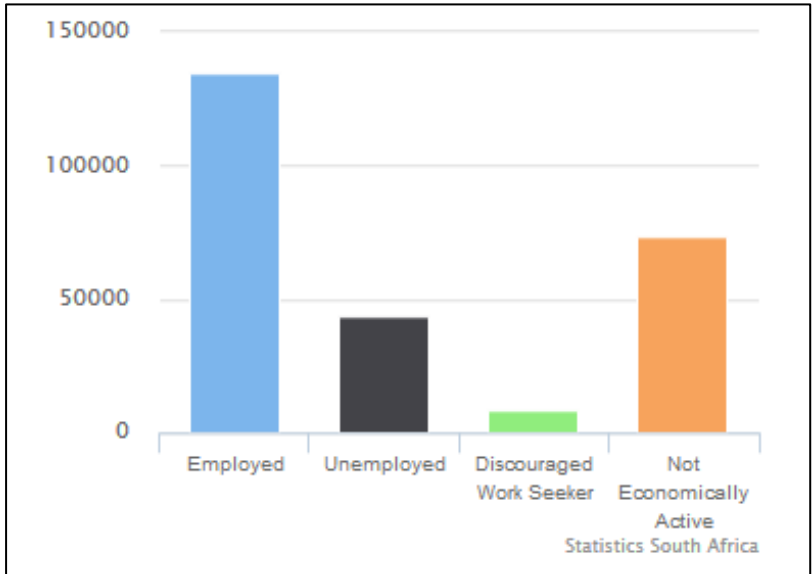


Figure 42: Employment for those aged 15-64 (Statistics SA, accessed 2020)

**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 m<sup>2</sup> 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:

Not applicable.

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

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

A Phase 1 Heritage Impact Assessment and as part of this, the study area was assessed both on desktop level and by a non-intrusive pedestrian field survey over a period of two days. Key finding of the assessment includes:

- Access restrictions resulted that some sections of the sewer line and road infrastructure was not physically surveyed. Based on environmental sensitivities and a desk-based assessment of these sections the areas are not considered to be of heritage sensitivity;
- No surface evidence of heritage resources was identified during the survey;
- Based on the SAHRIS Paleontological Sensitivity Map, the area is of insignificance paleontological sensitivity and no further action is required for this aspect;
- No grave sites were identified in the study area although known graves occur in the greater area;
- Both the preferred and alternative option for the sewer line is acceptable from a heritage perspective;
- The study area is surrounded by industrial and residential developments and road infrastructure developments and the proposed development will not impact negatively on significant cultural landscapes or viewsapes.

The impact of the proposed project on heritage resources is considered low. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- A heritage walk down of all linear developments must be conducted prior to development;
- Confirmation of any burial sites within the study area during the public participation process;
- Implementation of a chance find procedure.

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

YES	NO ✓
YES	NO ✓

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

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

A copy of this BAR and the Heritage Impact Assessment were uploaded to SAHRIS to allow SAHRA and PHRA-G an opportunity to provide comment in terms of section 38 of NRHA. Comments were received on 24 November 2020 and are included in Appendix E.

## SECTION C: PUBLIC PARTICIPATION (SECTION 41)

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

Please note that Public participation has been undertaken in line with the requirements of the EIA Regulations, 2014. As part of this, combined registration and public review of the Basic Assessment Report was undertaken as follows:

- In line with the new Permitting Regulations (GN 650 of 5 June 2020), a Public Participation Plan was compiled and submitted to GDARD on 19 June 2020. The plan was subsequently approved on 5 July 2020 (refer to **Appendix I4**).
- A potential I&AP database was compiled and included Adjacent Landowners, Ward Councillors, Authorities and Potential I&APs. Potential I&APs were also contacted telephonically to confirm their details and to determine their preferred means of communication.
- Authorities were also contacted to confirm whether they will accept hard copies or whether the use of electronic documents will suffice.
- A Background Information Document (BID) was compiled and included information on the proposed development, services and roads and included a map showing all these components. The BID provided details of the initial registration period which commenced on 7 September 2020. In addition, the BID provided a link to download the Basic Assessment Report and included details of the 30-day review of the document which was scheduled to start 2 weeks after the initial notification (from **21 September 2020 to 22 October 2020**).
- An advert was placed in the Star Newspaper on **7 September 2020**. As with the BID, the advert included the link to download the BAR and included the dates associated with the public review of the report.
- Three (3) site notices showing a map of the proposed development and associated components were placed on and around the site on **7 September 2020**. The site notice also included the link to download the BAR and included the dates associated with the public review of the report.
- The BIDs were emailed, or messaged to adjacent landowners, landowners, potential I&APs and authorities on **7 September 2020** (preferred means of communication based was determined telephonically).
- Hard copies and/or electronic copies of the BAR were submitted to competent and commenting authorities including the Gauteng Department of Agriculture and Rural Development (GDARD), the Mogale City Local Municipality (MCLM), Department of Human Settlements, Water and Sanitation (DHSWS), and the Gauteng Department of Roads and Transport (GDRT).
- The Comments and Responses register was opened and all requests to register and/or comments received have been included.
- The I&AP Database has also been updated to include those who have requested registration or provided comments.

During the initial registration as well as the review period of the BAR, a number of comments, concerns and queries were received regarding the development and the associated infrastructure required. In addition, formal comments were received from the Gauteng Department of Agricultural and Rural Development (GDARD), the Mogale City Local Municipality (MCLM) and the West Rand District Municipality (WRDM).

All comments received are captured in the Comments and Responses Report in Appendix E6. However, in summary, the main comments and concerns include the following:

- Request to be registered;
- Requests for more information on Road A and Road B;
- Concern regarding the impact of Road B on affected property owners;
- Concern regarding the impact of the sewer line on affected property owners;
- Impact of Road B on the wetland (from MCLM); and
- Queries regarding the alternatives assessed (from GDARD).

In order to deal with these, a number of stakeholder engagements were undertaken as follows:

- Focus group meeting with Mr. Alan Beadle and Mrs Diana Beadle on 10 September 2020;
- Focus group meeting with affected landowners on 7 October 2020; and
- Microsoft Teams meeting with the Case officer from the Gauteng Department of Agricultural and Rural Development (GDARD).



As a result of these interactions and comments and in response to the concerns raised, two changes to the proposed development and the associated BAR are applicable:

- The Floor Area Ratio (FAR) of the development was reduced from 0.8 to 0.4. The main implication of this, is that it resulted in a reduction of the extent of Road B which now will extend from Beyers Naude Drive along the southern boundary of the site to the western corner of the site.
- Two additional alternatives are included in the Assessment:
  - Proposed Layout (Proposal) with a FAR of 0.4
  - Alternative Layout with a FAR of 0.8.

The BAR has been updated with comments received during this period and then submitted to GDARD for review and decision making. A copy of the final submission of the BAR will also be made available to I&APs to see how their comments have been taken into account. All registered I&APs will be notified of the decision.

## 1. Local Authority Participation

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

Was the draft report submitted to the local authority for comment?

YES ✓	NO
----------	----

If yes, has any comments been received from the local authority?

YES ✓	NO
----------	----

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

The comments from MCLM provided a number of requirements for the development including:

- Noise management;
- Waste management;
- Requirements for a Landscape development plan;
- Requirements for Sustainability;
- Incorporation of Sustainable Urban Drainage Systems (SUDS);
- Request for a copy of the EA.

In addition, they noted that the development of Road B through the wetland was not supported and requested that if possible, the investigation of alternatives (such as reducing the development size so that Road B wasn't required) take place.

Detailed responses are provided in the Comments and Responses Report however in summary, the requirements have been included in the EMPr. Further, the proposed layout has been updated to include a reduced FAR of 0.4 which therefore reduces the extent required of Road B.

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

Not Applicable

## 2. Consultation with Other Stakeholders

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

Has any comment been received from stakeholders?

YES	NO
✓	

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

A combined registration and public review of the Basic Assessment Report has been undertaken. As part of this, on 7 September 2020 all potential I&APs were notified and provided with a 2-week period to register their interest. In addition, details of the review of the BAR was also provided including a link to download the document.

As part of this combined registration/review period, a number of I&APs registered their interest. Requests for further information have also been noted but no objections have been received to date. One informal stakeholder meeting took place with an affected landowner prior to the public review of the BAR and short minutes of the meeting are included in Appendix E5.

In addition, during the review period of the BAR, a number of comments, concerns and queries were received regarding the development and the associated infrastructure required. In addition, formal comments were received from the Gauteng Department of Agricultural and Rural Development (GDARD), the Mogale City Local Municipality (MCLM) and the West Rand District Municipality (WRDM).

All comments received are captured in the Comments and Responses Report in Appendix E6. However, in summary, the main comments and concerns include the following:

- Requests for more information on Road A and Road B;
- Concern regarding the impact of Road B on affected property owners;
- Concern regarding the impact of the sewer line on affected property owners;
- Impact of Road B on the wetland (from MCLM); and
- Queries regarding the alternatives assessed (from GDARD).

In order to deal with these concerns, a stakeholder meeting with affected landowners took place on 7 October 2020. At this meeting, three of the affected landowners noted their objection. This was specifically related to the development of infrastructure on their properties. On the basis of this, a decision was made to reduce the FAR of the development to 0.4. This resulted in a lower traffic impact and as such the full of extent of Road B through the affected landowners' properties would not be required.

A Microsoft Teams meeting was also held with GDARD to discuss the comments received. On the basis of the meeting, the updated layout with the FAR of 0.4 was included in the BAR as a proposed layout and assessed together with the original layout (now Alternative Layout 1) which has a FAR of 0.8. These two additional layouts are assessed as alternatives in addition to the sewer line alternatives which were originally assessed.

Copies of the comments received are provided in Appendix E4. Further, all comments received have been added to the Comments and Responses Report in Appendix E6.

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

Not applicable.

## 4. General Public Participation Requirements

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

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

Copies of the comments received are provided in Appendix E4. Further, all comments received have been added to the Comments and Responses Report in Appendix E6.

## 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

Please see Appendix E1 for proof of the site notices that were placed on 7 September 2020.

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

Please see Appendix E2 for proof of the emails and hand delivery of BIDs which took place as part of the combined registration and review period.

Appendix 3 – Proof of newspaper advertisements

Please see Appendix E3 for proof of newspaper notice which was placed in the Star Newspaper on 7 September 2020.

Appendix 4 – Communications to and from interested and affected parties

Comments received during the initial registration period are included in Appendix E4.

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

Three stakeholder meetings have taken place:

- Focus group meeting with Mr and Mrs Beadle – 9 September 2020
- Stakeholder Meeting with affected landowners – 7 October 2020
- Microsoft Teams meeting with GDARD case officer – 5 November 2020

Meetings notes from these meetings are included in Appendix E5.

Appendix 6 - Comments and Responses Report

Please see Appendix E6 for a copy of the Comments and Responses Report.

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

Please refer to Appendix E7 for a copy of all comments from I&APs on the BAR.

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

Not applicable.

Appendix 9 – Copy of the register of I&APs

Please see Appendix E9 for a copy of the I&AP register.

# SECTION D: RESOURCE USE AND PROCESS DETAILS

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

## Instructions for completion of Section D for alternatives

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

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

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

## 1. Waste, Effluent, and Emission Management

### Solid waste management

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

YES ✓	NO
Approximately 25m <sup>3</sup>	

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

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

The building rubble and solid construction waste (such as sand, gravel, concrete and waste material) that cannot be used for filling and rehabilitation and other litter and waste generated during the construction phase will be removed from site and be disposed of safely and responsibly at a licensed landfill site.

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

Waste will be removed by a Certified Waste Management Company and be disposed of at a registered landfill site

Will the activity produce solid waste during its operational phase?

YES ✓	NO
200m <sup>3</sup>	

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

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

Mogale City Local Municipality waste collectors under contract by the municipality will collect the domestic waste on a weekly basis. Recycling will be encouraged whereby paper and other recyclable materials will be stored separately and collected on a weekly basis.

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.

**Please note:** A townplanning application has been submitted to the Mogale City Local Municipality. The Municipality is thus aware of the proposed requirements in terms of waste and effluent etc.

**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:

All materials that can be recycled will be separated from the general waste and disposed of at recycling facilities. Spoil material which could be used for landscaping purposes will be extracted at kept neatly intact and in a controlled manner as to prevent erosion by the wind and water

**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 <input checked="" type="checkbox"/>
Not Applicable	
YES	NO <input checked="" type="checkbox"/>

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

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

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

Yes	NO <input checked="" type="checkbox"/>
Not applicable.	

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.

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 <input checked="" type="checkbox"/>
-----	---

If yes, provide the particulars of the facility:

Facility name: Contact person: Postal address: Postal code: Telephone: E-mail:	Not applicable. Only domestic sewage will be generated at the Business/Commercial Development. Connection to existing bulk sewer will be made and thus domestic sewage will be treated a municipal treatment works.
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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 <input checked="" type="checkbox"/>	NO
5324 kl per month estimated (242 kl per day for 22 working days a month)	
YES <input checked="" type="checkbox"/>	NO

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

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

**Please note:** A townplanning application has been submitted to the Mogale City Local Municipality. The Municipality is thus aware of the proposed requirements in terms of waste and effluent etc.

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

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

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

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

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

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

Please note that dust will be generated during the construction phase and will be regulated under the National Dust Control Regulations, 2013 (GN R 827). The dustfall rate (D) may not exceed 600 mg/m<sup>2</sup>/day. Dust suppression measures will be stipulated in the EMPr.

## 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
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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: Not applicable

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

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

YES ✓	NO
----------	----

If yes, list the permits required

A Water Use Licence Application is required for activities within 500m of a wetland as well as for the roads and sewer lines in the wetland area and is currently in progress.

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 ✓
-----	---------

A Water Use Licence Application is required for activities within 500m of a wetland as well as for the sewer line in the wetland area and is currently in progress. A pre-application enquiry has been submitted on the EWULAAS system and a copy of this document together with the WULA Technical Report was provided to DHSWS for review and comment. A pre-application meeting is scheduled with the Department but no further comments have been received to date.

## 3. Power Supply

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

Eskom

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:

The development design will comply with the NHBRC standards for energy efficiency (SANS 10400).

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

As mentioned, the buildings will comply with NHBRC standards (SANS 10400) for energy efficiency. As part of this, the following measures will be put in place:

- Energy saving measures for water heating (for example heat pumps or solar);
- LED lamps;
- General control switching (to minimise use of lights when not needed); and
- Energy saving appliances.

# SECTION E: IMPACT ASSESSMENT

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

## 1. Issues raised by Interested and Affected Parties

Summarise the issues raised by interested and affected parties.

Prior to the review of the BAR, requests for more information regarding the impact on electric boundary fences and sheep grazing have been made as well as more information on Road A and B. Information on services has also been requested.

During the review of the BAR, a number of comments, concerns and queries were made. These included:

- Concern regarding impacts of sewer pipeline on grazing
- Request for information on how rehabilitation would be undertaken to ensure grazing would not be affected.  
Requests for information on compensation mechanisms.
- Concern regarding impacts of Road B on existing infrastructure such as electric fencing and outbuildings as well as irrigated pastures.
- Concern regarding impact of Road B on wetland.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)

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

Initial registration Period:

Formal responses acknowledging receipt of requests for registration were made. It was also further explained that more information on the proposed development would be available as part of the Basic Assessment Report and that I&APs were welcome to peruse the document first before providing more detailed comments.

Public Review of the BAR:

In order to deal with these, a number of stakeholder engagements were undertaken as follows:

- Focus group meeting with Mr. Alan Beadle and Mrs Diana Beadle on 10 September 2020;
- Focus group meeting with affected landowners on 7 October 2020; and
- Microsoft Teams meeting with the Case officer from the Gauteng Department of Agricultural and Rural Development (GDARD).

As a result of these interactions and comments and in response to the concerns raised, two changes to the proposed development and the associated BAR are applicable:

- The Floor Area Ratio (FAR) of the development was reduced from 0.8 to 0.4. The main implication of this, is that it resulted in a reduction of the extent of Road B which now will extend from Beyers Naude Drive along the southern boundary of the site to the western corner of the site.
- Two additional alternatives are included in the Assessment:
  - Proposed Layout (Proposal) with a FAR of 0.4
  - Alternative Layout with a FAR of 0.8.

By reducing the FAR to 0.4., the traffic impact of the proposed development was reduced to a level where the full extent of Road B was no longer required. This therefore reduces the impact of the Road on Wetlands (as no wetland crossings are required). It also reduces the impact on agricultural land as the Road B will not traverse the irrigated area nor will it impact on outbuildings and electric fencing.

In addition, to deal with the concerns regarding the impact of the sewer line on grazing and existing infrastructure, the Impact Assessment was updated to take these items into account. In summary, specific measures will be put in place to reduce impacts to affected landowners, their properties, infrastructure and grazing land and the following mitigation measures apply and have been added to the EMPR:

- Access to all private properties will be negotiated between the developer and the landowner in question. Issues regarding compensation will be dealt with as part of this contractual stage.
- Access to private property will only be allowed by consent.
- Potential to allow connection to the new sewer line should be discussed and implemented if feasible and acceptable to the landowner in question.
- Where possible the construction of the pipeline will be undertaken in sections in line with property boundaries. Based on discussions with the engineer, it is understood that the excavation, laying of pipeline and closing of the excavation of approximately 300m will take 1 week. It is therefore feasible that the pipeline be developed property by property so to limit the time that each property is impacted. Grazing would therefore be limited for a short period only.
- The right of way/servitude for the pipeline is 3m. No additional clearing of excavation will be permitted.
- During site preparation, topsoil and subsoil must be stripped separately from each other and must be stored separately from spoil material for use in the rehabilitation phase.

- Programme the backfill of excavations so that subsoil is deposited first, followed by the topsoil.
- Monitor backfilled areas for subsidence (as the backfill settles) and fill depressions using available material.
- Execute top soiling activity prior to the rainy season or any expected wet weather conditions.
- Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter. Replace topsoil to the original depth.
- Place topsoil in the same area from where it was stripped.
- Rip and/or scarify all areas following the application of topsoil to facilitate mixing of the upper most layers.
- No litter, rubble or any other construction material shall remain on site once the pipeline is completed.
- ECO to undertake a rehabilitation audit at the completion of the pipeline and then again in 6 months to ensure that rehabilitation has been undertaken as necessary and to ensure no undue alien invasive plant species are establishing.
- Should electric fencing or fencing need to be removed this must be agreed to by affected landowners. All electric fencing/fencing must be replaced as soon as construction in the property is completed.
- All construction workers must be easily identifiable.
- The contractor and/or project manager must appoint a specific staff member to act as the landowner liaison officer to ensure clear and dedicated communication channels. All affected and adjacent landowners should have the contact details of the liaison officer as well as the ECO.
- An Issues Register should be set up and all comments, queries and complaints should be noted. Details on how these issues have been resolved should be noted

Detailed responses have been compiled and emailed to I&APs together with a copy of the final submission of the BAR. All responses are included in the Comments and Responses Register in Appendix E7.

## 2. Impacts that may result from the Construction and Operational Phase

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

Impacts were identified in a number of ways including the following:

- Impacts associated with triggered activities contained in Listing Notice 1 and 3 of the EIA Regulations, 2014 (as amended) for which authorisation has been applied for;
- Impacts identified by specialists;
- An assessment of the project activities and components; and
- Issues highlighted by I&APs (both the general public and authorities).

The significance of the identified impacts was determined using the approach outlined below which is line with the requirements of the EIA Regulations, 2014. Each impact was assessed for both the Proposal as well as Alternative 1.

The **significance** of an impact is defined as the combination of the **consequence** of the impact occurring and the **probability** that the impact will occur. The nature and type of impact may be direct or indirect and may also be positive or negative, refer to **Table 5:** below for the specific definitions.

**Table 5: Nature and type of impact.**

Nature and Type of Impact:			
<b>IMPACT</b>	<b>Direct</b>	Impacts that are caused directly by the activity and generally occur at the same time and place as the activity	✓/x
	<b>Indirect</b>	Indirect or induced changes that may occur as a result of the activity. These include all impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity	✓/x
	<b>Cumulative</b>	Those impacts associated with the activity which add to, or interact synergistically with existing impacts of past or existing activities, and include direct or indirect impacts which accumulate over time and space	✓/x
	<b>Positive</b>	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes will benefit significantly, and includes neutral impacts (those that are not considered to be negative)	✓
	<b>Negative</b>	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes will be comprised	x

**Table 6:** presents the defined criteria used to determine the **consequence** of the impact occurring which incorporates the extent, duration and intensity (severity) of the impact.



**Table 6: Consequence of the Impact occurring.**

<b>CONSEQUENCE</b>	<b>Extent of Impact:</b>	
	<b>Site</b>	Impact is limited to the site and immediate surroundings, within the study site boundary or property (immobile impacts)
	<b>Neighbouring</b>	Impact extends across the site boundary to adjacent properties (mobile impacts)
	<b>Local</b>	Impact occurs within a 5km radius of the site
	<b>Regional</b>	Impact occurs within a provincial boundary
	<b>National</b>	Impact occurs across one or more provincial boundaries
	<b>Duration of Impact:</b>	
	<b>Incidental</b>	The impact will cease almost immediately (within weeks) if the activity is stopped, or may occur during isolated or sporadic incidences
	<b>Short-term</b>	The impact is limited to the construction phase, or the impact will cease within 1 - 2 years if the activity is stopped
	<b>Medium-term</b>	The impact will cease within 5 years if the activity is stopped
	<b>Long-term</b>	The impact will cease after the operational life of the activity, either by natural processes or by human intervention
	<b>Permanent</b>	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient
	<b>Intensity or Severity of Impact:</b>	
	<b>Low</b>	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are not affected
	<b>Low-Medium</b>	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are modified insignificantly
	<b>Medium</b>	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are altered
	<b>Medium-High</b>	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are severely altered
	<b>High</b>	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes will permanently cease

The probability of the impact occurring is the likelihood of the impacts actually occurring and is determined based on the classification provided in **Table 7**.

**Table 7: Probability and confidence of impact prediction**

<b>PROBABILITY</b>	<b>Probability of Potential Impact Occurrence:</b>	
	<b>Improbable</b>	The possibility of the impact materialising is very low either because of design or historic experience
	<b>Possible</b>	The possibility of the impact materialising is low either because of design or historic experience
	<b>Likely</b>	There is a possibility that the impact will occur
	<b>Highly Likely</b>	There is a distinct possibility that the impact will occur
	<b>Definite</b>	The impact will occur regardless of any prevention measures

The **significance** of the impact is determined by considering the consequence and probability without taking into account any mitigation or management measures and is then ranked according to the

ratings listed in **Table 8:**. The level of confidence associated with the impact prediction is also considered as low, medium or high (**Table 9:**).

**Table 8: Significance rating of the impact.**

<b>Significance Ratings:</b>		
<b>SIGNIFICANCE</b>	<b>Low</b>	Neither environmental nor social and cultural receptors will be adversely affected by the impact. Management measures are usually not provided for low impacts
	<b>Low-Medium</b>	Management measures are usually encouraged to ensure that the impacts remain of Low-Medium significance. Management measures may be proposed to ensure that the significance ranking remains low-medium
	<b>Medium</b>	Natural, cultural and/or social functions and processes are altered by the activities, and management measures must be provided to reduce the significance rating
	<b>Medium-High</b>	Natural, cultural and/or social functions and processes are altered significantly by the activities, although management measures may still be feasible
	<b>High</b>	Natural, cultural, and/or social functions and processes are adversely affected by the activities. The precautionary approach will be adopted for all high significant impacts and all possible measures must be taken to reduce the impact

**Table 9: Level of confidence of the impact prediction**

<b>Level of Confidence in the Impact Prediction:</b>		
<b>CONFIDENCE</b>	<b>Low</b>	Less than 40% sure of impact prediction due to gaps in specialist knowledge and/or availability of information
	<b>Medium</b>	Between 40 and 70% sure of impact prediction due to limited specialist knowledge and/or availability of information
	<b>High</b>	Greater than 70% sure of impact prediction due to outcome of specialist knowledge and/or availability of information

Once significance rating has been determined for each impact, management and mitigation measures must be determined for all impacts that have a significance ranking of Medium and higher in order to attempt to reduce the level of significance that the impact may reflect.

The EIA Regulations, 2014 specifically require a description is provided of the degree to which these impacts:

- can be reversed;
- may cause irreplaceable loss of resources; and
- can be avoided, managed or mitigated.

Based on the proposed mitigation measures the EAP will determined a mitigation efficiency (**Table 10:**) whereby the initial significance is re-evaluated and ranked again to affect a significance that incorporates the mitigation based on its effectiveness. The overall significance is then re-ranked and a final significance rating is determined.

**Table 10: Mitigation efficiency**

<b>Mitigation Efficiency</b>		
<b>MITIGATION EFFICIENCY</b>	<b>None</b>	Not applicable
	<b>Very Low</b>	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact. Positive impacts will remain the same
	<b>Low</b>	Where the significance rating reduces by one level, after mitigation
	<b>Medium</b>	Where the significance rating reduces by two levels, after mitigation
	<b>High</b>	Where the significance rating reduces by three levels, after mitigation

<b>Very High</b>	Where the significance rating reduces by more than three levels, after mitigation
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The reversibility is directly proportional the “Loss of Resource” where no loss of resource is experienced, the impact is completely reversible; where a substantial “Loss of resource” is experienced there is a medium degree of reversibility; and an irreversible impact relates to a complete loss of resources, i.e. irreplaceable (**Table 11:**).

**Table 11: Degree of reversibility and loss of resources**

<b>DEGREE REVERSIBILITY &amp; LOSS OF RESOURCES</b>	<b>Loss of Resources:</b>	
	<b>No Loss</b>	No loss of social, cultural and/or ecological resource(s) are experienced. Positive impacts will not experience resource loss
	<b>Partial</b>	The activity results in an insignificant or partial loss of social, cultural and/or ecological resource(s)
	<b>Substantial</b>	The activity results in a significant loss of social, cultural and/or ecological resource(s)
	<b>Irreplaceable</b>	The activity results in the complete and irreplaceable social, cultural and/or ecological loss of resource(s)
	<b>Reversibility:</b>	
	<b>Irreversible</b>	Impacts on natural, cultural and/or social functions and processes are irreversible to the pre-impacted state in such a way that the application of resources will not cause any degree of reversibility
	<b>Medium Degree</b>	Impacts on natural, cultural and/or social functions and processes are partially reversible to the pre-impacted state if less than 50% resources are applied
	<b>High Degree</b>	Impacts on natural, cultural and/or social functions and processes are partially reversible to the pre-impacted state if more than 50% resources are applied
	<b>Reversible</b>	Impacts on natural, cultural and/or social functions and processes are fully reversible to the pre-impacted state if adequate resources are applied

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

Please note that the impact assessment provided below is a summary only and that the full impact assessment is contained in **Appendix I1**. The full impact assessment provides an overview of both the probability of the impact occurring as well as the mitigation efficiency and as such gives an indication of the risk of the impact occurring as well as the risk that the mitigation will not be implemented/or be effective. Impacts associated with the proposal, alternative and no-go alternative are included in one table in order to allow for easy comparison and assessment.

Table 12 provides the summary of construction impacts while Table 13 provides the summary of the operation impacts.

Table 12: Impact Assessment – Construction

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES			RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)	
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>CONSTRUCTION PHASE</b>												
<b>Atmospheric Emissions</b>	Negative	Dust emissions	Sewer Proposal	Yes	Direct	Low	High	<ul style="list-style-type: none"> <li>A speed limit of 20km/h must be maintained on all dirt roads.</li> <li>Dust suppression by means of either water or biodegradable chemical agent is required.</li> </ul>	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
			Layout Alternative			Low	High		High	Low	No Loss	Reversible
			No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable
	Negative	Emissions from vehicles and equipment (CO2, NOx, SOx, VOC's etc.)	Sewer Proposal	Yes	Direct	Low	High	<ul style="list-style-type: none"> <li>In terms of transportation of workers and materials, collective transportation arrangements should be made to reduce individual car journeys where possible.</li> <li>All vehicles used during the project should be properly maintained and in good working order.</li> <li>All vehicles and other machinery should comply with road worthy requirements and comply with legislation in terms of allowable emissions.</li> </ul>	Medium	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		Medium	Low	No Loss	Reversible
			Layout Proposal			Low	High		Medium	Low	No Loss	Reversible
			Layout Alternative			Low	High		Medium	Low	No Loss	Reversible
			No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable
	Negative	Noise	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>Equipment and/or machinery which will be used must comply with the manufacturer's specifications on acceptable noise levels.</li> <li>Construction activities should be limited to daytime only.</li> </ul>	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
			Layout Alternative			Low	High		High	Low	No Loss	Reversible
			No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable
<b>Impacts to Wetlands</b>	Negative	Water quality	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>The following mitigation measures suggested by the wetland specialist apply: Stock piling outside the wetland area, stormwater management, dry season construction, filtration. <b><u>Due to the fact that the alternative pipeline traverses most of the wetland, the intensity of the impact is likely to be higher and thus the proposal is preferred. Further, from a layout perspective, the proposed layout is also preferred as it reduces the FAR and the associated traffic and thus the full extent of Road B is not required. No road construction will thus take place within the wetland.</u></b></li> </ul> In addition, the following general measures should be implemented:	Very High	Low	No Loss	Reversible

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)			
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>CONSTRUCTION PHASE</b>												
		Sewer Alternative 1			Low-Medium	High	<ul style="list-style-type: none"> <li>Chemical toilets must be supplied and maintained during the construction phase</li> <li>Ablution facilities (chemical toilets) are to be provided by the Contractor, at a ratio of 1:10.</li> <li>Ablution facilities (chemical toilets) must be erected within 100m from all workplaces but within the development footprint.</li> <li>Toilets are to be secured to the ground, and must have a closing mechanism.</li> <li>Toilet paper must be provided at these facilities and must be serviced once per week.</li> <li>Certified contractors to maintain and remove chemical toilets regularly.</li> <li>The contractor must ensure that spillage does not occur when toilets are cleaned/serviced and contents must be properly stored and disposed of.</li> <li>Discharge of waste into the environment and/or burial of waste are strictly prohibited.</li> <li>Sanitary arrangements must be to the satisfaction of the PM, ECO, the local authorities and the applicable legal requirements.</li> <li>Drip trays must be placed under all vehicles when immobile for longer than 24 hours. Vehicles suspected of leaking must be monitored and conduct a pre start-up inspection checklist.</li> <li>Drip trays must be checked and replaced for vehicles standing (parked) for prolonged periods.</li> <li>Drip trays must be of a sufficient size and volume to collect any hydrocarbon leakages from a stationary vehicle.</li> <li>Spill kits (absorbent material) must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site.</li> <li>Spilled substances must be contained in impermeable containers for removal to a licensed hazardous waste site.</li> <li>Significant spills should be reported to the Project Manager or Contractors Manager and ECO who should report this to the relevant authority</li> </ul>	Medium	Low	No Loss	Reversible	
		Layout Proposal			Low	High		Very High	Low	No Loss	Reversible	
		Layout Alternative			Low-Medium	High		Medium	Low	No Loss	Reversible	
		No-Go Option	Not Applicable	Not Applicable	None	None		Not Applicable	None	Not Applicable	Not Applicable	
	Negative	Flow regime	Sewer Proposal			Low-Medium	High	<ul style="list-style-type: none"> <li>The following mitigation measures suggested by the wetland specialist apply: Stock piling outside the wetland area, stormwater management, dry season construction, filtration. <b><u>Due to the fact that the alternative pipeline traverses most of the wetland, the intensity of the impact is likely to be higher and thus the proposal is preferred. Further, from a layout perspective, the proposed layout is also preferred as it reduces the FAR and the associated traffic and thus the full extent of Road B is not required. No road construction will thus take place within the wetland.</u></b></li> <li>In addition, the following general measures should be implemented: <ul style="list-style-type: none"> <li>Instability and erosion of steep slopes must be stabilised immediately. Re-vegetation in consultation with landscape architect and ECO should be done if and where required.</li> <li>To reduce the loss of material by erosion, disturbance must be kept to a minimum.</li> <li>Where possible, natural vegetation should be retained to reduce the risk of erosion.</li> </ul> </li> <li>Silt fences must be used to stabilise the site, reduce erosion and silt entering the natural environment. No unchecked silt may enter the natural environment.</li> <li>Proper stormwater management as per the approved stormwater management plan.</li> <li>Increased run-off during construction should be managed using berms, temporary cut-off drains, attenuation ponds or other suitable structures, in</li> </ul>	High	Low	No Loss	Reversible
			Sewer Alternative 1	No	Indirect	Medium	High		Medium	Low-Medium	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility

**CONSTRUCTION PHASE**

		Layout Alternative			Medium	High	consultation with the ECO and resident Engineer. • Stormwater management system is to be installed as soon as possible following site establishment, to attenuate stormwater during the construction phase, as well as during the operational phase. • Surface-water run-off and stormwater must be directed away from trenches and areas of excavation.	Medium	Low-Medium	No Loss	Reversible
		No-Go Option	Not Applicable	Not Applicable	None	High	None required. However, it should be noted that the existing state of the wetland is poor and will continue to deteriorate without rehabilitation.	Not Applicable	None	Not Applicable	Not Applicable
Negative	Habitat	Sewer Proposal	Yes	Indirect	Low	High	<ul style="list-style-type: none"> <li>The following mitigation measures suggested by the wetland specialist apply: Stock piling outside the wetland area, minimal ingress and egress. <b><u>Due to the fact that the alternative pipeline traverses most of the wetland, the intensity of the impact is likely to be higher and thus the proposal is preferred. Further, from a layout perspective, the proposed layout is also preferred as it reduces the FAR and the associated traffic and thus the full extent of Road B is not required. No road construction will thus take place within the wetland.</u></b></li> <li>In addition, the following general measures should be implemented: <ul style="list-style-type: none"> <li>The wetland area should be declared 'no-go' area's during the construction and must be demarcated prior to construction;</li> <li>All laydown, storage areas etc. should be restricted to within the development footprint;</li> <li>Compilation and implementation of a Wetland Rehabilitation Plan.</li> </ul> </li> </ul>	High	Low	No Loss	Reversible
		Sewer Alternative 1			Low-Medium	High		Medium	Low	No Loss	Reversible
		Layout Proposal			Low	High		High	Low	No Loss	Reversible
		Layout Alternative			Medium	High		Medium	Low-Medium	No Loss	Reversible
		No-Go Option			Not Applicable	Not Applicable		Low	High	Not Applicable	None
Negative	Biota	Sewer Proposal	No	Indirect	Low	High	<ul style="list-style-type: none"> <li>The following mitigation measures suggested by the wetland specialist apply: Stock piling outside the wetland area, minimal ingress and egress. <b><u>Due to the fact that the alternative pipeline traverses most of the wetland, the intensity of the impact is likely to be higher and thus the proposal is preferred. Further, from a layout perspective, the proposed layout is also preferred as it reduces the FAR and the associated traffic and thus the full extent of Road B is not required. No road construction will thus take place within the wetland.</u></b></li> <li>In addition, the following general measures should be implemented: <ul style="list-style-type: none"> <li>The wetland area should be declared 'no-go' area's during the construction and must be demarcated prior to construction;</li> <li>Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site;</li> <li>No trapping, killing or poisoning of any wildlife should be allowed on site;</li> <li>Staff should be educated about the sensitivity of faunal species and measures should be put in place to deal with any species that are encountered during the construction process. The intentional killing of any animals including snakes, insects, lizards, birds or other animals should be strictly prohibited.</li> </ul> </li> </ul>	High	Low	No Loss	Reversible
		Sewer Alternative 1			Low-Medium	High		Medium	Low	No Loss	Reversible
		Layout Proposal			Low	High		High	Low	No Loss	Reversible
		Layout Alternative			Medium	High		Medium	Low-Medium	No Loss	Reversible
		No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility

**CONSTRUCTION PHASE**

Negative	Geomorphology	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>The following mitigation measures suggested by the wetland specialist apply: Stormwater management design and erosion control measures. <b>Due to the fact that the alternative pipeline traverses most of the wetland, the intensity of the impact is likely to be higher and thus the proposal is preferred. Further, from a layout perspective, the proposed layout is also preferred as it reduces the FAR and the associated traffic and thus the full extent of Road B is not required. No road construction will thus take place within the wetland.</b></li> <li>In addition, the following general measures should be implemented:               <ul style="list-style-type: none"> <li>Instability and erosion of steep slopes must be stabilised immediately. Re-vegetation in consultation with landscape architect and ECO should be done if and where required.</li> <li>To reduce the loss of material by erosion, disturbance must be kept to a minimum.</li> <li>Where possible, natural vegetation should be retained to reduce the risk of erosion.</li> <li>Proper stormwater management as per the approved stormwater management plan.</li> <li>Increased run-off during construction should be managed using berms, temporary cut-off drains, attenuation ponds or other suitable structures, in consultation with the ECO and resident Engineer.</li> <li>Stormwater management system is to be installed as soon as possible following site establishment, to attenuate stormwater during the construction phase, as well as during the operational phase.</li> <li>Surface-water run-off and stormwater must be directed away from trenches and areas of excavation.</li> </ul> </li> </ul>	High	Low	No Loss	Reversible	
		Sewer Alternative 1			Medium	High		Medium	Low-Medium	No Loss	Reversible	
		Layout Proposal			Low	High		High	Low	No Loss	Reversible	
		Layout Alternative			Medium	High		Medium	Low-Medium	No Loss	Reversible	
		No-Go Option			Not Applicable	Not Applicable		None	Not Applicable	None required	Not Applicable	None
Waste Generation	Negative	Domestic waste	Yes	Direct	Low	High	<ul style="list-style-type: none"> <li>Waste recycling to be put in place.</li> <li>Solid waste shall only be stored in the designated general waste storage area which must be enclosed and impermeable.</li> <li>All solid waste shall be disposed of by a certified contractor, off-site, at an approved landfill site. The Contractor shall supply the ECO with a certificate of disposal for auditing purposes.</li> </ul>	Medium	Low	No Loss	Reversible	
					Sewer Alternative 1	Low		High	Medium	Low	No Loss	Reversible
					Layout Proposal	Low		High	Medium	Low	No Loss	Reversible
					Layout Alternative	Low		High	Medium	Low	No Loss	Reversible
					No-Go Option	Not Applicable		Not Applicable	None	High	None required	Not Applicable
	Negative	Construction waste	Yes	Direct	Low	High	<ul style="list-style-type: none"> <li><b>Due to the extent of Road B, the alternative layout with an FAR of 0.8 would be expected to produce more construction rubble. The proposed layout is therefore preferred.</b></li> <li>Litter (from outside the camp included) and concrete bags etc. must be collected and put into suitable closed bins on a daily basis.</li> <li>Construction rubble must be disposed of at a registered site</li> <li>No Construction rubble may be used for infilling.</li> </ul>	Medium	Low	No Loss	Reversible	
					Sewer Alternative 1	Low		High	Medium	Low	No Loss	Reversible
					Layout Proposal	Low		High	Medium	Low	No Loss	Reversible

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility
<b>CONSTRUCTION PHASE</b>											
Negative	Hazardous waste	Layout Alternative			Low-Medium	High		Medium	Low	No Loss	Reversible
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
		Sewer Proposal	Yes	Direct	Low	High	<ul style="list-style-type: none"> <li>The classification of waste determines the handling methods and the ultimate disposal of the material. The contractor shall manage hazardous waste that are anticipated to be generated by his operations as follows: Characterise the waste to determine if it is general or hazardous. Obtain and provide an acceptable container with a label. Place hazardous waste material in the container. Inspect the container on a regular basis Haul the full container to the licenced and correct disposal site. Provide documentary evidence of proper disposal of the waste.</li> <li>Only temporary storage of waste is allowed (once of storage of waste for a period less than 90 days). The volume of material should be limited to less than 80m3 of hazardous waste. Should this be exceeded the Norms and Standards for the Storage of Waste will need to be complied with.</li> </ul>	Medium	Low	No Loss	Reversible
		Sewer Alternative 1			Low	High		Medium	Low	No Loss	Reversible
		Layout Proposal			Low	High		Medium	Low	No Loss	Reversible
		Layout Alternative			Low	High		Medium	Low	No Loss	Reversible
No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable		
Soil Alteration	Negative	Loss of topsoil	Yes	Direct	Medium	High	<p><b><u>With the sewer pipelines, loss of top soil is not expected to be significant as the pipeline will occur in a 3m wide servitude and will be separated and then replaced in the excavation. There is no real difference between the pipeline alternatives. However with the alternative layout, the full extent of Road B will be developed and will result in the loss of some topsoil. The proposed layout is therefore preferred.</u></b></p> <p>* Top soil should be separated and re-used where possible.</p>	Medium	Low	Partial	High Degree
					Medium	High		Medium	Low	Partial	High Degree
					Medium	High		Low	Low-Medium	Partial	High Degree
					Medium-High	High		Low	Medium	Partial	High Degree
			No-Go Option	Yes	Direct	Low-Medium	High	The site is degraded by historic land use. It is likely that there will be a continued loss of topsoil should the development not proceed as the site will remain in its degraded state.	None	Low-Medium	Partial



IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility
<b>CONSTRUCTION PHASE</b>											
Negative	Impact to sheep grazing land and irrigated fields	Sewer Proposal	Yes	Direct	Low	High	<ul style="list-style-type: none"> <li>Please note that according to the Gauteng Agricultural Potential Atlas IV, the agricultural potential of the site and the affected development footprint of the services is low to moderate. <b>Affected landowners have raised concerns regarding the impact of the of the sewer line and road on sheep grazing land as well as existing irrigated fields. In order to address this, two additional alternatives were assessed: Proposed layout (FAR = 0.4) and Alternative Layout (FAR=0.8). With the new proposed layout with the reduced FAR, the full extent of Road B is not required and thus the impact on affected landowner's grazing is reduced. There is also no impact on irrigated fields. The proposed layout is therefore preferred. In terms of the sewer line, both lines traverse grazing land however only the alternative pipeline route will affect the irrigated area. Therefore the proposed pipeline route is preferred. In addition, a number of specific measures have been recommended to reduce the impact of the sewer line on sheep grazing pastures:</b> <ul style="list-style-type: none"> <li>Access to all private properties will be negotiated between the developer and the landowner in question. Issues regarding compensation will be dealt with as part of this contractual stage.</li> <li>Access to private property will only be allowed by consent.</li> <li>Potential to allow connection to the new sewer line should be discussed and implemented if feasible and acceptable to the landowner in question.</li> <li>Where possible the construction of the pipeline will be undertaken in sections in line with property boundaries. Based on discussions with the engineer, it is understood that the excavation, laying of pipeline and closing of the excavation of approximately 300m will take 1 week. It is therefore feasible that the pipeline be developed property by property so to limit the time that each property is impacted. Grazing would therefore be limited for a short period only.</li> <li>The right of way/servitude for the pipeline is 3m. No additional clearing of excavation will be permitted.</li> <li>During site preparation, topsoil and subsoil must be stripped separately from each other and must be stored separately from spoil material for use in the rehabilitation phase.</li> <li>Programme the backfill of excavations so that subsoil is deposited first, followed by the topsoil.</li> <li>Monitor backfilled areas for subsidence (as the backfill settles) and fill depressions using available material.</li> <li>Execute top soiling activity prior to the rainy season or any expected wet weather conditions.</li> <li>Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter. Replace topsoil to the original depth.</li> <li>Place topsoil in the same area from where it was stripped.</li> <li>Rip and/or scarify all areas following the application of topsoil to facilitate mixing of the upper most layers.</li> <li>No litter, rubble or any other construction material shall remain on site once the pipeline is completed.</li> <li>ECO to undertake a rehabilitation audit at the completion of the pipeline and then again in 6 months to ensure that rehabilitation has been undertaken as necessary and to ensure no undue alien invasive plant species are establishing.</li> <li>Should electric fencing or fencing need to be removed this must be agreed</li> </ul> </li> </ul>	Medium	Low	Partial	High Degree
		Sewer Alternative 1			Low-Medium	High		Medium	Low	Partial	High Degree
		Layout Proposal			Low	High		Medium	Low	Partial	High Degree

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility

**CONSTRUCTION PHASE**

		Layout Alternative			Medium-High	High	<u>to be affected landowners. All electric fencing/fencing must be replaced as soon as construction in the property is completed.</u> <ul style="list-style-type: none"> <li>All construction workers must be easily identifiable.</li> <li>The contractor and/or project manager must appoint a specific staff member to act as the landowner liaison officer to ensure clear and dedicated communication channels. All affected and adjacent landowners should have the contact details of the liaison officer as well as the ECO.</li> <li>An Issues Register should be set up and all comments, queries and complaints should be noted. Details on how these issues have been resolved should be noted</li> </ul>	Low	Medium	Partial	High Degree	
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
	Negative	Loss of land capability	Sewer Proposal	Yes	Direct	Low-Medium	High	<ul style="list-style-type: none"> <li>Please note that according to the Gauteng Agricultural Potential Atlas IV, the agricultural potential of the site and the affected development footprint of the services is low to moderate. Portion 260 also falls part of the Mixed Use Development Zone of the Muldersdrift Precinct Plan and is thus not planned for agriculture. Therefore, it is not expected to be a significant loss.</li> </ul>	Low	Low	Partial	High Degree
			Sewer Alternative 1			Low-Medium	High		Low	Low	Partial	High Degree
			Layout Proposal			Low-Medium	High		None	Low-Medium	Partial	High Degree
			Layout Alternative			Medium-High	High		None	Medium	Partial	High Degree
			No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable
	Negative	Alteration of topography	Sewer Proposal	No	Direct	Medium	High	Some of the Topography within the development footprint will be altered as part of the development. In order to ensure the change in topography does not impact stormwater, the following must be implemented: <ul style="list-style-type: none"> <li>Stormwater management measures must be implemented to ensure these designs do not impact on stormwater.</li> </ul>	Low	Low-Medium	Partial	High Degree
			Sewer Alternative 1			Medium	High		Low	Low-Medium	Partial	High Degree
			Layout Proposal			Medium	High		Low	Low-Medium	Partial	High Degree
			Layout Alternative			Medium	High		Low	Low-Medium	Partial	High Degree
			No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility

**CONSTRUCTION PHASE**

Negative	Soil pollution	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>Drip trays must be placed under all vehicles when immobile for longer than 24 hours. Vehicles suspected of leaking must be monitored and conduct a pre start-up inspection checklist.</li> <li>All vehicle/equipment maintenance and washing must be done in the workshop area, equipped with a bund wall and grease trap oil separator.</li> <li>Workshop area must be monitored for fuel and oil spills.</li> <li>Drip trays must be checked and replaced for vehicles standing (parked) for prolonged periods.</li> <li>Drip trays must be of a sufficient size and volume to collect any hydrocarbon leakages from a stationary vehicle.</li> <li>Spill kits (absorbent material) must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site.</li> <li>Spilled substances must be contained in impermeable containers for removal to a licensed hazardous waste site.</li> <li>Significant spills should be reported to the Project Manager or Contractors Manager and ECO who should report this to the relevant authority.</li> <li>Waste must be managed in line with the requirements of the EMP (see above).</li> </ul>	High	Low	No Loss	Reversible	
		Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible	
		Layout Proposal			Low	High		High	Low	No Loss	High Degree	
		Layout Alternative			Low	High		High	Low	No Loss	High Degree	
		No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable	None
Negative	Electricity consumption	Sewer Proposal	Yes	Direct	None	High	<ul style="list-style-type: none"> <li>During the construction phase the contractors will mainly make use of generators.</li> </ul>	None	None	No Loss	Reversible	
		Sewer Alternative 1			None	High		None	None	No Loss	Reversible	
		Layout Proposal			None	High		None	None	No Loss	Reversible	
		Layout Alternative			None	High		None	None	No Loss	Reversible	
		No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable	None
	Negative	Water consumption	Sewer Proposal	Yes	Direct	Low-Medium	High	<ul style="list-style-type: none"> <li>Enforce water saving strategies.</li> <li>Environmental awareness training.</li> </ul>	Low	Low	No Loss	Reversible
			Sewer Alternative 1			Low-Medium	High		Low	Low	No Loss	Reversible
			Layout Proposal			Low-Medium	High		Low	Low	No Loss	Reversible
			Layout Alternative			Low-Medium	High		Low	Low	No Loss	Reversible
	Negative	Fuel consumption	Sewer Proposal	Yes	Direct	Low-Medium	High	<ul style="list-style-type: none"> <li>Record and monitor fuel consumption regularly</li> <li>Reduce theft of fuel (increase security)</li> </ul>	Low	Low	No Loss	Reversible
			Sewer Alternative 1			Low-Medium	High		Low	Low	No Loss	Reversible
			Layout Proposal			Low-Medium	High		Low	Low	No Loss	Reversible
			Layout Alternative			Low-Medium	High		Low	Low	No Loss	Reversible
			No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable
	Negative	Raw materials consumption	Sewer Proposal	Yes	Direct	Low-Medium	High	<ul style="list-style-type: none"> <li>Raw material usage is expected to be higher for the alternative layout due to the fact that the full extent of Road B would be required. The proposed layout is therefore preferred.</li> <li>Promote effective use of raw material.</li> </ul>	Low	Low	No Loss	Reversible
Sewer Alternative 1			Low-Medium			High	Low		Low	No Loss	Reversible	

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)			
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>CONSTRUCTION PHASE</b>												
		Layout Proposal			Low-Medium	High		Low	Low	No Loss	Reversible	
		Layout Alternative			Low-Medium	High		Low	Low	No Loss	Reversible	
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
Effects on Biodiversity	Negative	Sewer Proposal			Medium	High	<p><u>In terms of the pipeline alternatives, the proposed pipeline is designed to stay outside the wetland and 32m buffer as far as possible. It also does not enter within the C-Plan ESA area and only enters the Zone 3 of the GPEMF at the connection point. It therefore reduces the impact to sensitive vegetation (note however that an ecological assessment was undertaken and found that the site is highly disturbed and already developed in parts and the loss of habitat is not significant). Further, with the proposed layout (FAR =0.4), the traffic impact is reduced and as such there is no longer the need for the full extent of Road B. There is therefore no road development within the ESA, wetland, wetland buffer or Zone 3 and as such, the proposed layout is preferred.</u></p> <p>The following mitigation measures suggested by the specialist will be undertaken: All construction activities other than those authorised must be outside of the wetland 32m buffer</p>	Medium	Low	Partial	High Degree	
		Sewer Alternative 1	Yes	Direct	Medium-High	High		Low	Low-Medium	Partial	High Degree	
		Layout Proposal			Medium	High		Medium	Low	Partial	High Degree	
		Layout Alternative			Medium-High	High		Low	Medium	Partial	High Degree	
		No-Go Option	Not Applicable	Not Applicable	None	High		None required. However, please note that the site is highly disturbed and degraded in parts.	Not Applicable	None	Not Applicable	Not Applicable
		Negative	Sewer Proposal			Low-Medium	Medium	<p>Both sewer lines and layouts will require construction camps and laydown areas. An ecological assessment was undertaken and found that the site is highly disturbed and already developed in parts and the loss of habitat is not significant. The following mitigation measures suggested by the specialist will be undertaken: Construction and laydown areas should be established outside of the wetland 32m buffer.</p>	Medium	Low	Partial	High Degree
	Sewer Alternative 1		Yes	Direct	Low-Medium	Medium	Medium		Low	Partial	High Degree	
	Layout Proposal				Low-Medium	Medium	Medium		Low	Partial	High Degree	
	Layout Alternative				Low-Medium	Medium	Medium		Low	Partial	High Degree	
	No-Go Option		Not Applicable	Not Applicable	None	High	None required. However, please note that the site is highly disturbed and degraded in parts.		Not Applicable	None	Not Applicable	Not Applicable

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility

**CONSTRUCTION PHASE**

	Loss of sensitive vegetation ( <i>Hypoxis</i> and <i>Boophone</i> )	Sewer Proposal	Yes	Direct	Low-Medium	High	<b>Whilst there is no difference between the proposed and alternative sewer lines, the proposed layout is preferred as it limits the development footprint as Road B is not required.</b> The search, rescue and relocation plan as part of the Ecological Assessment must be implemented and all <i>Hypoxis</i> and <i>Boophone</i> species must be relocated within the development.	High	Low	Partial	High Degree	
		Sewer Alternative 1			Low-Medium	High		High	Low	Partial	High Degree	
		Layout Proposal			Low-Medium	High		High	Low	Partial	High Degree	
		Layout Alternative			Low-Medium	High		High	Low	Partial	High Degree	
		No-Go Option			Not Applicable	Not Applicable		None	High	None required. However, please note that the site is highly disturbed and degraded in parts.	Not Applicable	None
	Loss of habitat - Stochastic events such as fire	Sewer Proposal	Yes	Direct	Low	Medium	Impacts related to stochastic events are not effected by either the sewer line or layout alternatives.  The following mitigation measures suggested by the specialist will be undertaken: Fires shall only be permitted in specially designated areas and under controlled circumstances.	Medium	Low	Partial	High Degree	
		Sewer Alternative 1			Low	Medium		Medium	Low	Partial	High Degree	
		Layout Proposal			Low	Medium		Medium	Low	Partial	High Degree	
		Layout Alternative			Low	Medium		Medium	Low	Partial	High Degree	
		No-Go Option			Not Applicable	Not Applicable		None	High	None required. However, please note that the site is highly disturbed and degraded in parts.	Not Applicable	None
	Negative	Direct mortality of fauna - Staff or construction workers poaching and hunting	Sewer Proposal	No	Direct	Low	Medium	Both pipeline routes and layouts are similar and thus impacts in regards to fauna mortality are similar. An ecological assessment and did not identify any sensitive fauna on site. The following mitigation measures suggested by the specialist will be undertaken: Snaring and hunting of fauna by construction workers on or adjacent to the study area are strictly prohibited.	High	Low	Partial	High Degree
			Sewer Alternative 1			Low	Medium		High	Low	Partial	High Degree
			Layout Proposal			Low	Medium		High	Low	Partial	High Degree
			Layout Alternative			Low	Medium		High	Low	Partial	High Degree
		No-Go Option	Not Applicable			Not Applicable	None		High	None required. However, please note that the site is highly disturbed and degraded in parts.	Not Applicable	None
Direct mortality of fauna - Intentional killing of fauna	Sewer Proposal	No	Direct	Low	Medium	Both pipeline routes and layouts are similar and thus impacts in regards to fauna mortality are similar. An ecological assessment and did not identify any sensitive fauna on site. The following mitigation measures suggested by the specialist will be undertaken: Killing of fauna on or adjacent to the study area are strictly prohibited. Should any	High	Low	Partial	High Degree		

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility
<b>CONSTRUCTION PHASE</b>											
		Sewer Alternative 1			Low	Medium	fauna species be found on site, the ECO should be conducted asap to provide recommendation or mitigation measures.	High	Low	Partial	High Degree
		Layout Proposal			Low	Medium		High	Low	Partial	High Degree
		Layout Alternative			Low	Medium		High	Low	Partial	High Degree
		No-Go Option			None	High	None required. However, please note that the site is highly disturbed and degraded in parts.	Not Applicable	None	Not Applicable	Not Applicable
		Sewer Proposal			Low-Medium	Medium		Low	Low	Partial	High Degree
	Direct mortality of fauna - Vegetation and ground clearing (resulting in fauna mortality)	Sewer Alternative 1	Yes	Direct	Low-Medium	Medium	<b><u>Both pipeline routes are similar and thus impacts in regards to fauna mortality are similar. However due to the requirement to construct Road B as part of the alternative layout, a larger footprint of vegetation clearing is required and thus the alternative layout has a greater impact. The proposed layout is therefore preferred.</u></b>	Low	Low	Partial	High Degree
		Layout Proposal			Low-Medium	Medium	An ecological assessment and did not identify any sensitive fauna on site. The following mitigation measures suggested by the specialist will be undertaken: Killing of fauna on or adjacent to the study area are strictly prohibited. Should any fauna species be found on site, the ECO should be conducted asap to provide recommendation or mitigation measures. 'Clearing of vegetation is not allowed within the 32m buffer of the wetland area.	Low	Low	Partial	High Degree
		Layout Alternative			Medium	Medium		Low	Low-Medium	Partial	High Degree
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
Negative	Disruption of ecological life cycles due to the restriction of species movement - Open trenches	Sewer Proposal	Yes	Direct	Low	Medium	Trenches and other linear barriers should not be kept open for to long, especially not staying open over night.	High	Low	No Loss	Reversible
		Sewer Alternative 1			Low	Medium	<b><u>Due to the reduced FAR in the proposed layout, the full extent of Road B is not required and therefore will reduce the construction impact of open trenches/works. It is therefore preferred.</u></b>	High	Low	No Loss	Reversible

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)			
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>CONSTRUCTION PHASE</b>												
	and other linear barriers	Layout Proposal			Low	Medium		High	Low	No Loss	Reversible	
		Layout Alternative			Medium	Medium		High	Low-Medium	No Loss	Reversible	
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
	Disruption of ecological life cycles due to the restriction of species movement - Infrastructure	Sewer Proposal	Yes	Direct	Medium	High	Stormwater and road infrastructure should be designed in such a way that it will have minimal impact on the environmental, especially the wetland area. <b>The proposed layout with reduced FAR is preferred as it reduces the disruption of ecological life cycles as the full extent of Road B is not required.</b>	High	Low	No Loss	Reversible	
		Sewer Alternative 1			Medium	High		High	Low	No Loss	Reversible	
		Layout Proposal			Medium	High		High	Low	No Loss	Reversible	
		Layout Alternative			Medium-High	High		High	Low-Medium	No Loss	Reversible	
		No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable	None
Negative	Disruption of ecological life cycles due to noise and lighting - Noise during construction	Sewer Proposal	Yes	Direct	Low	High	Construction must be restricted to hours of 07:00 and 17:00. Should construction activities need to continue over a weekend/public holiday or is expected to be excessively noisy, all Interested and Affected Parties and the ECO must be notified in advance.	Medium	Low	No Loss	Reversible	
					Sewer Alternative 1	Low		High	Medium	Low	No Loss	Reversible
					Layout Proposal	Low		High	Medium	Low	No Loss	Reversible
					Layout Alternative	Low		High	Medium	Low	No Loss	Reversible
					No-Go Option	Not Applicable		Not Applicable	None	High	None required	Not Applicable
Negative	Disruption of ecological life cycles due to noise and lighting - Noise	Sewer Proposal	Yes	Direct	Low-Medium	High	Construction must be restricted to hours of 07:00 and 17:00. Should construction activities need to continue after hours is, all Interested and Affected Parties and the ECO must be notified in advance. Excessive lighting during construction should be avoided.	Medium	Low	No Loss	Reversible	

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility

**CONSTRUCTION PHASE**

	during construction	Sewer Alternative 1			Low-Medium	High		Medium	Low	No Loss	Reversible	
		Layout Proposal			Low-Medium	High		Medium	Low	No Loss	Reversible	
		Layout Alternative			Low-Medium	High		Medium	Low	No Loss	Reversible	
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
	Negative	Introduction of alien flora affecting native faunal assemblages - Vehicles and machinery	Sewer Proposal	Yes	Direct	Low	High	Alien, invasive species found within the construction area should be eradicated as far as possible and disposed of at a registered site. Measures to prevent siltation from entering the wetland area, should be implemented throughout the construction phase.	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
			Layout Alternative			Low	High		High	Low	No Loss	Reversible
			No-Go Option	Not Applicable	Not Applicable	None	High		None required	Not Applicable	None	Not Applicable
	Negative	Introduction of alien flora affecting native faunal assemblages - soil disturbances	Sewer Proposal	Yes	Direct	Low	High	<b>As the sewer proposal and alternative are similar, impacts are expected to be similar. However with the alternative layout, Road B is required and due to the larger development footprint, a greater impact is expected.</b> The following measures must be implemented. Alien, invasive species found within the construction area should be eradicated as far as possible and disposed of at a registered site. Measures to prevent siltation from entering the wetland area, should be implemented throughout the construction phase.	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
			Layout Alternative			Low	High		High	Low	No Loss	Reversible
No-Go Option			Not Applicable	Not Applicable	None	High	None required		Not Applicable	None	Not Applicable	Not Applicable
Negative	Pollution incidents	Sewer Proposal	No	Direct	Low	High		Low	Low	No Loss	Reversible	



IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility

**CONSTRUCTION PHASE**

Incidents, accidents and potential emergency situations			Sewer Alternative 1			Low	High	<ul style="list-style-type: none"> <li>• Spill kits to be located in strategic areas for when needed</li> <li>• Regular site and plant inspection must be conducted</li> <li>• Environmental awareness training</li> </ul>	Low	Low	No Loss	Reversible
			Layout Proposal			Low	High		Low	Low	No Loss	Reversible
			Layout Alternative			Low	High		Low	Low	No Loss	Reversible
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Negative	Health and safety	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>• 24 hour security and access control.</li> <li>• Health and Safety awareness training.</li> <li>• Contractor to submit a Health and Safety Plan, prepared in accordance with the Health and Safety Specification, for approval prior to the commencement of work.</li> <li>• A Safety Agent should be appointed</li> <li>• A Dedicated Occupational Health and Safety system to be implemented by Contractor's Safety Officer. To be monitored and audited by the Client's Safety Agent, in terms of the Construction Regulations (2003).</li> </ul>	Low	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		Low	Low	No Loss	Reversible
			Layout Proposal			Low	High		Low	Low	No Loss	Reversible
			Layout Alternative			Low	High		Low	Low	No Loss	Reversible
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Negative	Storage of hydrocarbons	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>• Best practice regarding storage of substances</li> <li>• Spill kits to be located in strategic areas for when needed</li> <li>• Environmental awareness training</li> <li>• Firefighting equipment must be accessible on site at all times.</li> <li>• Display of emergency numbers</li> </ul>	Low	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		Low	Low	No Loss	Reversible
			Layout Proposal			Low	High		Low	Low	No Loss	Reversible
			Layout Alternative			Low	High		Low	Low	No Loss	Reversible
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Negative	Fire	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>• Adhere to the appropriate emergency procedures</li> <li>• Firefighting equipment must be accessible on site at all times.</li> <li>• Display of emergency numbers</li> <li>• In addition, designated smoking areas should be provided and there should be</li> </ul>	Low	Low	No Loss	Reversible

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility

**CONSTRUCTION PHASE**

Social			Sewer Alternative 1			Low	High	zero tolerance to smoking outside these areas. Cooking over open flames is not allowed.	Low	Low	No Loss	Reversible
			Layout Proposal			Low	High		Low	Low	No Loss	Reversible
			Layout Alternative			Low	High		Low	Low	No Loss	Reversible
			No-Go Option	No	Direct	Low	High		The site is currently unoccupied and the risk for fire remains.	None	Low	No Loss
	Negative	Visual impact	Sewer Proposal	Yes	Direct	Low	High	The Heritage Impact Assessment noted "Visual impacts to scenic routes and sense of place are also considered to be low due to the existing developments in the greater area. However, during construction, the site will be screened or walled off to reduce visual impacts.	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
			Layout Alternative			Low	High		High	Low	No Loss	Reversible
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Negative	Safety and security	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>• 24 hour access control to the site and 24 hour security.</li> <li>• Workers found to be engaging in activities such as excessive consumption of alcohol, drug use or selling of any such items on site must be disciplined.</li> <li>• <b>During the public review of the BAR, affected landowners raised concerns regarding safety and security of their property and stud sheep. A number of measures are therefore included in the EMPR including:</b></li> <li>• <b>All workers must be easily identifiable with name tags and appropriate safety vests etc.</b></li> <li>• <b>Access to private property must be by agreement only.</b></li> <li>• <b>A landowner liaison officer should be appointed and contact with the landowners must be made before any entry to the private property is made.</b></li> <li>• <b>The sewer pipeline should be phased so that the impact is localised to one property at a time and once completed, access to the site by workers will not be permitted.</b></li> </ul>	Medium	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		Medium	Low	No Loss	Reversible
			Layout Proposal			Low	High		Medium	Low	No Loss	Reversible
Layout Alternative			Low			High	Medium		Low	No Loss	Reversible	

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES			RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)	
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>CONSTRUCTION PHASE</b>												
		No-Go Option	No	Direct	Low	High	The site is currently unoccupied. Should the develop not take place, there may be further safety and security issues in the area.	None	Low	No Loss	Reversible	
Negative	Traffic disruptions	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>Traffic calming measures and appropriate signage to be implemented.</li> <li>New roads and road/intersection upgrades to be implemented as per the TIA.</li> <li>Speed limits on all existing roads must be adhered to at all times.</li> </ul>	High	Low	No Loss	Reversible	
		Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible	
		Layout Proposal			Low	High		High	Low	No Loss	Reversible	
		Layout Alternative			Low	High		High	Low	No Loss	Reversible	
		No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable	None
Negative	Loss of cultural and palaeontological heritage	Sewer Proposal	No	Direct	Low	High	<p>A Heritage Impact Assessment was undertaken and the following mitigation measures recommended:</p> <ul style="list-style-type: none"> <li>A heritage walkdown of linear infrastructure should be conducted prior to construction;</li> <li>Confirmation of any burial sites within the study area during the public participation process;</li> <li>It is recommended that a Chance Find Procedure should be implemented for the project should any heritage resources be identified during the construction phase of the project.</li> </ul> <p>The site does not occur in a significant palaeontological area. There was no preference between either the proposal or alternative sewer line or layout alternatives.</p>	High	Low	Irreplaceable	Irreversible	
		Sewer Alternative 1			Low	High		High	Low	Irreplaceable	Irreversible	
		Layout Proposal			Low	High		High	Low	Irreplaceable	Irreversible	
		Layout Alternative			Low	High		High	Low	Irreplaceable	Irreversible	
		No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable	None

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)			
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>CONSTRUCTION PHASE</b>												
Negative	Loss of sense of place	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>• Suitable screening to be put in place during construction to minimise visual impacts.</li> <li>• No littering to be allowed.</li> <li>• Good housekeeping practices to be followed</li> </ul>	Low	Low	No Loss	Reversible	
		Sewer Alternative 1			Low	High		Low	Low	No Loss	Reversible	
		Layout Proposal			Low	High		Low	Low	No Loss	Reversible	
		Layout Alternative			Low	High		Low	Low	No Loss	Reversible	
		No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable	None
	Positive	Change of land use	Sewer Proposal	Yes	Direct	+ Medium	High	<p>A Townplanning process is currently being undertaken to change the land use associated with the site. The proposed change in land use is in line with the Muldersdrift Precinct Plan. <b>The proposed sewer lines will not affect land use. The proposed layout is preferred as it does not require the development of road B on adjacent properties and therefore does not change the land use of adjacent properties.</b></p> <p>No mitigation measures other than the townplanning process is required.</p>	Low	+ Medium	No Loss	Reversible
			Sewer Alternative 1			+ Medium	High		Low	+ Medium	No Loss	Reversible
			Layout Proposal			+ Medium	High		Low	+ Medium	No Loss	Reversible
			Layout Alternative			Medium	High		Very Low	Low-Medium	No Loss	Reversible
			No-Go Option			Not Applicable	Not Applicable		None	High	None required	Not Applicable

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility
<b>CONSTRUCTION PHASE</b>											
Economic	Negative	Impact to private infrastructure and property (including livestock)	No	Direct	Low	High	<p><u>During the public review of the BAR, affected landowners raised concerns regarding the impact of the services (Road B and the sewer line) on electric fencing, existing outbuildings and expensive stud sheep. A number of measures are therefore included in the EMPR to mitigate potential impacts including:</u></p> <ul style="list-style-type: none"> <li><u>All workers must be easily identifiable with name tags and appropriate safety vests etc.</u></li> <li><u>Access to private property must be by agreement only.</u></li> <li><u>A landowner liaison officer should be appointed and contact with the landowners must be made before any entry to the private property is made.</u></li> <li><u>The sewer pipeline should be phased so that the impact is localised to one property at a time and once completed, access to the site by workers will not be permitted.</u></li> <li><u>Should electric fencing or fencing need to be removed this must be agreed to by affected landowners. All electric fencing/fencing must be replaced as soon as construction in the property is completed.</u></li> <li><u>An Issues Register should be set up and all comments, queries and complaints should be noted. Details on how these issues have been resolved should be noted.</u></li> </ul>	Medium	Low	No Loss	Reversible
					Low	High		Medium	Low	No Loss	Reversible
					Low	High		Medium	Low	No Loss	Reversible
					Medium	High		Medium	Low-Medium	No Loss	Reversible
					Low	High		None	Low	No Loss	Reversible
	Positive	Decline/increase in economy	Yes	Direct	+ Medium	High	<p>The proposed CAPEX value of the development is R15 000 000.00. This will have numerous multiplier effects in the local community. In order to ensure that this benefits the local community, it is recommended that local labour and suppliers are used where possible.</p>	Low	+ Medium	No Loss	Reversible
					+ Medium	High		Low	+ Medium	No Loss	Reversible
					+ Medium	High		Low	+ Medium	No Loss	Reversible
					+ Medium	High		Low	+ Medium	No Loss	Reversible
					Medium	High		None	Medium	Partial	High Degree
	Positive	Decline/increase in property value	No	Direct	+ Medium	High	<p>The development of the proposed development will increase the property value of the site overall. Further, it will have a knock on effect and is likely to increase the value of neighbouring properties as well. No mitigation measures are required.</p>	None	+ Medium	No Loss	Reversible

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES			RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)	
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>CONSTRUCTION PHASE</b>												
		Sewer Alternative 1			+ Medium	High		None	+ Medium	No Loss	Reversible	
		Layout Proposal			+ Medium	High		None	+ Medium	No Loss	Reversible	
		Layout Alternative			+ Medium	High		None	+ Medium	No Loss	Reversible	
Negative		No-Go Option			Medium	High	The site was is vacant and is degraded and without development, the property value is likely to decrease. This will have knock on effects on the surrounding properties. No mitigation, save for development of the site, is available.	None	Medium	No Loss	Reversible	
Positive	Employment	Sewer Proposal	Yes	Direct	+ Medium	None	The proposed development will result in approximately 150 construction related employment opportunities for the local community. Local labour should be utilised as far as possible.	None	+ Medium	No Loss	Reversible	
		Sewer Alternative 1			+ Medium	None		None	+ Medium	No Loss	Reversible	
		Layout Proposal			+ Medium	None		None	+ Medium	No Loss	Reversible	
		Layout Alternative			+ Medium	None		None	+ Medium	No Loss	Reversible	
		No-Go Option			Medium	None		Should the development not proceed, the benefits to the local community will be long term and negative as potential employment opportunities will be lost. No mitigation measures are available.	None	Medium	No Loss	Reversible

Table 13: Impact Assessment – Operation

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)			
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>OPERATIONAL PHASE</b>												
Atmospheric Emissions	Not Applicable	Dust emissions	Sewer Proposal	Not Applicable	Not Applicable	None	High	Impacts not applicable to the operational phase. No mitigation required.	Not Applicable	None	No Loss	Reversible
			Sewer Alternative 1			None	High		Not Applicable	None	No Loss	Reversible
			Layout Proposal			None	High		Not Applicable	None	No Loss	Reversible
			Layout Alternative			None	High		Not Applicable	None	No Loss	Reversible
			No-Go Option			None	High		None required	Not Applicable	None	Not Applicable
	Negative	Emissions from vehicles and equipment (CO2, NOx, SOx, VOC's etc.)	Sewer Proposal	Yes	Direct	None	High	Impacts not applicable to the operational phase as the development will not result in more cars being produced. No mitigation required.	Not Applicable	None	No Loss	Reversible
			Sewer Alternative 1			None	High		Not Applicable	None	No Loss	Reversible
			Layout Proposal			None	High		Not Applicable	None	No Loss	Reversible
			Layout Alternative			None	High		Not Applicable	None	No Loss	Reversible
			No-Go Option			None	High		None required	Not Applicable	None	Not Applicable
	Negative	Noise	Sewer Proposal	No	Direct	Low	High	<b>Noise increases are expected to be more significant with Road B (Alternative Layout). Therefore the proposed layout is preferred.</b> The Body corporate/Management Board should develop rules and regulations to manage noise in line with applicable by-laws.	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
			Layout Alternative			Low	High		High	Low	No Loss	Reversible
			No-Go Option			None	High		None required	Not Applicable	None	Not Applicable
Impacts to Wetlands	Negative	Water quality	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>A Outline Scheme Report has been undertaken and noted that sewer will connect to an existing sewer line approximately 1.1km away from the site. This new sewer pipeline must be implemented. <b>Due to the decreased length of pipeline in the wetland and thus the decreased potential for sewer spills, the proposal should be implemented. Further, the proposed layout is preferred as it decreases traffic and as such Road B is not required at this stage.</b></li> <li>Maintenance and management of the sewer connection must be undertaken as per Mogale's requirements</li> <li>In addition, the following mitigation measures from the Wetland specialist must be implemented: Rehabilitation of construction impacted area, continuous monitoring, Storm water management.</li> </ul>	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
			Layout Alternative			Low	High		High	Low	No Loss	Reversible
			No-Go Option			None	High		None required	Not Applicable	None	Not Applicable
	Not Applicable	Flow regime	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>The following mitigation measures from the Wetland specialist must be implemented: Rehabilitation of construction impacted area, continuous monitoring, Storm water management. Further, Alternative 1 is not preferred as the impacts to flow would be greater due to the deeper pond.</li> <li><b>Due to the decreased length of pipeline in the wetland and thus the decreased impact on the flow regime, the proposed layout should be implemented. Further due to the smaller extent of Road B required, the proposed layout should also be implemented.</b></li> </ul>	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
			Layout Alternative			Low	High		High	Low	No Loss	Reversible
			No-Go Option			None	High		None required	Not Applicable	None	Not Applicable
	Negative	Habitat	Sewer Proposal	Yes	Indirect	Low	High	<ul style="list-style-type: none"> <li>The following mitigation measures from the Wetland specialist must be implemented: Rehabilitation of construction impacted area, continuous monitoring, Storm water management.</li> <li><b>Due to the decreased length of pipeline in the wetland and thus the decreased impact on the wetland habitat, the proposal should be</b></li> </ul>	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
Layout Proposal			Low			High	High		Low	No Loss	Reversible	

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)			
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>OPERATIONAL PHASE</b>												
		Layout Alternative			Low	High	<b>implemented. Further due to the smaller extent of Road B required, the proposed layout should also be implemented.</b>	High	Low	No Loss	Reversible	
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
	Negative	Biota	Sewer Proposal	No	Indirect	Low	High	<ul style="list-style-type: none"> <li>The following mitigation measures from the Wetland specialist must be implemented: Rehabilitation of construction impacted area, continuous monitoring. Storm water management.</li> <li><b>Due to the decreased length of pipeline in the wetland and thus the decreased impact on the wetland habitat, flow regime and associated biota, the proposal should be implemented. Further due to the smaller extent of Road B required, the proposed layout should also be implemented.</b></li> </ul>	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
			Layout Alternative			Low	High		High	Low	No Loss	Reversible
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Not Applicable	Geomorphology	Sewer Proposal	No	Indirect	Low	High	<ul style="list-style-type: none"> <li>The following mitigation measures from the Wetland specialist must be implemented: Rehabilitation of construction impacted area.</li> <li><b>Due to the decreased length of pipeline in the wetland and thus the decreased impact on the geomorphology, the proposal should be implemented. Further due to the smaller extent of Road B required, the proposed layout should also be implemented.</b></li> </ul>	High	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		High	Low	No Loss	Reversible
			Layout Proposal			Low	High		High	Low	No Loss	Reversible
Layout Alternative			Low			High	High		Low	No Loss	Reversible	
				No-Go Option	Not Applicable	Not Applicable	None	Not Applicable	None required	Not Applicable	None	Not Applicable
Waste Generation	Negative	Domestic waste	Yes	Direct	Sewer Proposal	Medium	High	<p><b><u>There is no difference between the proposed and alternative sewer line in terms of domestic waste. However with the alternative layout, road users may through litter when using Road B and therefore contribute to domestic waste. The proposed layout is therefore preferred.</u></b></p> <ul style="list-style-type: none"> <li>Recyclable waste streams must be separated from other waste streams. Waste to be separated into recyclable and non-recyclable waste. Waste separation needs to occur before waste is collected.</li> <li>Solid waste shall only be stored in the designated general waste storage area which must be enclosed and impermeable.</li> <li>All solid waste shall be disposed of by a certified contractor, off-site, at an approved landfill site if no municipal services are available.</li> <li>Avoidance, reduction, re-use and recycling should be practiced wherever possible.</li> </ul>	Medium	Low	No Loss	Reversible
					Sewer Alternative 1	Medium	High		Medium	Low	No Loss	Reversible
					Layout Proposal	Medium	High		Medium	Low	No Loss	Reversible
					Layout Alternative	Medium	High		Medium	Low	No Loss	Reversible
					No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None
	Not Applicable	Construction waste	Sewer Proposal	Not Applicable	Not Applicable	None	High	Impacts not applicable to the operational phase. No mitigation required.	Not Applicable	None	Not Applicable	Not Applicable
			Sewer Alternative 1			None	High		Not Applicable	None	Not Applicable	Not Applicable
			Layout Proposal			None	High		Not Applicable	None	Not Applicable	Not Applicable
			Layout Alternative			None	High		Not Applicable	None	Not Applicable	Not Applicable
			No-Go Option			None	High		None required	Not Applicable	None	Not Applicable
	Negative	Hazardous waste	Sewer Proposal	Not Applicable	Not Applicable	None	High	No hazardous waste is expected during operation.	Not Applicable	None	Not Applicable	Not Applicable
			Sewer Alternative 1			None	High		Not Applicable	None	Not Applicable	Not Applicable
			Layout Proposal			None	High		Not Applicable	None	Not Applicable	Not Applicable
Layout Alternative			None			High	Not Applicable		None	Not Applicable	Not Applicable	
No-Go Option			None			High	None required		Not Applicable	None	Not Applicable	Not Applicable
Soil Alteration	Negative	Loss of topsoil	Sewer Proposal	Not Applicable	Not Applicable	None	High	Impacts not applicable to the operational phase. No mitigation required.	Not Applicable	None	Not Applicable	Not Applicable



IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)			
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>OPERATIONAL PHASE</b>												
		Sewer Alternative 1			None	High		Not Applicable	None	Not Applicable	Not Applicable	
		Layout Proposal			None	High		Not Applicable	None	Not Applicable	Not Applicable	
		Layout Alternative			None	High		Not Applicable	None	Not Applicable	Not Applicable	
		No-Go Option	Yes	Direct	Low-Medium	High	The site is highly degraded by historic land use. It is likely that there will be a continued loss of topsoil should the development not proceed as the site will remain in its degraded state.	None	Low-Medium	Partial	High Degree	
Not Applicable	Loss of land capability	Sewer Proposal			None	High	Impacts not applicable to the operational phase. No mitigation required.	None	None	No Loss	Reversible	
		Sewer Alternative 1			None	High		None	None	No Loss	Reversible	
		Layout Proposal	Not Applicable	Not Applicable	None	High		None	None	No Loss	Reversible	
		Layout Alternative			None	High		None	None	No Loss	Reversible	
		No-Go Option			None	High		None required	Not Applicable	None	Not Applicable	Not Applicable
Not Applicable	Alteration of topography	Sewer Proposal			None	High	Impacts not applicable to the operational phase. No mitigation required.	None	None	No Loss	Reversible	
		Sewer Alternative 1			None	High		None	None	No Loss	Reversible	
		Layout Proposal	Not Applicable	Not Applicable	None	High		None	None	No Loss	Reversible	
		Layout Alternative			None	High		None	None	No Loss	Reversible	
		No-Go Option			None	High		None required	Not Applicable	None	Not Applicable	Not Applicable
Negative	Soil pollution	Sewer Proposal			None	High	Impacts not applicable to the operational phase. No mitigation required.	None	None	No Loss	Reversible	
		Sewer Alternative 1	Not Applicable	Not Applicable	None	High		None	None	No Loss	Reversible	
		Layout Proposal			None	High	Impacts not applicable to the operational phase. No mitigation required.	None	None	No Loss	Reversible	
		Layout Alternative			None	High		None	None	No Loss	Reversible	
		No-Go Option			None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
Resource Consumption	Negative	Electricity consumption	Yes	Direct	Sewer Proposal	Medium	High	<ul style="list-style-type: none"> <li>Promote effective electricity consumption. In terms of energy usage, there is no difference between the sewer line alternatives. However, the proposed layout has a lower FAR and thus energy usage will likely be less.</li> </ul>	Low	Low-Medium	No Loss	Reversible
					Sewer Alternative 1	Medium	High		Low	Low-Medium	No Loss	Reversible
					Layout Proposal	Medium	High		Low	Low-Medium	No Loss	Reversible
					Layout Alternative	Medium	High		Low	Low-Medium	No Loss	Reversible
		No-Go Option	None	High	Not Applicable	Not Applicable	None required	Not Applicable	None	Not Applicable	Not Applicable	
	Negative	Water consumption	Yes	Direct	Sewer Proposal	Medium	High	<ul style="list-style-type: none"> <li>Promote effective water conservation measures. In terms of water consumption, there is no difference between the sewer line alternatives. However, the proposed layout has a lower FAR and thus energy usage will likely be less.</li> </ul>	Medium	Low	No Loss	Reversible
					Sewer Alternative 1	Medium	High		Medium	Low	No Loss	Reversible
					Layout Proposal	Medium	High		Medium	Low	No Loss	Reversible
					Layout Alternative	Medium	High		Medium	Low	No Loss	Reversible
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Negative	Fuel consumption	Sewer Proposal	Not Applicable	Not Applicable	None	High	Impacts not applicable to the operational phase. No mitigation required.	Not Applicable	None	Not Applicable	Not Applicable

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)			
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>OPERATIONAL PHASE</b>												
		Sewer Alternative 1			None	High		Not Applicable	None	Not Applicable	Not Applicable	
		Layout Proposal			None	High		Not Applicable	None	Not Applicable	Not Applicable	
		Layout Alternative			None	High		Not Applicable	None	Not Applicable	Not Applicable	
		No-Go Option			None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
	Negative	Raw materials consumption	Sewer Proposal	Yes	Direct	Low-Medium	High	<ul style="list-style-type: none"> <li>Promote effective use of raw material.</li> <li>In terms of raw material, there is no difference between the sewer line alternatives. However, the proposed layout has a lower FAR and thus energy usage will likely be less.</li> </ul>	Low	Low	No Loss	Reversible
			Sewer Alternative 1			Low-Medium	High		Low	Low	No Loss	Reversible
			Layout Proposal			Low-Medium	High		Low	Low	No Loss	Reversible
			Layout Alternative			Low-Medium	High		Low	Low	No Loss	Reversible
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
<b>Effects on Biodiversity</b>	Negative	Sewer Proposal	No	Direct	Low	High	Fire extinguishers must be placed on the property.	Medium	Low	No Loss	Reversible	
		Sewer Alternative 1			Low	High		Medium	Low	No Loss	Reversible	
		Layout Proposal			Low	High		Medium	Low	No Loss	Reversible	
		Layout Alternative			Low	High		Medium	Low	No Loss	Reversible	
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Negative	Loss of fauna - Intentional killing of fauna	Sewer Proposal	No	Direct	Low	High	It is not expected that any fauna will be found on site during operation. The Body Corporate must include the requirement in their rule book that should any be found that the relevant organisation be called to safely remove the species.	Medium	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		Medium	Low	No Loss	Reversible
			Layout Proposal			Low	High		Medium	Low	No Loss	Reversible
			Layout Alternative			Low	High		Medium	Low	No Loss	Reversible
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Negative	Disruption of ecological life cycles due to the restriction of species movement - infrastructure	Sewer Proposal	No	Direct	Low-Medium	High	Stormwater infrastructure should be designed in such a way that it will have minimal impact on the environmental, especially the wetland area. Maintenance should be undertaken as per the requirements of the stormwater management plan. Due to the fact that the proposed layout has a reduced FAR, the full extent of Road B is not required and thus the impact is reduced. The alternative layout is not preferred.	Medium	Low	No Loss	Reversible
			Sewer Alternative 1			Low-Medium	High		Medium	Low	No Loss	Reversible
Layout Proposal					Low-Medium	High	Medium		Low	No Loss	Reversible	
Layout Alternative					Medium	High	Medium		Low-Medium	No Loss	Reversible	
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
<b>Incidents, accidents and potential emergency situations</b>	Negative	Sewer Proposal	No	Direct	Low	High	Sewer connection pipe must be managed and maintained in line with Mogale's requirements.	Low	Low	No Loss	Reversible	
		Sewer Alternative 1			Low	High		Low	Low	No Loss	Reversible	
		Layout Proposal			Low	High		Low	Low	No Loss	Reversible	
		Layout Alternative			Low	High		Low	Low	No Loss	Reversible	
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Negative	Health and safety	Sewer Proposal	No	Direct	Low	High	24 hour security and access control.	Low	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		Low	Low	No Loss	Reversible

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)		
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility
<b>OPERATIONAL PHASE</b>											
		Layout Proposal			Low	High		Low	Low	No Loss	Reversible
		Layout Alternative			Low	High		Low	Low	No Loss	Reversible
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
Negative	Storage of hydrocarbons	Sewer Proposal	No	Direct	None	High	Impacts not applicable to the operational phase. No mitigation required.	Not Applicable	None	Not Applicable	Not Applicable
		Sewer Alternative 1			None	High		Not Applicable	None	Not Applicable	Not Applicable
		Layout Proposal			None	High		Not Applicable	None	Not Applicable	Not Applicable
		Layout Alternative			None	High		Not Applicable	None	Not Applicable	Not Applicable
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
Negative	Fire	Sewer Proposal	No	Direct	Low	High	<ul style="list-style-type: none"> <li>Adhere to the appropriate emergency procedures</li> <li>Firefighting equipment must be accessible on site at all times.</li> <li>Display of emergency numbers</li> </ul>	Low	Low	No Loss	Reversible
		Sewer Alternative 1			Low	High		Low	Low	No Loss	Reversible
		Layout Proposal			Low	High		Low	Low	No Loss	Reversible
		Layout Alternative			Low	High		Low	Low	No Loss	Reversible
		No-Go Option	Not Applicable	Not Applicable	Low	High	The site is currently unoccupied. Should the develop not take place, the potential for fires on site and on neighbouring properties remains as is.	None	Low	No Loss	Reversible
Negative	Visual impact	Sewer Proposal	No	Direct	Low	High	As the development is in line with the development goals of the area, no mitigation measures are required or recommended.	None	Low	No Loss	Reversible
		Sewer Alternative 1			Low	High		None	Low	No Loss	Reversible
		Layout Proposal			Low	High		None	Low	No Loss	Reversible
		Layout Alternative			Low	High		None	Low	No Loss	Reversible
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
Positive	Safety and security	Sewer Proposal	No	Direct	+Low	High	Due to the development of the site, safety and security in the area is likely to improve. In addition, the following will be implemented which will assist with this: <ul style="list-style-type: none"> <li>24 hour access control to the site and 24 hour security.</li> </ul>	Low	+Low	No Loss	Reversible
		Sewer Alternative 1			+Low	High		Low	+Low	No Loss	Reversible
		Layout Proposal			+Low	High		Low	+Low	No Loss	Reversible
		Layout Alternative			+Low	High		Low	+Low	No Loss	Reversible
Negative		No-Go Option	Not Applicable	Not Applicable	Low	High	The site is currently unoccupied. Should the develop not take place, there may be further safety and security issues in the area.	None	Low	No Loss	Reversible
Negative	Traffic disruptions	Sewer Proposal	No	Direct	Low-Medium	High	As part of the proposed layout, Road A, small section of Road B, intersection upgrades and Access road to be put in place as discussed in the TIA to be implemented. This will ensure that there is no impact to traffic during operation.	High	Low	No Loss	Reversible
		Sewer Alternative 1			Low-Medium	High		High	Low	No Loss	Reversible
		Layout Proposal			Low-Medium	High		High	Low	No Loss	Reversible
		Layout Alternative			Low-Medium	High		High	Low	No Loss	Reversible
		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
Not Applicable	Loss of cultural heritage	Sewer Proposal	Not Applicable	Not Applicable	None	High	Impacts not applicable to the operational phase. No mitigation required.	None	None	No Loss	Reversible
		Sewer Alternative 1			None	High		None	None	No Loss	Reversible
		Layout Proposal			None	High		Not Applicable	None	Not Applicable	Not Applicable

IMPACTS					RANKING WITHOUT MITIGATION	CONFIDENCE	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION	DEGREE REVERSABILITY & LOSS OF RESOURCE (AFTER MITIGATION)			
Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Confidence	Description and/or Mitigation and Management Measures (if applicable)	Mitigation Effectiveness	Significance	Loss of Resources	Reversibility	
<b>OPERATIONAL PHASE</b>												
		Layout Alternative			None	High		Not Applicable	None	Not Applicable	Not Applicable	
		No-Go Option			None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
	Negative	Loss of sense of place	Sewer Proposal	No	Direct	Low	High	Impacts to sense of place are not expected, due to the extensive developments that already occur in the area. As the development is in line with the development goals of the area, no mitigation measures are required or recommended.	None	Low	No Loss	Reversible
			Sewer Alternative 1			Low	High		None	Low	No Loss	Reversible
			Layout Proposal			Low	High		None	Low	No Loss	Reversible
			Layout Alternative			Low	High		None	Low	No Loss	Reversible
			No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable
	Positive	Change of land use	Sewer Proposal	No	Direct	+ Medium	High	A Townplanning process is currently being undertaken to change the land use associated with the site. The proposed change in land use is in line with the Muldersdrift Precinct Plan. No mitigation measures other than the townplanning process is required.	Low	+ Medium	No Loss	Reversible
			Sewer Alternative 1			+ Medium	High		Low	+ Medium	No Loss	Reversible
			Layout Proposal			+ Medium	High		Low	+ Medium	No Loss	Reversible
Layout Alternative			+ Medium			High	Low		+ Medium	No Loss	Reversible	
N/A		No-Go Option	Not Applicable	Not Applicable	None	High	None required	Not Applicable	None	Not Applicable	Not Applicable	
Economic	Positive	Decline/increase in economy	Yes	Direct	Sewer Proposal	High	Once operational the development will provide will contribute to the economy as it will provide business and commercial space. This will have an economic multiplier effect in the local community. No mitigation measures are required. Whilst the proposed layout does provide a lower FAR, and therefore reduces the development capacity, it is not expected that there will be a significant difference between the layout and proposed alternative.	None	+ Medium-High	No Loss	Reversible	
					Sewer Alternative 1	High		None	+ Medium	No Loss	Reversible	
					Layout Proposal	High		None	+ Medium-High	No Loss	Reversible	
					Layout Alternative	High		None	+ Medium	No Loss	Reversible	
	Negative		No-Go Option			Medium	High	Should the development not proceed, the benefits to the local community will be long term and negative. Further, the goals of the Muldersdrift Precinct Plan will also not be met. There are no mitigation measures available.	None	Medium	Partial	High Degree
	Positive	Decline/increase in property value	No	Direct	Sewer Proposal	High	The development of the site and services will increase the property value of the site overall. Further, it will have a knock on effect and is likely to increase the value of neighbouring properties as well. No mitigation measures are required.	None	+ Medium	No Loss	Reversible	
					Sewer Alternative 1	High		None	+ Medium	No Loss	Reversible	
					Layout Proposal	High		None	+ Medium	No Loss	Reversible	
					Layout Alternative	High		None	+ Medium	No Loss	Reversible	
	Negative		No-Go Option			Medium	High	The site was previously is vacant and degraded and without development, the property value is likely to decrease. This will have knock on effects on the surrounding properties. No mitigation, save for development of the site, is available.	None	Medium	No Loss	Reversible
	Positive	Employment	Yes	Direct	Sewer Proposal	None	The proposed development will result in approximately 100 permanent full time operation related employment opportunities for the local community. Local labour should be utilised as far as possible.	None	+ Medium	No Loss	Reversible	
					Sewer Alternative 1	None		None	+ Medium	No Loss	Reversible	
					Layout Proposal	None		None	+ Medium	No Loss	Reversible	
					Layout Alternative	None		None	+ Medium	No Loss	Reversible	
Negative		No-Go Option			Medium	None	Should the development not proceed, the benefits to the local community will be long term and negative as potential employment opportunities will be lost. No mitigation measures are available.	None	Medium	No Loss	Reversible	

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

The following environmental specialist studies have been undertaken and have been used to better understand potential impacts:

- Wetland Assessment;
- Baseline Ecological Habitat Assessment; and
- Phase 1 Heritage Impact Assessment,.

In addition, the following technical studies have been undertaken:

- Traffic Impact Assessment;
- Outline Scheme Report;
- Stormwater Management Plan; and
- Geotechnical Report.

These studies are all included in **Appendix G**.

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

The following gaps and/or assumptions were associated with the specialist studies.

Wetland Assessment:

- The study was limited to a snapshot view during a few site visits. The field investigations were undertaken during January 2020 to assess and confirm the delineated Wetland zones present on the survey area. The wetland's northern bank was surveyed less intensely and mostly based on desktop level delineations as this area will not be impacted by the developed. The eastern section adjacent to the proposed development was surveyed in detail. Weather conditions during the survey were favourable for recordings. The delineations were recorded by hand held GPS.
- It must be noted that, during the process of converting spatial data to final output drawings, several steps are followed that may affect the accuracy of areas delineated. Due care has been taken to preserve accuracy. Printing or other forms of reproduction may also distort the scale indicated in maps. It is therefore suggested that the wetland areas identified in this report be pegged in the field in collaboration with the surveyor for precise boundaries.
- It is unlikely that more surveys would alter the outcome of this study radically.

Ecological Assessment:

- All information acquired for the Ecological Habitat Assessment was assumed to be correct. Which includes all GIS data and website information used to determine all previous recordings of Fauna and Flora species possible to be found on site.
- The study was limited to a snapshot view during one site visit and aimed only to confirm the desktop assessment. No detailed plant species lists, or faunal trapping was therefore undertaken as the site is disturbed.

Heritage Impact Assessment:

- The authors acknowledge that the brief literature review is not exhaustive on the literature of the area.
- Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey and the possible occurrence of unmarked graves and other cultural material cannot be excluded. Similarly, the depth of the deposit of heritage sites cannot be accurately determined due its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys.
- This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components will be highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment

### 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.

It is not expected that the development will be decommissioned. As such, impacts related to decommissioning and closure are not applicable.

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

Not applicable.

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

Not applicable.

### 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:

Cumulative impacts are those impacts that are created as a result of the combination of impacts of the proposed project, with impacts of other projects or operations, to cause related impacts, as well as a single impact over a certain time period which then results in the accumulation of negative/ positive impacts making the significance higher. These impacts occur when the incremental impact of the project, combined with the effects of other past, present and reasonably foreseeable future projects, are cumulatively considered.

Cumulative impacts are included in the detailed impact assessment included in **Appendix I1** but in summary, the following impacts have been considered as cumulative for each phase of development:

#### Construction Phase:

- Dust emissions
- Emissions from vehicles and equipment (CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>, VOC's etc.)
- Impact to wetlands – habitat
- Domestic waste
- Construction waste
- Hazardous waste
- Loss of topsoil
- Loss of land capability
- Electricity consumption
- Water consumption
- Fuel consumption
- Raw materials consumption
- Loss of habitat due to Digging and laying foundations
- Loss of habitat due to construction camps & lay down areas
- Loss of habitat - Stochastic events such as fire
- Direct mortality of fauna - Vegetation and ground clearing (resulting in fauna mortality)
- Disruption of ecological life cycles due to the restriction of species movement -Open trenches and other linear barriers
- Disruption of ecological life cycles due to the restriction of species movement -Infrastructure
- Disruption of ecological life cycles due to noise and lighting - Noise during construction
- Disruption of ecological life cycles due to noise and lighting - Noise during construction
- Introduction of alien flora affecting native faunal assemblages - Vehicles and machinery
- Introduction of alien flora affecting native faunal assemblages - soil disturbances
- Visual impact
- Change of land use
- Decline/increase in economy
- Employment

**Operational Phase:**

- Emissions from vehicles and equipment (CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>, VOC's etc.)
- Impacts to wetland – habitat
- Domestic Waste
- Electricity consumption
- Water consumption
- Fuel consumption
- Raw Material Consumption
- Visual Impact
- Change of Land Use
- Decline/increase in economy
- Employment

It should be noted that even considering their cumulative nature, these impacts could be satisfactorily mitigated.

## 5. Environmental Impact Statement

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

### **Proposal – Proposed Sewer Line and Proposed Layout**

The proposed development of Portion 260 of the Farm Rietfontein 189 IQ involves a mix use development which includes a broad range of uses including Business 1 and Commercial Uses. This aims to serve growing residential areas around the area. The following primary rights are being applied for:

- Erf 1 – 4 | Business 1 (As per Scheme: Shops, Office use, Dwelling Units, Residential Use, Hotel and Restaurant)
- Erf 5 | Commercial (As per Scheme: - Warehousing and Distribution)
- Erf 6-7 | Business 1 As per Scheme: Shops, Office use, Dwelling Units, Residential Use, Hotel and Restaurant)

Necessary roads and services required for the development will also be put in place including:

- Water
  - An existing 110mm dia. municipal water pipeline traverses the proposed development parallel to Beyers Naude Drive and will be abandoned. A new 160mm dia. municipal water pipeline will be installed in the new service road connecting to the existing 160mm dia. municipal water pipeline located in Valley Road.
  - The average daily demand for the proposed township is 307.2 kl/day.
- Sewer
  - No existing municipal sewer infrastructure is located adjacent to the proposed development. The nearest connection point is situated approximately 1.3 km west from the proposed township. A new 160mm and 200mm dia. external sewer network will be constructed to connect to this existing line.
  - Dry Weather Flow (DWF) for the proposed township is 230.4 kl/day
- Stormwater
  - Stormwater attenuation will be provided for the 1:5 as well as the 1:25 year storm event such that the pre-development runoff is not exceeded. An industry guideline of 350 m<sup>3</sup>/ha will be used for the sizing of the attenuation ponds.
  - The stormwater network will be designed in order to safely channel the runoff from a 1:10 year storm event, to the nearby natural drainage course.
  - The internal roads will be provided with kerb inlets at strategic points to catch stormwater runoff from the development.
  - The underground system will consist of "Interlocking Joint" concrete pipes with a minimum diameter of 450mm (up to 675mm diameter) and will discharge into the Bio-retention Pond.
  - The bio-retention pond include an earth berm with crest protect with stone pitching and vegetation will be put in place to promote sheet flow into the wetland
- Electricity
  - The proposed development will require approximately 3639 kVA electrical capacity.
  - Preliminary information suggests that the township will be supplied by Eskom from the existing 86 KV Dalkeith Substation from the 11kV Kromdraai feeder line which is adjacent to the property. The substation and line both have spare capacity.
  - Internal services will consist of an 11KV underground cable supplying miniature substations.

- Roads and access
  - A Traffic Impact Assessment has been undertaken to better understand the traffic impact of the development as well as to identify the necessary road upgrades required by the proposed development. Based on the outcomes of the study, the following roads will be required:
    - Road A The construction of a new Class 5a (commercial local) road – 7.4m wide in a 20m road reserve (Already approved)
    - Road B The construction of a new Class 4a (commercial collector) road – 7.4m wide in a 25m road reserve (with the proposal only a small stretch of the road adjacent to the southern boundary of the site is required).
  - In addition, the following intersection improvements are required and will be undertaken as part of the Beyers Naude Road Upgrade:
    - Intersection 4: Valley Road – Ibis Lane / Beyers Naude Drive
    - Intersection 7: Boland Road – Indaba Lane / Beyers Naude Drive
    - Intersection 8: Planned K56 / Beyers Naude Drive
    - Intersection 9: Road B / Beyers Naude Drive
    - Intersection 11: Road B / Road A

Two types of alternatives were assessed:

- Sewer line alternatives (i.e. how the development will manage and connect to existing infrastructure); and
- Layout alternatives (with particular focus on the FAR of the development).

In terms of the sewer pipelines, the proposal involves the development of approximately 1.3km of 160mm and 200mm diameter pipeline which travels within the property and crosses the buffer slightly before exiting the property to the north, and then crossing the wetland and wetland buffer before entering the wetland area to connect to the existing line. In contrast with the alternative, the proposal limits the impact to the wetland as for most of its length it occurs outside the delineated wetland. This reduces impacts to wetland interflows. It also reduces potential water quality issues. Lastly, the proposal does not encroach on the ESA whilst the alternative does. The proposal therefore reduces the impact to the ESA area.

In terms of the layout alternatives, the proposal has a FAR of 0.4 which results in a lower square meter usage of the site. This was taken into account by the Traffic Impact Assessment which found that based on the amended FAR of 0.4 (Proposed Layout), the Morning (AM) Peak Hour was expected to be 519 (313 in / 206 out) and Afternoon (PM) Peak Hour 1,352 (664 in / 687 out). In order to cater for this, construction of only small section of Road B would be required (along the southern boundary of the application site, terminating at the western corner). No road would therefore be developed within the wetland or wetland buffer, the ESA or Zone 3 of the GPEMF. It also reduces the impact to adjacent landowners as the full extent of Road B would have resulted in impacts to existing outbuilding and irrigated fields. The proposed layout is therefore preferred.

Based on the findings of the specialist studies and impact assessment and taking into account the successful implementation of the EMP, it is felt that the following be authorised:

- Proposed Sewer Line; and
- Proposed Layout (FAR = 0.4)

The reasons for this opinion are discussed in more detail in the following subsections:

### **1. Need for the Project**

The proposed development is a mixed-use development which includes Business 1 and Commercial uses. This is in line with the Muldersdrift Precinct Plan (Mogale City Local Municipality, 2011) as it falls within the mixed use zone area. The mixed land use district will invest in and strengthen existing communities and achieve more balanced regional development and facilitate the provision of a variety of transportation choices.

The development is located adjacent to Beyers Naude Drive which is a major arterial and will allow access to necessary transportation to and from work for employees. This is in line with the Transit Oriented Development (TOD) Principles. This is especially pertinent in that there are current and future residential components planned in the area and thus there will be a demand for business orientated land uses that can provide for the needs of these communities. For this reason, abundant office space is required for in the proposed township.

In addition, from a town planning point of view and in terms of good urban design it is desirable to have mixture of use along Beyers Naude Drive not only to buffer the existing agricultural holdings and farm portions but to support other residential neighbourhoods both existing and upcoming also to grow certain areas where the need for alternative land use is wanted. The site is also currently vacant and



degraded and thus development in line with the Local Municipalities plans for the area will be beneficial and allow the full potential of the area to be met.

Lastly the proposed development will provide numerous economic benefits. Firstly, during construction, there will be a direct CAPEX of R15 million. Secondly, 150 construction related employment opportunities will be created. During operation, 100 permanent positions will be created. This will also have a number of economic multiplier effects for the local economy.

## 2. Sensitivity

Three Specialist Studies were undertaken to better understand the environmental sensitivities on site. These include a Wetland Assessment, Baseline Ecological Habitat Assessment and Heritage Impact Assessment.

The Wetland Assessment noted that the development site is not directly affected by the wetland (GG98\_UCVB – Unchanneled Valley Bottom Wetland), but the wetland buffer encroaches slightly onto the development site on the western boundary. Furthermore, the infrastructure installations and connections to the external services will impact on this wetland. In terms of the status of the wetland, the study noted that the wetland had a moderate Present Ecological State (PES) as the wetland was found to moderately modified. The Ecological Importance and Sensitivity (EIS) also fell in the moderate range and has some functionality in respect of bio-diversity conservation. The Recommended Ecological Category (REC) for the wetlands were categorised as moderate. The wetland will be impacted to some extent by the proposed development activities. This impact will be localised and at the transitional point leading from the development and infrastructure installations into the wetland and buffer area. It will in all likelihood regress slightly in terms of its current Ecological Category if not managed in specific during the construction period. Stormwater management for the site is required in specific the construction phase. This will mitigate the impact on the wetlands. Rehabilitation of the impacts and maintenance of the system will further mitigate the impacts and could improve the sustainability of the system.

A Baseline Ecological Status Assessment was also undertaken and found two main habitat types including the wetland with associated 32m buffer; and secondary vegetation with scattered patches of alien invasive plant species. The habitats identified were identified as having a medium to low sensitivity. The development footprint falls within the disturbed area which is not representative of Egoli Granite Grassland. In terms of species of conservation concern (SCC), two SCC were identified on site, namely *Hypoxis hemerocallidea* and *Boophone disticha*. Whilst these species are classified as “Least Concern” in terms of Red Data List, GDARD has confirmed that they should be considered as “Orange List” species in Gauteng due to provincial level pressures. Therefore, in order to mitigate impacts to these species, a Search and Rescue and Relocation Plan has been devised and included in Appendix E of the Baseline Ecological Assessment. Impacts to these species are expected to be low with the implementation of the necessary mitigation. The study therefore concluded that the proposed development is unlikely to have a high impact on the study site due to the disturbed nature of the site. All recommendations and mitigation measures, with regards to the fauna and flora on site, should be well managed pre -, during and post of the construction activities. A number of mitigation measures were recommended and have been included in the EMPr.

The Heritage Impact Assessment noted that the impact of the proposed project on heritage resources is considered low. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- Heritage walk down of all linear developments prior to development;
- Confirmation of any burial sites within the study area during the public participation process;
- Implementation of a chance find procedure as outlined below.

From a technical perspective, a Traffic Impact Assessment was also undertaken and had important implications. The study found that based on the amended FAR of 0.4 (Proposed Layout), the Morning (AM) Peak Hour was expected to be 519 (313 in / 206 out) and Afternoon (PM) Peak Hour 1,352 (664 in / 687 out). In order to cater for this, construction of only small section of Road B would be required (along the southern boundary of the application site, terminating at the western corner). No road would therefore be developed within the wetland or wetland buffer, the ESA or Zone 3 of the GPEMF. It was also reduces the impact to private adjacent properties.

Figure 43 provides an overview of overall sensitivity of the study area and is included in the EMPr. This will ensure that the contractor is aware of sensitive environmental and social features in the area. The following should be noted:

- **Wetlands and 32m wetland buffer**– this area must be demarcated and only construction related to authorized infrastructure can occur within this area. Due to the fact that Wetland achieved a Moderate overall Present Ecological State (PES), and a moderate Ecological Importance and Sensitivity (EIS) score, The sensitivity is given as **Low-Medium** for the 32m buffer and **Medium** for the wetland area.
- A Baseline Ecological Habitat Assessment was undertaken. From a desktop perspective, the proposed development occurs within the Egoli Granite Grassland (Endangered) vegetation type. According to the Gauteng Conservation Plan, the proposed sewer line and Road A and B (as part of the alternative layout only), traverses a small section of an Ecological Support Area (ESA) and Zone 3 of the GPEMF. The site was actively surveyed to determine the current status of the habitats on site. Two main habitat types were identified within the study site, namely:
  - Wetland with associated 32m buffer (**Medium**); and
  - Secondary vegetation with scattered patches of alien invasive plant species (**Low**).
- It should however be noted that two SCC were identified on site, namely *Hypoxis hemerocallidea* and *Boophone disticha*. Whilst these species are classified as “Least Concern” in terms of Red Data List, GDARD has confirmed that they should be considered as “Orange List” species in Gauteng due to provincial level pressures. Therefore, in order to mitigate impacts to these species, a Search and Rescue and Relocation Plan has been devised and included in Appendix E of the Baseline Ecological Assessment.
- All adjacent properties to Portion 260 must be viewed as sensitive and contractors must be ensure access has been granted prior to entering any private properties. All noise, dust and security measures must be implemented as per the EMPr.

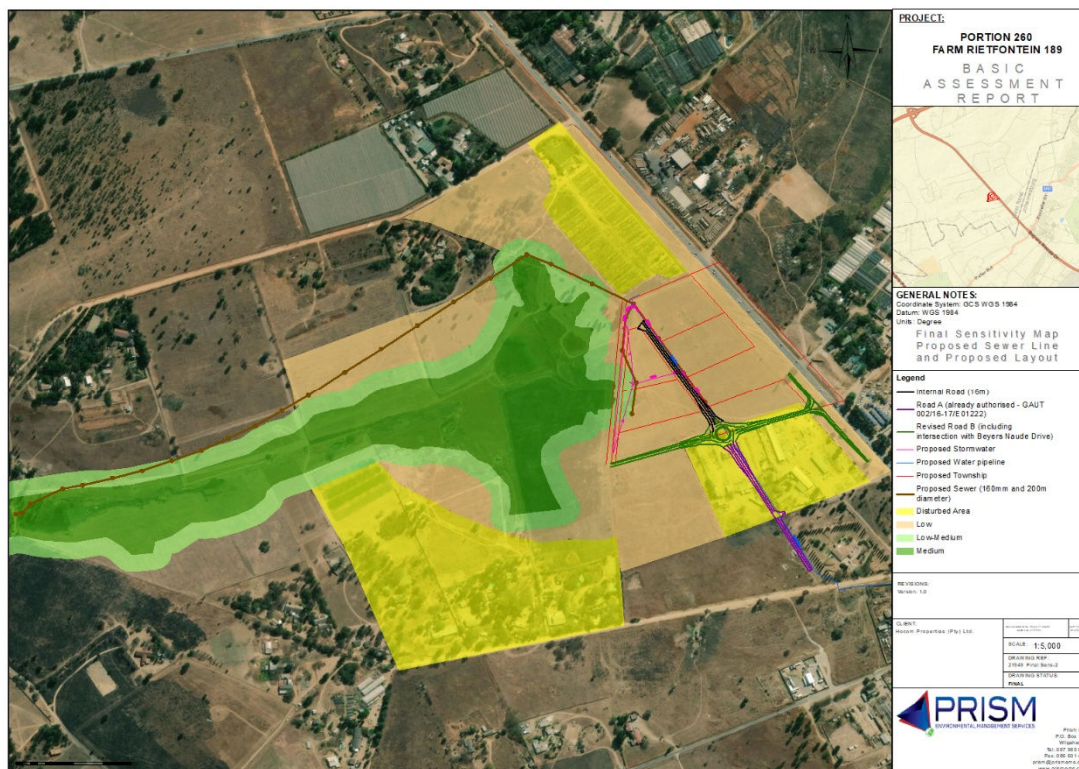


Figure 43: Final Sensitivity Map

### 3. Impact Assessment

A detailed impact assessment has been undertaken and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (Appendix I). Most impacts have a low significance once mitigation measures were applied (please see Table 17 and Table 18 below for the impact summary for the proposed sewer line and proposed layout). The following can be noted:

- During construction, dust emissions and emissions from vehicles will occur but will be of a low significance. A number of mitigation measures will be implemented and will further reduce the intensity of these impacts. During operation, no dust emissions are expected. Vehicle emissions will however occur but can be reduced to a low significance

- Noise impacts will occur throughout construction and operation but will be of a low significance. Mitigation measures will further reduce the significance of this impact.
- The proposed development occurs within close proximity (although only the wetland buffer occurs within the main development footprint. Service infrastructure however will cross the wetland and associated 32m buffer. In terms of impacts, with the proposal, during construction, impacts to water quality, flow, habitat, biota and geomorphology were assessed to be of a low to low-medium significance prior to mitigation and a low significance, with the implementation of necessary mitigation measures including strict adherence to the delineated wetland and buffer other than authorised activities as well as the rehabilitation of the wetland as recommended by the Wetland Specialist. During operation, the impacts were assessed to be of low significance and the implementation of a proper stormwater management plan will ensure reduced impacts. In all cases, the proposed sewer line reduces the impact to the wetland as it limits the length of the sewer line within the wetland buffer. In addition, the proposed layout also reduces the impact to the wetland as it requires only a small section of Road B to be developed. Therefore, no wetland crossings for the Road B are required.
- Waste in the form of domestic waste, hazardous waste and construction waste will be generated. However, the impacts related to this can be mitigated to 'low' with the implementation of a number of mitigation measures. During operation, domestic waste will be generated but will be collected into the municipal waste stream. Impacts related to waste generation can be mitigated to a low significance.
- Whist, soil alteration impacts such as loss of topsoil, loss of land capability, alteration of topography, soil erosion and soil pollution will occur and have a medium to low significance before mitigation, these are not felt to be significant due to the currently degraded nature of the site. Where possible, mitigation measures have been suggested to reduce the significance of the impacts to low-medium/low. Impacts are not applicable during operation. During the public review of the BAR, I&APs raised concerns regarding the impact of the development of sheep grazing and irrigated fields. In order to mitigate the impact of Road B (which would have traversed irrigated fields and sheep grazing land), the proposed layout was developed with a FAR of 0.4. This reduces traffic impact and thus only a small section of Road B is required. This Road section does not impact on any irrigated lands or grazing area and thus reduces the impact to these areas.
- In terms of resource consumption, some electricity usage is expected during construction. Further, in terms of water consumption, fuel consumption and raw material consumption, impacts can be considered to be of a low significance. During operation, electricity, fuel and raw material consumption will take place but will be of a low-medium to low significance after mitigation.
- Impacts related to effects on biodiversity were also assessed. These included loss of habitat (including loss of sensitive vegetation such as *Hypoxis* sp. and *Boophone* sp.), direct mortality of fauna, disruption of ecological life cycles due to the restriction of species movement, degradation of ecological systems and the Introduction of alien flora affecting native faunal assemblages. Based on the Ecological Baseline and Impact Assessment which found that the study site was disturbed, the significance of these impacts was found to be low to low-medium after mitigation. A number of mitigation measures have been included in the EMPr. Importantly, Search, Rescue and Relocation of SCC (*Hypoxis* and *Boophone* species) must be implemented to reduce impacts to sensitive species. During operation, impacts relate to loss of habitat due to stochastic events like fire, loss of fauna due to intentional killing and disruption of ecological life cycles due to restriction of species movement. These impacts were assessed to be low after mitigation. It should be noted that with the proposed sewer line, the sewer line does not encroach on the ESA and thus impacts to this area are reduced. From a biodiversity perspective, the proposed sewer line is therefore preferred. Similarly, the proposed layout is also preferred as it reduces the impact of the development on the ESA due to the fact that the full extent of Road B is not required.
- Potential impacts related to pollution incidents, health and safety, storage of hydrocarbons and fire may occur during construction and operation but can be mitigated through the implementation of the site specific EMPr and will thus have a low significance.
- During construction, the main social impacts will be visual impacts, safety and security, traffic disruptions, loss and loss of sense of place. All these impacts can be successfully mitigated to a low significance. A **positive** impact related to the change of land use is expected as currently the site is degraded. Further, the development of the site will further the objectives of the Muldersdift Precinct Plan. During operation, there will be a positive impact related to safety and security as the development of the site is expected to improve safety in the area. All other impacts can be mitigated to a low significance.
- During construction and operation, a number of **positive** economic impacts will occur relating to an increase in economy and increased employment. These have a medium level of significance after mitigation. In addition, during the public review of the BAR, I&APs raised concerns regarding the impact of the development of existing infrastructure and the farming economy of the area. This impact was assessed to have a low significance for the proposed layout and the proposed sewer line. This was due to the fact that main impact

related to the development of Road B which would traverse existing buildings, irrigated fields and grazing land. In order to mitigate the impact of Road B, the proposed layout was developed with a FAR of 0.4. This reduces traffic impact and thus only a small section of Road B is required. This Road section does not impact on any irrigated lands or grazing area and thus reduces the impact to these areas. The impact could thus be satisfactorily mitigated.

Based on the impact assessment undertaken as well as the findings of the specialist studies and the need for the project, it is the opinion of the EAP, that the impacts related to the proposed development can be satisfactorily mitigated the following be authorised:

- Proposed Sewer Line; and
- Proposed Layout (FAR = 0.4)

#### **Alternative 1**

Two types of alternatives were assessed:

- Sewer line alternatives (i.e. how the development will manage and connect to existing infrastructure); and
- Layout alternatives (with particular focus on the FAR of the development).

In terms of the sewer pipeline, the sewer pipeline alternative traverses a large portion of the wetland and therefore has a greater impact on interflows. It also increases the potential for spills within the wetland habitat. Lastly, it results in a greater area of wetland habitat being cleared for the construction of the sewer line. From an environmental perspective, this alternative is therefore not recommended.

In terms of the layout alternatives, the alternative layout has a FAR of 0.8 which increases the square meter usage of the site. This was taken into account initially by the Traffic Impact Assessment which found that based on the FAR of 0.8 (Alternative Layout 1), the expected trip generation of the application was ±965 vehicle trips during the weekday morning (AM) peak hour and ±2,293 vehicle trips during the weekday afternoon (PM) peak hour (based on COTO TMH 17, the South African Trip Data Manual). The study noted that in order to cater for this, construction of the full length of Road B (from Beyers Naude Drive, along the southern boundary and then west and north to connect to the K56) would be required. This would result in two wetland crossings as well as additional impacts to the SA and Zone 3 of the GPEMF. It also increases the impact to adjacent landowners as the full extent of Road B will in impacts to existing outbuilding and irrigated fields. The alternative layout is therefore **not preferred**.

#### **1. Need for the Project**

The need for both alternatives is the same and thus the full discussion provided above is not repeated here. In summary, the development is in line with the objectives of the Muldersdrift Precinct Plan. It will also have a positive economic effect in the area through the direct CAPEX of R15 million. In addition, 150 construction related employment opportunities will be created. During operation, 100 permanent positions will also be created. This will also have a number of economic multiplier effects for the local economy.

#### **2. Sensitivity**

As mentioned in the previous Impact Statement, a Wetland Assessment, Baseline Ecological Habitat assessment and Heritage Impact Assessment were undertaken and found that the site was disturbed by previous activities. A number of mitigation measures were recommended and have been included in the EMP.

#### **3. Impact Assessment**

A detailed impact assessment has been undertaken for Alternative 1 and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (**Appendix I**). Based on the impact assessment, neither the alternative sewer pipeline nor the alternative layout (FAR = 0.8) is **not preferred** for the following reason:

- Sewer pipeline alternative
  - The sewer pipeline traverses a large portion of the wetland and therefore has a greater impact on interflows.
  - It also increases the potential for spills within the wetland habitat.
  - It results in a greater area of wetland habitat being cleared for the construction of the sewer line.
  - Lastly, it encroaches on the ESA and Zone 3 of the GPEMF area.
- Layout Alternative (FAR = 0.8)
  - With the increased FAR, there is a greater traffic impact. In order to cater for this, the full extent of Road B would be required.

- This will have a larger impact on the wetland and wetland buffer as a wetland crossing would be required.
- In addition, this would increase the impact on the ESA and Zone 3 of the GPEMF and thus has a larger impact on more sensitive areas (although the ecological study did note that the site is degraded).
- Lastly, it reduces the impact on the adjacent landowners (especially existing outbuildings, irrigated land and grazing).

Therefore, from an environmental perspective, both alternatives are therefore not recommended

Please see **Table 10** below for the impact summary for Alternative 1.

Based on the impact assessment undertaken as well as the findings of the specialist studies, it is the opinion of the EAP, that Alternative 1 **NOT BE AUTHORISED.**

No-go (compulsory)

The No-Go option involves the option of not developing Portion 260 of the Farm Rietfontein 189 IQ for Business 1 and Commercial Uses. None of the associated roads and services would be developed. Instead the site will remain vacant and its current degraded and disturbed state.

#### **1. Need for the Project**

Should the No-go Option be selected, the objectives of Muldersdrift Precinct Plan will not be met on the specific property. Further, there will be a loss of positive benefits associated with the development including the general improvement of the area and increases in the local economy. Therefore, from a needs perspective, the No-go option is **NOT** preferred.

#### **2. Impact Assessment**

A detailed impact assessment has been undertaken for No-Go Alternative and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (**Appendix I**).

Based on the impact assessment, the no-go option is **not preferred** for a number of reasons.

- Firstly, and most importantly, the no-go option will result in a loss of the social and economic benefits associated with the proposed development. This **cannot be mitigated to a satisfactory level.**
- Secondly, as the site is vacant and degraded, the option of not developing the site does not result in a significant positive effect in terms of biodiversity or conservation as the site is already disturbed. In addition, with the continuation of current degradation and impacts, the site would remain degraded and there would also be additional safety and security impacts. This would have additional effects on fire safety, property value, soil erosion etc.

Based on the impact assessment undertaken as well as the need for the project, it is the opinion of the EAP, that the No-Go Option **NOT BE AUTHORISED.**

## 6. Impact Summary of the Proposal or Preferred Alternative

### Comparative Assessment based on Receiving Environment and Impact Assessment

Due to the fact that the BAR now assesses 2 different types of alternatives, the following section has been added as a summary and aims to provide a comparative analysis of the alternatives based on the receiving environment and impact assessment (Section E2 above). The aim of this comparative assessment is to identify the Best Practicable Environmental Option (BPEO). Münster (2005) defines BPEO as the alternative that “provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term”.

**Table 14** provides the comparative analysis of layout alternatives and shows that the proposed layout is preferred as it will allow for simplified access and reduced impact to the wetland, ESA and zone 3 of the GPMEF.

**Table 14: Comparative Analysis Between Layout Alternatives (black shaded blocks show preference, if any)**


	<u>Proposed Layout</u>	<u>Layout Alternative</u>	<u>Reason</u>
<u>Atmospheric Emissions</u>	<i>No preference</i>		<ul style="list-style-type: none"> <li>In terms of dust and vehicle and equipment emissions, there is no difference between the two layout alternatives.</li> </ul>
<u>Noise</u>	<i>No preference</i>		<ul style="list-style-type: none"> <li>Both alternatives involve the construction of a boundary wall which will reduce noise pollution.</li> </ul>
<u>Surface Water</u>	✓	X	<ul style="list-style-type: none"> <li>The Proposed Layout has a FAR of 0.4. and thus reduces the traffic impact. This in turn reduces the required extent of Road B. As only a small section of Road B is required, no wetland crossings will be necessary. This greatly reduces the impact to the wetland and associated buffer area.</li> </ul>
<u>Waste Generation</u>	<i>No preference</i>		<ul style="list-style-type: none"> <li>Both alternatives will result in waste being generated. As such, there is no difference between alternatives.</li> </ul>
<u>Soil Alteration</u>	✓	X	<ul style="list-style-type: none"> <li>During the public review of the BAR, I&amp;APs raised concerns regarding the impact of the development of sheep grazing and irrigated fields. In order to mitigate the impact of Road B (which would have traversed irrigated fields and sheep grazing land), the proposed layout was developed with a FAR of 0.4. This reduces traffic impact and thus only a small section of Road B is required. This Road section does not impact on any irrigated lands or grazing area and thus reduces the impact to these areas. It is therefore preferred from this perspective.</li> </ul>

<u>Resource Consumption</u>	<i>No preference</i>	<ul style="list-style-type: none"> <li>Both alternatives require resources. There is therefore no preference.</li> </ul>	
<u>Effects on Biodiversity</u>	✓	X	<ul style="list-style-type: none"> <li>The Proposed Layout has a FAR of 0.4. and thus reduces the traffic impact. This in turn reduces the required extent of Road B. As only a small section of Road B is required, there will be no impact on the ESA or Zone 3 of the GPEMF. This greatly reduces the impact in terms of biodiversity of the area.</li> </ul>
<u>Incidents and Accidents</u>	<i>No preference</i>		<ul style="list-style-type: none"> <li>Both alternatives are similar and will have similar impacts related to incidents and accidents.</li> </ul>
<u>Social</u>	<i>No preference</i>		<ul style="list-style-type: none"> <li>Both alternatives are similar and will have similar impacts.</li> </ul>
<u>Economic</u>	✓	X	<ul style="list-style-type: none"> <li>The Proposed Layout has a FAR of 0.4. and thus reduces the traffic impact. This in turn reduces the required extent of Road B. As only a small section of Road B is required, there is a reduced impact on adjacent landowners and their property and livestock.</li> </ul>

**Table 15** provides the comparative analysis of the stormwater layout options. The Proposed Stormwater Layout is preferred. Preliminary discussions with the wetland specialist indicated that a long, thin attenuation pond which runs alongside the existing wetland and has multiple release points would be most environmentally sound and would mimic the wetland conditions existing on site. In line with this, the engineers have designed a proposed attenuation pond alongside the wetland. Further, as part of the development of the SWMP, the Proposal (Attenuation along the Wetland) has been further designed to ensure that it is practicable and will meet the requirements of the City of Johannesburg. To the end, additional attenuation is provided as part of the sports field, and on the eastern side of the wetland.

**Table 15: Comparative Analysis Between Sewer Pipeline Routes**

	<u>Proposed Sewer Pipeline</u>	<u>Alternative Sewer Pipeline</u>	<u>Reason</u>
<u>Atmospheric Emissions</u>	<i>No preference</i>		<ul style="list-style-type: none"> <li>In terms of dust and vehicle and equipment emissions, there is no difference between the two sewer pipeline alternatives.</li> </ul>
<u>Noise</u>	<i>No preference</i>		<ul style="list-style-type: none"> <li>The Sewer pipeline alternatives do not impact noise generation and thus there is no difference between the two alternatives.</li> </ul>
<u>Surface Water</u>	✓	X	<ul style="list-style-type: none"> <li>The proposed sewer pipeline is preferred from a surface water perspective as it is located as far as possible outside the wetland and wetland buffer. It therefore reduces the impact to wetland interflows and potential water quality issues are also reduced.</li> </ul>

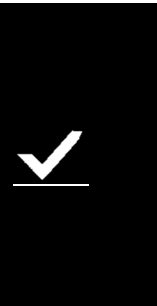

<u>Waste Generation</u>	<u>No preference</u>	<ul style="list-style-type: none"> <li>Sewer pipeline alternatives do not impact waste generation and thus there is no difference between the two alternatives.</li> </ul>
<u>Soil Alteration</u>	<u>No preference</u>	<ul style="list-style-type: none"> <li>Both alternatives will result in soil alteration.</li> </ul>
<u>Resource Consumption</u>	<u>No preference</u>	<ul style="list-style-type: none"> <li>Sewer pipeline alternatives do not impact resource consumption and thus there is no difference between the two alternatives.</li> </ul>
<u>Effects on Biodiversity</u>	 X	<ul style="list-style-type: none"> <li>The proposed sewer pipeline is preferred from a biodiversity perspective as it is located as far as possible outside the wetland and wetland buffer. It therefore reduces the impact to the ESA and Zone 3 of the GPEMF..</li> </ul>
<u>Incidents and Accidents</u>	<u>No preference</u>	<ul style="list-style-type: none"> <li>The Sewer pipeline alternatives do not impact Incidents and Accidents and thus there is no difference between the two alternatives.</li> </ul>
<u>Social</u>	<u>No preference</u>	<ul style="list-style-type: none"> <li>The sewer pipeline alternatives do not impact Social aspects and thus there is no difference between the two alternatives.</li> </ul>
<u>Economic</u>	<u>No preference</u>	<ul style="list-style-type: none"> <li>The sewer pipeline alternatives do not impact Economic aspects and thus there is no difference between the two alternatives.</li> </ul>

**Input from Specialist Studies**

Specialist studies are an important aspect of the BAR process. In the case of the proposed development of Portion 260 of the Farm Rietfontein 189, specialists had numerous requirements for the proposed development. The two sets of alternatives are assessed in terms of how well they meet these requirements in **Table 16** below. Both environmental and technical specialist inputs are included. Based on general requirements from the specialists that have been interpreted by the EAP in light of the alternatives, the following are preferred:

- Proposed Layout; and
- Proposed Stormwater Layout.

**Table 16: Comparative Analysis Between Alternatives taking into account Specialist Requirements (black shaded blocks show preference, if any)**

	<u>Specialist Study Requirements</u>	<u>Proposed Layout</u>	<u>Layout Alternative</u>	<u>Proposed Sewer</u>	<u>Alternative Sewer</u>
<u>Ecological Baseline Habitat Assessment</u>	<ul style="list-style-type: none"> <li>A number of mitigation measures recommended and included in the EMPr.</li> <li>Due to the limited impact on the wetland and the ESA, the proposed layout</li> </ul>		X		X



	and proposed sewer line would be preferred.				
<u>Wetland Assessment</u>	<ul style="list-style-type: none"> <li>Wetland and 32m buffer to preserved.</li> <li>Due to the limited impact on the wetland and the ESA, the proposed layout and proposed sewer line would be preferred.</li> </ul>	✓	X	✓	X
<u>Heritage Impact Assessment</u>	<ul style="list-style-type: none"> <li>A number of mitigation measures recommended and included in the EMP.</li> </ul>	<i>No preference</i>			
<u>Aquatic Resources Monitoring Program and Auditing Plan</u>	<ul style="list-style-type: none"> <li>Monitoring to be undertaken.</li> </ul>	<i>No preference</i>			
<u>Aquatic Resources Rehabilitation Plan</u>	<ul style="list-style-type: none"> <li>A number of requirements for Rehabilitation to be undertaken.</li> </ul>	<i>No preference</i>			
<u>Outline Scheme Report</u>	<ul style="list-style-type: none"> <li>Additional service connections and crossings would be required.</li> <li>OSR has been developed in line with the wetland specialist's recommendation as well as based on the comments raised by I&amp;APs regarding the concerns of Road B on private property. Thus it includes the proposed layout and proposed sewer line.</li> </ul>	✓	X	✓	X
<u>Stormwater Management Plan</u>	<ul style="list-style-type: none"> <li>Stormwater management in line with SUDS requirements</li> </ul>	<i>No preference</i>			
<u>Geotechnical Assessment</u>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<i>No preference</i>			
<u>Traffic Impact Assessment</u>	<ul style="list-style-type: none"> <li>Traffic Impact Assessment has been updated based on the comments raised by I&amp;APs regarding the concerns of Road B on private property.</li> </ul>	✓	X	<i>No preference</i>	

	<u>Thus it includes the proposed layout which results in only a small section of Road B being required.</u>		
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Please refer to the impact summaries below for each alternative.

For proposal:

Please see **Table 17** for a summary of the impact assessment undertaken in terms of the proposed sewer line. In general, most negative impacts from both construction and operation could be mitigated to a low or low-medium significance with the implementation of the proposed mitigation measures which are included in the EMPr. Further, numerous social and economic benefits are related to proposal which have a medium to medium-high significance. **For this reason, the Proposal is preferred.**

**Table 17: Impact Summary for the Proposed Sewer Line**

Impacts	Comment
<b>Atmospheric Emissions</b>	During construction, dust emissions and emissions from vehicles will occur but will be of a low significance. A number of mitigation measures will be implemented and will further reduce the intensity of these impacts. During operation, no dust emissions are expected. Vehicle emissions will however occur but can be reduced to a low significance
<b>Noise</b>	Noise impacts will occur throughout construction and operation (to a lesser extent) but will be of a low significance. Mitigation measures will further reduce the significance of this impact.
<b>Impacts to Wetlands</b>	The proposed development occurs within close proximity (although only the wetland buffer occurs within the main development footprint. Service infrastructure however will cross the wetland and associated 32m buffer. In terms of impacts, with the proposal, during construction, impacts to water quality, flow, habitat, biota and geomorphology were assessed to be of a low to low-medium significance prior to mitigation and a low significance, with the implementation of necessary mitigation measures including strict adherence to the delineated wetland and buffer other than authorised activities as well as the rehabilitation of the wetland as recommended by the Wetland Specialist. During operation, the impacts were assessed to be of low significance and the implementation of a proper stormwater management plan will ensure reduced impacts. In all cases, the proposal reduces the impact to the wetland as it limits the length of the sewer line within the wetland buffer.
<b>Waste Generation</b>	Waste in the form of domestic waste, hazardous waste and construction waste will be generated. However, the impacts related to this can be mitigated to 'low' with the implementation of a number of mitigation measures. During operation, domestic waste will be generated but will be collected and enter the municipal waste stream. Impacts related to waste generation can be mitigated to a low significance.
<b>Soil Alteration</b>	Whist, soil alteration impacts such as loss of topsoil, loss of land capability, alteration of topography, soil erosion and soil pollution will occur and have a medium to low significance before mitigation, these are not felt to be significant due to the currently degraded nature of the site. Where possible, mitigation measures have been suggested to reduce the significance of the impacts to low-medium/low. Impacts are not applicable during operation.
<b>Resource Consumption</b>	In terms of resource consumption, no electricity usage is expected during construction. Further, in terms of water consumption, fuel consumption and raw material consumption, impacts can be considered to be of a low significance. During operation, electricity, fuel and raw material consumption will take place but will be of a low-medium to low significance after mitigation.
<b>Effects on Biodiversity</b>	Impacts related to effects on biodiversity were also assessed. These included loss of habitat (including loss of sensitive vegetation such as Hypoxis sp. and Boophone sp.), direct mortality of fauna, disruption of ecological life cycles due to the restriction of species movement, degradation of ecological systems and the Introduction of alien flora affecting native faunal assemblages. Based on the Ecological Baseline and Impact Assessment which found that the study site was disturbed, the significance of these impacts was found to be low to low-medium after mitigation. A number of mitigation measures have been included in the EMPr. Importantly, Search, Rescue and Relocation of SCC (Hypoxis and Boophone species) must be implemented to reduce impacts to sensitive species. During operation, impacts relate to loss of habitat due to stochastic events like fire, loss of fauna due to intentional killing and disruption of ecological life cycles due to restriction of species movement. These impacts were assessed to be low after mitigation. It should be noted that whilst the development of the Road B traverses C-Plan area, this area is degraded and is no longer sensitive. Furthermore, with the proposal, the sewer line does not encroach on the ESA and thus impacts to this area are reduced. From a biodiversity perspective, the proposal is therefore preferred.

<b>Incidents, accidents and potential emergency situations</b>	Potential impacts related to pollution incidents, health and safety, storage of hydrocarbons and fire may occur during construction and operation but can be mitigated through the implementation of the site specific EMPr and will thus have a low significance.
<b>Social</b>	During construction, the main social impacts will be visual impacts, safety and security, traffic disruptions, loss and loss of sense of place. All these impacts can be successfully mitigated to a low significance. A positive impact related to the change of land use is expected as currently the site is degraded. Further, the development of the site will further the objectives of Muldersdrift Precinct Plan. During operation, there will be a positive impact related to safety and security as the development of the site is expected to improve safety in the area. All other impacts can be mitigated to a low significance.
<b>Economic</b>	During construction and operation, a number of positive economic impacts will occur relating to an increase in economy and increased employment. These have a (positive) medium level of significance after mitigation.

Please see **Table 18** for a summary of the impact assessment undertaken in terms of the proposed layout. In general, most negative impacts from both construction and operation could be mitigated to a low or low-medium significance with the implementation of the proposed mitigation measures which are included in the EMPr. Further, numerous social and economic benefits are related to proposal which have a medium to medium-high significance. **For this reason, the Proposal is preferred.**

**Table 18: Impact Summary for the Proposed Layout**

<b>Impacts</b>	<b>Comment</b>
<b>Atmospheric Emissions</b>	During construction, dust emissions and emissions from vehicles will occur but will be of a low significance. A number of mitigation measures will be implemented and will further reduce the intensity of these impacts. During operation, no dust emissions are expected. Vehicle emissions will however occur but can be reduced to a low significance. There is no difference in significance between layout alternatives.
<b>Noise</b>	Noise impacts will occur throughout construction and operation (to a lesser extent) but will be of a low significance. Mitigation measures will further reduce the significance of this impact. There is no difference in significance between layout alternatives.
<b>Impacts to Wetlands</b>	The proposed development occurs within close proximity (although only the wetland buffer occurs within the main development footprint. Service infrastructure however will cross the wetland and associated 32m buffer. In terms of impacts, with the proposal, during construction, impacts to water quality, flow, habitat, biota and geomorphology were assessed to be of a low to low-medium significance prior to mitigation and a low significance, with the implementation of necessary mitigation measures including strict adherence to the delineated wetland and buffer other than authorised activities as well as the rehabilitation of the wetland as recommended by the Wetland Specialist. During operation, the impacts were assessed to be of low significance and the implementation of a proper stormwater management plan will ensure reduced impacts. The proposed layout reduces the impact to the wetland as it requires only a small section of Road B to be developed. Therefore, no wetland crossings for the Road B are required. The proposed layout is therefore preferred.
<b>Waste Generation</b>	Waste in the form of domestic waste, hazardous waste and construction waste will be generated. However, the impacts related to this can be mitigated to 'low' with the implementation of a number of mitigation measures. During operation, domestic waste will be generated but will be collected and enter the municipal waste stream. Impacts related to waste generation can be mitigated to a low significance. There is no difference in significance between layout alternatives.
<b>Soil Alteration</b>	Whist, soil alteration impacts such as loss of topsoil, loss of land capability, alteration of topography, soil erosion and soil pollution will occur and have a medium to low significance before mitigation, these are not felt to be significant due to the currently degraded nature of the site. Where possible, mitigation measures have been suggested to reduce the significance of the impacts to low-medium/low. Impacts are not applicable during operation. During the public review of the BAR, I&APs raised concerns regarding the impact of the development of sheep grazing and irrigated fields. In order to mitigate the impact of Road B (which would have traversed irrigated fields and sheep grazing land), the proposed layout was developed with a FAR of 0.4. This reduces traffic impact and thus only a small section of Road B is

	required. This Road section does not impact on any irrigated lands or grazing area and thus reduces the impact to these areas.
<b>Resource Consumption</b>	In terms of resource consumption, no electricity usage is expected during construction. Further, in terms of water consumption, fuel consumption and raw material consumption, impacts can be considered to be of a low significance. During operation, electricity, fuel and raw material consumption will take place but will be of a low-medium to low significance after mitigation. There is no difference in significance between layout alternatives.
<b>Effects on Biodiversity</b>	Impacts related to effects on biodiversity were also assessed. These included loss of habitat (including loss of sensitive vegetation such as Hypoxis sp. and Boophone sp.), direct mortality of fauna, disruption of ecological life cycles due to the restriction of species movement, degradation of ecological systems and the Introduction of alien flora affecting native faunal assemblages. Based on the Ecological Baseline and Impact Assessment which found that the study site was disturbed, the significance of these impacts was found to be low to low-medium after mitigation. A number of mitigation measures have been included in the EMPr. Importantly, Search, Rescue and Relocation of SCC (Hypoxis and Boophone species) must be implemented to reduce impacts to sensitive species. During operation, impacts relate to loss of habitat due to stochastic events like fire, loss of fauna due to intentional killing and disruption of ecological life cycles due to restriction of species movement. These impacts were assessed to be low after mitigation. The proposed layout is preferred as it reduces the impact of the development on the ESA due to the fact that the full extent of Road B is not required.
<b>Incidents, accidents and potential emergency situations</b>	Potential impacts related to pollution incidents, health and safety, storage of hydrocarbons and fire may occur during construction and operation but can be mitigated through the implementation of the site specific EMPr and will thus have a low significance.
<b>Social</b>	During construction, the main social impacts will be visual impacts, safety and security, traffic disruptions, loss and loss of sense of place. All these impacts can be successfully mitigated to a low significance. A positive impact related to the change of land use is expected as currently the site is degraded. Further, the development of the site will further the objectives of Muldersdrift Precinct Plan. During operation, there will be a positive impact related to safety and security as the development of the site is expected to improve safety in the area. All other impacts can be mitigated to a low significance.
<b>Economic</b>	During construction and operation, a number of positive economic impacts will occur relating to an increase in economy and increased employment. These have a medium level of significance after mitigation. In addition, during the public review of the BAR, I&APs raised concerns regarding the impact of the development of existing infrastructure and the farming economy of the area. This impact was assessed to have a low significance for the proposed layout and the proposed sewer line. This was due to the fact that main impact related to the development of Road B which would traverse existing buildings, irrigated fields and grazing land. In order to mitigate the impact of Road B, the proposed layout was developed with a FAR of 0.4. This reduces traffic impact and thus only a small section of Road B is required. This Road section does not impact on any irrigated lands or grazing area and thus reduces the impact to these areas. The impact could thus be satisfactorily mitigated.

For alternative:

A detailed impact assessment has been undertaken for Alternative Sewer Line and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (Appendix I). For the most part, the impacts for both the proposal and the alternative are the same, However, based on the impact assessment, Alternative Sewer Line is not preferred for a number of reasons:

- The sewer pipeline traverses a large portion of the wetland and therefore has a greater impact on interflows.
- It also increases the potential for spills within the wetland habitat.
- It results in a greater area of wetland habitat being cleared for the construction of the sewer line.
- Lastly, it encroaches on the ESA area.

Therefore, from an environmental perspective, the alternative is not preferred.

Table 19 below provides a summary of the impacts assessed.

**Table 19: Impact Summary for Sewer Pipeline Alternative**

Impacts	Comment
<b>Atmospheric Emissions</b>	During construction, dust emissions and emissions from vehicles will occur but will be of a low significance. A number of mitigation measures will be implemented and will further reduce the intensity of these impacts. During operation, no dust emissions are expected. Vehicle emissions will however occur but can be reduced to a low significance
<b>Noise</b>	Noise impacts will occur throughout construction and operation (to a lesser extent) but will be of a low significance. Mitigation measures will further reduce the significance of this impact.
<b>Impacts to Wetlands</b>	<p>The proposed development occurs within close proximity (although only the wetland buffer occurs within the main development footprint). Service infrastructure however will cross the wetland and associated 32m buffer. With the alternative, in particular, there is a greater impact on the wetland as the sewer pipeline occurs mostly in the delineated wetland area. In terms of impacts, with the alternative, during construction, impacts to water quality, flow, habitat, biota and geomorphology were assessed to be of a low-medium to medium significance prior to mitigation and a low to low medium significance, with the implementation of necessary mitigation measures. During operation, the impacts were assessed to be of low significance and the implementation of a proper stormwater management plan will ensure reduced impacts.</p> <p><b>However, the alternative is not preferred as the sewer pipeline traverses a large portion of the wetland and therefore has a greater impact on interflows. It also increases the potential for spills within the wetland habitat. Lastly, it results in a greater area of wetland habitat being cleared for the construction of the sewer line. From an environmental perspective, this alternative is therefore not recommended.</b></p>
<b>Waste Generation</b>	Waste in the form of domestic waste, hazardous waste and construction waste will be generated. However, the impacts related to this can be mitigated to 'low' with the implementation of a number of mitigation measures. During operation, domestic waste will be generated but will be collected and enter the municipal waste stream. Impacts related to waste generation can be mitigated to a low significance.
<b>Soil Alteration</b>	Whist, soil alteration impacts such as loss of topsoil, loss of land capability, alteration of topography, soil erosion and soil pollution will occur and have a medium to low significance before mitigation, these are not felt to be significant due to the currently degraded nature of the site. Where possible, mitigation measures have been suggested to reduce the significance of the impacts to low-medium/low. Impacts are not applicable during operation.
<b>Resource Consumption</b>	In terms of resource consumption, no electricity usage is expected during construction. Further, in terms of water consumption, fuel consumption and raw material consumption, impacts can be considered to be of a low significance. During operation, electricity, fuel and raw material consumption will take place but will be of a low-medium to low significance after mitigation.
<b>Effects on Biodiversity</b>	<p>Impacts related to effects on biodiversity were also assessed. These included loss of habitat (including loss of sensitive vegetation such as <i>Hypoxis</i> sp. and <i>Boophone</i> sp.), direct mortality of fauna, disruption of ecological life cycles due to the restriction of species movement, degradation of ecological systems and the Introduction of alien flora affecting native faunal assemblages. Based on the Ecological Baseline and Impact Assessment which found that the study site was disturbed, the significance of these impacts was found to be low to medium -high after mitigation. A number of mitigation measures have been included in the EMPr. Importantly, Search, Rescue and Relocation of SCC (<i>Hypoxis</i> and <i>Boophone</i> species) must be implemented to reduce impacts to sensitive species. However, for the alternative, the sewer line traverses a large portion of the ESA and thus the impact is much greater and cannot be mitigated to the same level as the proposal.</p> <p>During operation, impacts relate to loss of habitat due to stochastic events like fire, loss of fauna due to intentional killing and disruption of ecological life cycles due to</p>

	<p>restriction of species movement. These impacts were assessed to be low after mitigation.</p> <p>Due to the fact that the alternative traverses a larger portion of the sensitive wetland habitat as well as the ESA, it is not preferred from an environmental perspective.</p>
<b>Incidents, accidents and potential emergency situations</b>	Potential impacts related to pollution incidents, health and safety, storage of hydrocarbons and fire may occur during construction and operation but can be mitigated through the implementation of the site specific EMPr and will thus have a low significance.
<b>Social</b>	During construction, the main social impacts will be visual impacts, safety and security, traffic disruptions, loss and loss of sense of place. All these impacts can be successfully mitigated to a low significance. A positive impact related to the change of land use is expected as currently the site is degraded. Further, the development of the site will further the objectives of the GPEMF and Regional SDP. During operation, there will be a positive impact related to safety and security as the development of the site is expected to improve safety in the area. All other impacts can be mitigated to a low significance.
<b>Economic</b>	During construction and operation, a number of positive economic impacts will occur relating to an increase in economy and increased employment. These have a medium level of significance after mitigation.

Please see Table 20 for a summary of the impact assessment undertaken in terms of the alternative layout. In general, most negative impacts from both construction and operation were similar between the proposed and alternative layout except for the following:

- With the increased FAR, there is a greater traffic impact. In order to cater for this, the full extent of Road B would be required.
- This will have a larger impact on the wetland and wetland buffer as a wetland crossing would be required.
- In addition, this would increase the impact on the ESA and Zone 3 of the GPEMF and thus has a larger impact on more sensitive areas (although the ecological study did note that the site is degraded).
- Lastly, it reduces the impact on the adjacent landowners (especially existing outbuildings, irrigated land and grazing).

For this reason, the Alternative **Layout is not recommended.**

**Table 20: Impact Summary for Alternative Layout**

<b>Impacts</b>	<b>Comment</b>
<b>Atmospheric Emissions</b>	<u>During construction, dust emissions and emissions from vehicles will occur but will be of a low significance. A number of mitigation measures will be implemented and will further reduce the intensity of these impacts. During operation, no dust emissions are expected. Vehicle emissions will however occur but can be reduced to a low significance. There is no difference in significance between layout alternatives.</u>
<b>Noise</b>	<u>Noise impacts will occur throughout construction and operation (to a lesser extent) but will be of a low significance. Mitigation measures will further reduce the significance of this impact. There is no difference in significance between layout alternatives.</u>
<b>Impacts to Wetlands</b>	<p><u>The proposed development occurs within close proximity (although only the wetland buffer occurs within the main development footprint. Service infrastructure however will cross the wetland and associated 32m buffer. In terms of impacts, with the proposal, during construction, impacts to water quality, flow, habitat, biota and geomorphology were assessed to have a higher impact than the proposed layout prior to mitigation. During operation, the impacts were also assessed to have a higher significance.</u></p> <p><b><u>The alternative layout is not preferred as due to the increased FAR, it requires the development of Road B though the wetland which would thus result in a larger impact on the wetland.</u></b></p>

<b>Waste Generation</b>	Waste in the form of domestic waste, hazardous waste and construction waste will be generated. However, the impacts related to this can be mitigated to 'low' with the implementation of a number of mitigation measures. During operation, domestic waste will be generated but will be collected and enter the municipal waste stream. Impacts related to waste generation can be mitigated to a low significance. There is no difference in significance between layout alternatives.
<b>Soil Alteration</b>	<p>Whist, soil alteration impacts such as loss of topsoil, loss of land capability, alteration of topography, soil erosion and soil pollution will occur and have a medium to low significance before mitigation, these are not felt to be significant due to the currently degraded nature of the site. Where possible, mitigation measures have been suggested to reduce the significance of the impacts to low-medium/low. Impacts are not applicable during operation.</p> <p><b>The alternative layout is not preferred as due to the increased FAR, it requires the development of Road B. This will impact existing irrigated land and grazing and therefore has a larger impact.</b></p>
<b>Resource Consumption</b>	In terms of resource consumption, no electricity usage is expected during construction. Further, in terms of water consumption, fuel consumption and raw material consumption, impacts can be considered to be of a low significance. During operation, electricity, fuel and raw material consumption will take place but will be of a low-medium to low significance after mitigation. There is no difference in significance between layout alternatives.
<b>Effects on Biodiversity</b>	<p>Impacts related to effects on biodiversity were also assessed. These included loss of habitat (including loss of sensitive vegetation such as Hypoxis sp. and Boophone sp.), direct mortality of fauna, disruption of ecological life cycles due to the restriction of species movement, degradation of ecological systems and the Introduction of alien flora affecting native faunal assemblages. Based on the Ecological Baseline and Impact Assessment which found that the study site was disturbed, the significance of these impacts was found to be higher than with the proposal. A number of mitigation measures have been included in the EMPr. Importantly, Search, Rescue and Relocation of SCC (Hypoxis and Boophone species) must be implemented to reduce impacts to sensitive species. During operation, impacts relate to loss of habitat due to stochastic events like fire, loss of fauna due to intentional killing and disruption of ecological life cycles due to restriction of species movement. These impacts were assessed to be low after mitigation.</p> <p><b>The alternative layout is not preferred as due to the increased FAR, it requires the development of Road B. This will impact the wetland, ESA, and Zone 3 of the GPEMF.</b></p>
<b>Incidents, accidents and potential emergency situations</b>	Potential impacts related to pollution incidents, health and safety, storage of hydrocarbons and fire may occur during construction and operation but can be mitigated through the implementation of the site specific EMPr and will thus have a low significance.
<b>Social</b>	During construction, the main social impacts will be visual impacts, safety and security, traffic disruptions, loss and loss of sense of place. All these impacts can be successfully mitigated to a low significance. A positive impact related to the change of land use is expected as currently the site is degraded. Further, the development of the site will further the objectives of Muldersdrift Precinct Plan. During operation, there will be a positive impact related to safety and security as the development of the site is expected to improve safety in the area. All other impacts can be mitigated to a low significance.
<b>Economic</b>	<p>During construction and operation, a number of positive economic impacts will occur relating to an increase in economy and increased employment. These have a medium level of significance after mitigation.</p> <p>In addition, during the public review of the BAR, I&amp;APs raised concerns regarding the impact of the development of existing infrastructure and the farming economy of the area. This impact was assessed to have a higher significance for the alternative layout due to the fact that main impact related to the development of Road B which would traverse existing buildings, irrigated fields and grazing land.</p>



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

When assessing the alternatives, the following was assessed:

- The results of the impact assessment; and
- The need for the project.

Taking into account the findings of the specialist study, a detailed impact assessment was undertaken for both the Proposed sewer line and the alternative sewer line as well as the No-Go Option. A summary of the findings is provided in **Table 17 and Table 19** above. They show that the following impacts were expected to be similar for both the alternative and the proposed sewer line:

- Atmospheric Emissions;
- Noise;
- Waste Generation;
- Soil Alteration;
- Resource Consumption;
- Incidents, accidents and potential emergency situations; and
- Social.

Where impacts differed was in terms of impacts to wetlands and impacts to biodiversity. The reasons for that were as follows:

- Impacts to wetlands:
  - In regards to the impact to wetlands, the proposal limits the length of the sewer line occurring within the delineated wetland with only approximately 100m of the 1.3km of the line occurring in the wetland. In contrast, with the alternative, approximately 900m of the line occurs within the wetland.
  - The alternative sewer line therefore has a greater impact on interflows.
  - It also increases the potential for spills within the wetland habitat.
  - Lastly, it results in a greater area of wetland habitat being cleared for the construction of the sewer line.
- Impacts to biodiversity:
  - The main difference between the proposal and the alternative is the length of the pipeline that occurs within the ESA area. With the proposal, none of the pipeline encroaches on the ESA area, whilst with the alternative, approximately 200m of the line encroaches on the ESA.
  - The alternative sewer line therefore has a greater impact on sensitive habitats in the study area (although it should be noted that the ESA is currently degraded due to historic activities).

**On this basis, it is felt that Proposed sewer line should be authorised.**

In addition, an assessment of impacts between the proposed and alternative layout was also undertaken. A summary of the findings is provided in **Table 18 and Table 20** above. They show that the following impacts were expected to be similar for both the alternative and the proposed sewer line:

- Atmospheric Emissions;
- Noise;
- Waste Generation;
- Resource Consumption;
- Incidents, accidents and potential emergency situations; and
- Social.

Where impacts differed was in terms of impacts to wetlands and impacts to biodiversity. The reasons for that were as follows:

- Impacts to wetlands:
  - In regards to the impact to wetlands, the proposed layout has an FAR of 0.4. and therefore, does not require the full extent of Road B to be developed. This reduces the impact to the wetland. The alternative layout includes the full Road B and therefore has a greater impact on wetland interflows.
- Impacts to biodiversity:
  - In regards to the impact to biodiversity, the proposed layout has an FAR of 0.4. and therefore, does not require the full extent of Road B to be developed. This reduces the impact to the ESA and Zone 3 of the GPEMF. The alternative layout includes the full Road B and therefore has a greater impact on these areas.

- Soil Alteration
  - With the increased FAR, there is a greater traffic impact. In order to cater for this, the full extent of Road B would be required.
  - This has a greater impact on the adjacent landowners as existing outbuildings, irrigated land and grazing land will be affected. '
- Economic
  - With the increased FAR, there is a greater traffic impact. In order to cater for this, the full extent of Road B would be required. This has a greater impact on the adjacent landowners as existing outbuildings, irrigated land and grazing land will be affected. This would have an economic impact.

**On this basis, it is felt that Proposed layout should be authorised.**

## 7. Spatial Development Tools

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

The following spatial development tools were applied and/or considered:

- The GDARD C-PLAN and environmentally sensitive layers were utilized during the compilation of this report to identify biodiversity specialist reports as well as possible sensitive areas within the area. The Road B (as part of the alternative layout) as well as the alternative sewer line does traverse a C-Plan ESA area however the proposed sewer line (Proposal) does not. This is one of the reasons that the proposal is preferred (see Section 6 for the detailed impact assessment). Further, the Baseline Ecological Status Assessment found that the site was degraded and no longer consistent with primary vegetation.
- The South African National Biodiversity Institute (SANBI) provides a database, namely the Botanical Database of Southern Africa (BODATSA) which was used by the Ecological specialist to determine sensitive flora species on site.
- Data from the South African Bird Atlas Project (SABAP2) was also utilized to identify potentially occurring bird species in and around the site.
- The FitzPatrick Institute of African Ornithology - Virtual Museum website was also utilized.
- The Gauteng Provincial Environmental Management Framework was utilized in the compilation of this report. Most of the proposed development occurs within Zone 4 which is the Normal control Zone. Road B as well as the alternative sewer line does traverse Zone 3: Sensitive area outside the UDZ however as with the ESA area, the proposed sewer line does not enter this area which is one of the reasons it is preferred. Further, the Baseline Ecological Status Assessment found that the site was degraded and no longer sensitive.
- The National Wetland Map version 5 (NWM5) as presented by SANBI was utilized to understand wetlands in and around the study area.
- The National Freshwater Ecosystem Priority Areas (NFEPA) Wetlands layer was also scrutinised.

## 8. Recommendation of the Practitioner

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

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

Not applicable.

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:

A number of critical mitigation measures accompany this recommendation and should be included as conditions of the environmental authorisation (should it be granted). These include:

- The **proposed sewer line (Proposal)** should be implemented;
- **The proposed Layout (FAR =0.4) should be implemented;**
- The final Site Development Plan (SDP) should be submitted to GDARD once it has been finalised through the townplanning process. **No buildings or stormwater infrastructure to be developed within the wetland buffer.**
- Rehabilitation of the wetland as per the requirements of the wetland study and rehabilitation plan must be undertaken.
- An Environmental Control Officer (ECO) should be appointed to ensure compliance to the authorisation and EMPr. Bimonthly monitoring and monthly reporting together with six-monthly full environmental audits are recommended;
- As required by the Baseline Ecological Habitat Assessment, the following should be undertaken:
  - Construction and laydown areas should be established outside of the wetland 32m buffer.
  - Fires shall only be permitted in specially designated areas and under controlled circumstances.
  - Killing of fauna on or adjacent to the study area are strictly prohibited. Should any fauna species be found on site, the ECO should be conducted asap to provide recommendation or mitigation measures.

- Clearing of vegetation is not allowed within the 32m buffer of the wetland area other than for those activities authorised.
- It is recommended that all *Hypoxis hemerocallidea* and the one *Boophane disticha* species should be removed prior to construction activities and either relocated to a similar type of environment or implemented within the landscaping plan of the proposed development. A Search, Rescue and Relocation plan has been compiled and should be implemented.
- Trenches and other linear barriers should not be kept open for too long, especially not staying open overnight.
- Stormwater, sewer and road infrastructure should be designed in such a way that it will have minimal impact on the environmental, especially the wetland area.
- Construction must be restricted to hours of 07:00 and 17:00. Should construction activities need to continue over a weekend/public holiday or is expected to be excessively noisy, all Interested and Affected Parties and the ECO must be notified in advance.
- Construction must be restricted to hours of 07:00 and 17:00. Should construction activities need to continue after hours is, all Interested and Affected Parties and the ECO must be notified in advance. Excessive lighting during construction should be avoided.
- Fire extinguishers must be placed on the property.
- As required by the Heritage Impact Assessment:
  - Heritage walk down of all linear developments prior to development;
  - Confirmation of any burial sites within the study area during the public participation process;
  - Implementation of a chance find procedure as outlined below. The stormwater management system included in the Stormwater Management Plan must be implemented and maintained;
- The requirements of the Traffic Impact Assessment must be implemented.
- **An updated Stormwater Management Plan should be developed and submitted to the Department prior to construction. Stormwater attenuation and outlets should remain outside the 32m wetland buffer.**
- **Access to private property must be by agreement only.**
- **A landowner liaison officer should be appointed and contact with the landowners must be made before any entry to the private property is made.**
- **The sewer pipeline should be phased so that the impact is localised to one property at a time and once completed, access to the site by workers will not be permitted.**
- **Should electric fencing or fencing need to be removed this must be agreed to by affected landowners. All electric fencing/fencing must be replaced as soon as construction in the property is completed.**
- **An Issues Register should be set up and all comments, queries and complaints should be noted. Details on how these issues have been resolved should be noted.**
- **The right of way/servitude for the pipeline is 3m. No additional clearing of excavation will be permitted.**
- **During site preparation, topsoil and subsoil must be stripped separately from each other and must be stored separately from spoil material for use in the rehabilitation phase.**
- **Programme the backfill of excavations so that subsoil is deposited first, followed by the topsoil.**
- **Monitor backfilled areas for subsidence (as the backfill settles) and fill depressions using available material.**
- **Execute top soiling activity prior to the rainy season or any expected wet weather conditions.**
- **Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter. Replace topsoil to the original depth.**
- **Place topsoil in the same area from where it was stripped.**
- **Rip and/or scarify all areas following the application of topsoil to facilitate mixing of the upper most layers.**
- **No litter, rubble or any other construction material shall remain on site once the pipeline is completed.**
- **ECO to undertake a rehabilitation audit at the completion of the pipeline and then again in 6 months to ensure that rehabilitation has been undertaken as necessary and to ensure no undue alien invasive plant species are establishing.**

## 9. The Needs and Desirability of the Proposed Development (As Per Notice 792 Of 2012, or the updated version of this Guideline)

The need and desirability of the proposed development was assessed in terms of Notice 891 of 2014 which is the updated guideline available regarding need and desirability. In line with this, the consideration of "need and desirability" included consideration of the strategic context of the proposed development along with the broader societal needs and the public interest.

The proposed development is a mixed-use development which includes Business 1 and Commercial uses. This is in line with the Muldersdrift Precinct Plan (Mogale City Local Municipality, 2011) as it falls within the mixed use zone area. The mixed land use district will invest in and strengthen existing communities and achieve more balanced regional development and facilitate the provision of a variety of transportation choices.

The development is located adjacent to Beyers Naude Drive which is a major arterial and will allow access to necessary transportation to and from work for employees. This is in line with the Transit Oriented Development (TOD) Principles. This is especially pertinent in that there are current and future residential components planned in the area and thus there will be a demand for business orientated land uses that can provide for the needs of these communities. For this reason, abundant office space is required for in the proposed township.

In addition, from a town planning point of view and in terms of good urban design it is desirable to have mixture of use along Beyers Naude Drive not only to buffer the existing agricultural holdings and farm portions but to support other residential neighbourhoods both existing and upcoming also to grow certain areas where the need for alternative land use is wanted. The site is also currently vacant and degraded and thus development in line with the Local Municipalities plans for the area will be beneficial and allow the full potential of the area to be met.

Lastly the proposed development will provide numerous economic benefits. Firstly, during construction, there will be a direct CAPEX of R15 million. Secondly, 150 construction employment opportunities will be created. During operation, 100 permanent positions will be created. This will also have a number of economic multiplier effects for the local economy.

Further, a detailed impact assessment process including specialist assessment has been undertaken and shows that impacts related to the proposed development can be satisfactorily mitigated. In addition, the construction of the proposed development will result in employment opportunities in the area.

The following questions have also been addressed in line with the Guideline for Need and Desirability (Notice 891 of 2014).

**Table 21: Need and Desirability**

Question from the Need and Desirability Guideline	Response
<b>Securing ecological sustainable development and use of natural resources</b>	
How will this development (and its separate elements / aspects) on the ecological integrity of the area?	<p>A Baseline Ecological Status Assessment and Wetland Assessment were undertaken and included in the BAR. Both studies did not envision significant negative impacts due to existing disturbed nature of the site.</p> <p>Therefore, it is not expected that the proposed development will negatively impact on the ecological integrity of the area as the site is not pristine and has been degraded by historical use. In addition, the wetland buffer which falls within the development will not be developed.</p> <p><u>Two types of alternatives were assessed:</u></p> <ul style="list-style-type: none"> <li>• <u>Sewer line alternatives (i.e. how the development will manage and connect to existing infrastructure); and</u></li> </ul>

	<ul style="list-style-type: none"> <li>• <u>Layout alternatives (with particular focus on the FAR of the development).</u></li> </ul> <p><u>In terms of the sewer pipelines, the proposal involves the development of approximately 1.3km of 160mm and 200mm diameter pipeline which travels within the property and crosses the buffer slightly before exiting the property to the north, and then crossing the wetland and wetland buffer before entering the wetland area to connect to the existing line. In contrast with the alternative, the proposal limits the impact to the wetland as for most of its length it occurs outside the delineated wetland. This reduces impacts to wetland interflows. It also reduces potential water quality issues. Lastly, the proposal does not encroach on the ESA whilst the alternative does. The proposal therefore reduces the impact to the ESA area.</u></p> <p><u>In terms of the layout alternatives, the proposal has a FAR of 0.4 which results in a lower square meter usage of the site. This was taken into account by the Traffic Impact Assessment which found that based on the amended FAR of 0.4 (Proposed Layout), the Morning (AM) Peak Hour was expected to be 519 (313 in / 206 out) and Afternoon (PM) Peak Hour 1,352 (664 in / 687 out). In order to cater for this, construction of only small section of Road B would be required (along the southern boundary of the application site, terminating at the western corner). No road would therefore be developed within the wetland or wetland buffer, the ESA or Zone 3 of the GPMEF. It also reduces the impact to adjacent landowners as the full extent of Road B would have resulted in impacts to existing outbuilding and irrigated fields. The proposed layout is therefore preferred.</u></p> <p>The proposed development is not expected to cause significant impacts to ecological integrity as long as the necessary mitigation and designs are implemented. In addition, with the proposals (proposed sewer line and layout), impacts are reduced through limited the impact to the wetland. The proposals are therefore preferred.</p>
<p>How were the following ecological integrity considerations taken into account?</p> <ul style="list-style-type: none"> <li>• Threatened Ecosystems</li> <li>• Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure,</li> <li>• Critical Biodiversity Areas (“CBAs”) and Ecological Support Areas (“ESAs”)</li> <li>• Conservation targets,</li> <li>• Environmental Management Framework,</li> <li>• Spatial Development Framework, and</li> <li>• Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.</li> </ul>	<p>A desktop assessment of sensitivity was undertaken initially to identify listed activities and determine necessary specialist studies.</p> <p>This included an assessment of the following:</p> <ul style="list-style-type: none"> <li>• Threatened ecosystems;</li> <li>• CBAs and ESAs;</li> <li>• Sensitive features such as wetlands; and</li> <li>• Agricultural Potential.</li> </ul> <p>Based on this, a Baseline Ecological Habitat Assessment and Wetland Assessment were undertaken and included in the BAR. Both studies did not envision significant negative impacts due to existing disturbed nature of the site. The Wetland Study recommended that the wetland be rehabilitated. Further, an Search, Rescue and Relocation Plan is included in the Baseline Ecological Habitat Assessment.</p>

<p>How will this development disturb or enhance ecosystems and / or result in the loss or protection of biological impacts that could not be avoided altogether, what measures were explored to minimize and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>A Baseline Ecological Habitat Assessment and Wetland Assessment were undertaken and included in the BAR. Both studies did not envision significant negative impacts due to existing disturbed nature of the site.</p> <p>Further, mitigation measures suggested by the specialists have been incorporated into the EMPr.</p> <p>Lastly, in order to reduce the significance of the impact to the wetland, the proposed sewer line and alternative are recommended.</p>
<p>How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimize and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>Potential pollution has been assessed as part of the impact assessment and is not expected to be significant in either the construction or operation phase.</p>
<p>What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimize, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?</p>	<p>During construction, construction waste will be produced whilst during operation, domestic waste related to the proposed development will be produced.</p> <p>The EMPr includes a waste management plan that aims to ensure measures to minimize, reuse and/or recycle the waste are incorporated into the development.</p>
<p>How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimize and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>The proposed development does not involve the mining of non-renewable resources. However, some natural resources will be required during construction. A detailed impact assessment was undertaken and did not find significant impact to natural resources.</p>
<p>How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardize the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimize the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?</p> <ul style="list-style-type: none"> <li>• Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. dematerialized growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without</li> </ul>	<p>A Baseline Ecological Habitat Assessment and Wetland Assessment were undertaken and included in the BAR. Both studies did not envision significant negative impacts due to existing degraded nature of the site.</p> <p>The location of the site is in line with the Muldersdift Precinct Plan for the area.</p> <p>Further, energy saving measures will also be incorporated at the detailed design phase to minimise energy requirements.</p> <p>Buildings must comply with NHBC requirements</p>

<p>compromising their quest to improve their quality of life)</p> <ul style="list-style-type: none"> <li>Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?).</li> <li>Do the proposed location, type and scale of development promote a reduced dependency on resources?</li> </ul>	
<p>How were a risk-averse and cautious approach applied in terms of ecological impacts?</p> <ul style="list-style-type: none"> <li>What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</li> <li>What is the level of risk associated with the limits of current knowledge?</li> <li>Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</li> </ul>	<p>A risk-averse and cautious approach has been undertaken. The following has reference:</p> <ul style="list-style-type: none"> <li>The specialist studies will identify gaps which will then be noted in both the specialist report and BAR.</li> <li>The impact assessment which was undertaken will specifically deal with gaps identified by specialists and/or lack of information through the assessment of 'Level of Confidence'.</li> <li>The EMPr provides numerous mitigation measures to ensure that impacts identified to be a 'low' risk can be further mitigated.</li> </ul>
<p>How will the ecological impacts resulting from this development impact on people's environmental right in terms following:</p> <ul style="list-style-type: none"> <li>Negative impacts e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimize, manage and remedy negative impacts?</li> <li>Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?</li> </ul>	<p>A detailed impact assessment was undertaken and did not identify any significant impacts to people's environmental rights. The site is disturbed and the wetland buffer which falls within the proposed development will not be developed. Whilst some of the services will traverse the wetland, the impact of this is reduced through the selection of the proposed sewer line which occurs mostly outside the wetland and the ESA area.</p>
<p>Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?</p>	<p>A detailed impact assessment was undertaken and did not identify any significant impacts to ecosystem services. The site is disturbed and the wetland buffer which falls within the proposed development will not be developed. A Heritage Impact Assessment was also undertaken and did not identify any heritage on site. Lastly, there will be positive economic impacts related to the development.</p>
<p>Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?</p>	<p>It is not expected that the development will negatively impact on the ecological integrity objectives of the area. The site is degraded and is not sensitive. Whilst some services traverse more sensitive areas (such as wetland and ESA), the impact of this is limited through the implementation of the proposed sewer line <u>and proposed layout</u> which limits the impact to these areas.</p>



	<p>More information is provided in the specialist studies and impact assessment.</p>
<p>Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the “best practicable environmental option” in terms of ecological considerations?</p>	<p>Two types of alternatives were assessed:</p> <ul style="list-style-type: none"> <li>• <u>Sewer line alternatives (i.e. how the development will manage and connect to existing infrastructure); and</u></li> <li>• <u>Layout alternatives (with particular focus on the FAR of the development).</u></li> </ul> <p><u>In terms of the sewer pipelines, the proposal involves the development of approximately 1.3km of 160mm and 200mm diameter pipeline which travels within the property and crosses the buffer slightly before exiting the property to the north, and then crossing the wetland and wetland buffer before entering the wetland area to connect to the existing line In contrast with the alterative, the proposal limits the impact to the wetland as for most of its length it occurs outside the delineated wetland. This reduces impacts to wetland interflows. It also reduces potential water quality issues. Lastly, the proposal does not encroach on the ESA whilst the alternative does. The proposal therefore reduces the impact to the ESA area.</u></p> <p><u>In terms of the layout alternatives, the proposal has a FAR of 0.4 which results in a lower square meter usage of the site. This was taken into account by the Traffic Impact Assessment which found that based on the amended FAR of 0.4 (Proposed Layout), the Morning (AM) Peak Hour was expected to be 519 (313 in / 206 out) and Afternoon (PM) Peak Hour 1,352 (664 in / 687 out). In order to cater for this, construction of only small section of Road B would be required (along the southern boundary of the application site, terminating at the western corner). No road would therefore be developed within the wetland or wetland buffer, the ESA or Zone 3 of the GPMEF. It also reduces the impact to adjacent landowners as the full extent of Road B would have resulted in impacts to existing outbuilding and irrigated fields. The proposed layout is therefore preferred.</u></p> <p>A detailed impact assessment has been undertaken for both the Proposals and the Alternatives and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (Appendix I1). Based on the findings of the specialist studies and impact assessment and taking into account the successful implementation of the EMPr, <u>it is felt that the following alternatives be authorised:</u></p> <ul style="list-style-type: none"> <li>• <u>Proposed Sewer Line;</u></li> <li>• <u>Proposed Layout (FAR = 0.4).</u></li> </ul> <p>The reasons for this opinion are discussed are as follows:</p> <ul style="list-style-type: none"> <li>• The Proposed Sewer Line involves the development of approximately 1.3km of 160mm and 200mm diameter</li> </ul>

	<p>pipeline which travels within the property and crosses the buffer slightly before exiting the property to the north, and then crossing the wetland and wetland buffer before entering the wetland area to connect to the existing line.</p> <ul style="list-style-type: none"> <li>• In contrast with the alternative, the proposal limits the impact to the wetland as for most of its length it occurs outside the delineated wetland. This reduces impacts to wetland interflows.</li> <li>• It also reduces potential water quality issues.</li> <li>• Lastly, the proposal does not encroach on the ESA and Zone 3 of the GPEMF whilst the alternative does. The proposal therefore reduces the impact to the ESA and GPEMF area.</li> <li>• <u>The proposed layout (FAR = 0.4) has a reduced FAR and thus reduces the expected number of trips for the development. This reduces the traffic impact of the development.</u></li> <li>• <u>It also reduces the need for the full length of Road B at this time as only a small section to the south of the site (up until the western corner) will be developed.</u></li> <li>• <u>The reduced length of Road B reduces the impact to the wetland, ESA and Zone 3 of the GPEMF as it no longer extends into this area</u></li> <li>• <u>Most importantly, it is also in line with the comments received from affected landowners who were not in favour of the full development of Road B through their properties.</u></li> </ul>
<b>Promoting justifiable economic and social development</b>	
<p>What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?</p> <ul style="list-style-type: none"> <li>• The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any strategic plans, frameworks of policies applicable to the area,</li> <li>• Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.).</li> <li>• Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and</li> <li>• Municipal Economic Development Strategy ("LED Strategy").</li> </ul>	<p>The proposed development is a mixed-use development which includes Business 1 and Commercial uses. This is in line with the Muldersdrift Precinct Plan (Mogale City Local Municipality, 2011) as it falls within the mixed use zone area. The mixed land use district will invest in and strengthen existing communities and achieve more balanced regional development and facilitate the provision of a variety of transportation choices.</p> <p>The development is located adjacent to Beyers Naude Drive which is a major arterial and will allow access to necessary transportation to and from work for employees. This is in line with the Transit Oriented Development (TOD) Principles. This is especially pertinent in that there are current and future residential components planned in the area and thus there will be a demand for business orientated land uses that can provide for the needs of these communities. For this reason, abundant office space is required for in the proposed township.</p>
<p>Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?</p> <ul style="list-style-type: none"> <li>• Will the development complement the local socio-economic initiatives (such as local economic development (LED)</li> </ul>	<p>In addition, from a town planning point of view and in terms of good urban design it is desirable to have mixture of use along Beyers Naude</p>

<p>initiatives), or skills development programs?</p>	<p>Drive not only to buffer the existing agricultural holdings and farm portions but to support other residential neighbourhoods both existing and upcoming also to grow certain areas where the need for alternative land use is wanted. The site is also currently vacant and degraded and thus development in line with the Local Municipalities plans for the area will be beneficial and allow the full potential of the area to be met.</p> <p>From a socio-economic perspective, the proposed development will benefit the area in the following way:</p> <ul style="list-style-type: none"> <li>• General improvement of the image of the area; and</li> <li>• Increase in local economy.</li> </ul>
<p>How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?</p>	<p>The proposed development aims to provide required business and commercial space in the larger Muldersdrift area where it is required.</p> <p>This is in line with the Muldersdrift Precinct Plan (Mogale City Local Municipality, 2011) as it falls within the mixed use zone area. The mixed land use district will invest in and strengthen existing communities and achieve more balanced regional development and facilitate the provision of a variety of transportation choices.</p> <p>The development is located adjacent to Beyers Naude Drive which is a major arterial and will allow access to necessary transportation to and from work for employees. This is in line with the Transit Oriented Development (TOD) Principles. This is especially pertinent in that there are current and future residential components planned in the area and thus there will be a demand for business orientated land uses that can provide for the needs of these communities. For this reason, abundant office space is required for in the proposed township.</p> <p>In addition, from a town planning point of view and in terms of good urban design it is desirable to have mixture of use along Beyers Naude Drive not only to buffer the existing agricultural holdings and farm portions but to support other residential neighbourhoods both existing and upcoming also to grow certain areas where the need for alternative land use is wanted. The site is also currently vacant and degraded and thus development in line with the Local Municipalities plans for the area will be beneficial and allow the full potential of the area to be met.</p>
<p>Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?</p>	<p>A detailed impact assessment has been undertaken and all identified impacts can be satisfactorily mitigated. Significant inequitable (intra- and inter-generational) impacts are not expected.</p>
<p>In terms of location, describe how the placement of the proposed development will:</p> <ul style="list-style-type: none"> <li>• Result in the creation of residential and employment opportunities in close proximity to or integrated with each other</li> </ul>	<p>The location of the proposed development considered a number of aspects including:</p> <ul style="list-style-type: none"> <li>• Available land; and</li> <li>• Alignment to various planning documents including the Muldersdrift Precinct Plan.</li> </ul>

<ul style="list-style-type: none"> <li>• Reduce the need for transport of people and goods</li> <li>• Result in access to public transport or enable non-motorized and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),</li> <li>• Compliment other uses in the area</li> <li>• Be in line with the planning for the area,</li> <li>• for urban related development, make use of underutilized land available with the urban edge</li> <li>• optimize the use of existing resources and infrastructure,</li> <li>• opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),</li> <li>• discourage “urban sprawl” and contribute to compaction/densification,</li> <li>• contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, encourage environmentally sustainable land development practices and processes, take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),</li> <li>• the investment in the settlement or area in question will generate the highest socio-economic returns (i.e an area with high economic potential),</li> <li>• impact on the sensitivities of the area, and</li> <li>• in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?</li> </ul>	<ul style="list-style-type: none"> <li>• Linkages to existing transport networks such as Beyers Naude Drive.</li> </ul> <p>The following can also be noted:</p> <ul style="list-style-type: none"> <li>• The site is disturbed and the wetland buffer which falls within the proposed development will not be developed.</li> <li>• A Heritage Impact Assessment was also undertaken to ensure the proposed development does not impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics of the site. No heritage resources were identified on site.</li> <li>• The proposed development will create employment during construction and operation.</li> <li>• It also compliments other land uses in the area.</li> <li>• Lastly, the development complies with the Mogale City Local Municipality town planning requirements</li> </ul>
<p>How were a risk-averse and cautious approach applied in terms of socio-economic impacts?</p> <ul style="list-style-type: none"> <li>• What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</li> <li>• What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?</li> <li>• Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</li> </ul>	<p>Other than the Heritage Impact Assessment, no social or economic specialist studies were triggered and are required. However, a risk-averse and cautious approach has been undertaken. The following has reference:</p> <ul style="list-style-type: none"> <li>• The Heritage Impact Assessment identified gaps which have been noted in both the specialist report and BAR.</li> <li>• The impact assessment specifically deals with gaps identified by specialists and/or lack of information through the assessment of ‘Level of Confidence’.</li> <li>• The EMPr provides numerous mitigation measures to ensure that impacts identified to be a ‘low’ risk can be further mitigated.</li> </ul>
<p>How will the socio-economic impacts resulting from this development impact on people’s environmental right in terms following:</p>	<p>A detailed impact assessment has been undertaken and it is not expected that there will be negative socio-economic impacts associated</p>

<ul style="list-style-type: none"> <li>Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimize, manage and remedy negative impacts?</li> <li>Positive impacts. What measures were taken to enhance positive impacts?</li> </ul>	<p>with the development. Instead, the CAPEX value of the project is about R15 million and will create numerous multiplier effects in the area. Further, approximately 150 construction-related and 100 operation-related jobs will be created.</p>
<p>Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilization of natural resources, etc.)?</p>	<p>A detailed impact assessment was undertaken and included an assessment of social and economic impacts as well as ecological impacts. Based on the type of proposed development, it is not expected that the socio-economic impacts will result in significant ecological impacts.</p>
<p>What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?</p>	<p>Two types of alternatives were assessed:</p> <ul style="list-style-type: none"> <li><u>Sewer line alternatives (i.e. how the development will manage and connect to existing infrastructure); and</u></li> <li><u>Layout alternatives (with particular focus on the FAR of the development).</u></li> </ul> <p><u>In terms of the sewer pipelines, the proposal involves the development of approximately 1.3km of 160mm and 200mm diameter pipeline which travels within the property and crosses the buffer slightly before exiting the property to the north, and then crossing the wetland and wetland buffer before entering the wetland area to connect to the existing line In contrast with the alternative, the proposal limits the impact to the wetland as for most of its length it occurs outside the delineated wetland. This reduces impacts to wetland interflows. It also reduces potential water quality issues. Lastly, the proposal does not encroach on the ESA whilst the alternative does. The proposal therefore reduces the impact to the ESA area.</u></p> <p><u>In terms of the layout alternatives, the proposal has a FAR of 0.4 which results in a lower square meter usage of the site. This was taken into account by the Traffic Impact Assessment which found that based on the amended FAR of 0.4 (Proposed Layout), the Morning (AM) Peak Hour was expected to be 519 (313 in / 206 out) and Afternoon (PM) Peak Hour 1,352 (664 in / 687 out). In order to cater for this, construction of only small section of Road B would be required (along the southern boundary of the application site, terminating at the western corner). No road would therefore be developed within the wetland or wetland buffer, the ESA or Zone 3 of the GPEMF. It also reduces the impact to adjacent landowners as the full extent of Road B would have resulted in impacts to existing outbuilding and irrigated fields. The proposed layout is therefore preferred.</u></p> <p>A detailed impact assessment has been undertaken for both the Proposals and the Alternatives and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (Appendix I1). Based on the findings of the specialist studies and impact</p>

	<p>assessment and taking into account the successful implementation of the EMPr, it is felt that the following alternatives be authorised:</p> <ul style="list-style-type: none"> <li>• <u>Proposed Sewer Line;</u></li> <li>• <u>Proposed Layout (FAR = 0.4).</u></li> </ul> <p>These alternatives were assessed and the Proposals has been identified as the Best Practicable Environmental Option as impacts to the wetland and ESA will be reduced.</p> <p>Both the proposals and alternatives had similar impacts and socio-economic benefits.</p>
<p>What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the “best practicable environmental option” to be selected, or is there a need for other alternatives to be considered?</p>	<p>A detailed BAR process is currently being undertaken. This includes the assessment of alternatives, compilation of a detailed impact assessment and undertaking relevant specialist studies.</p> <p><u>Two types of alternatives were assessed:</u></p> <ul style="list-style-type: none"> <li>• <u>Sewer line alternatives (i.e. how the development will manage and connect to existing infrastructure); and</u></li> <li>• <u>Layout alternatives (with particular focus on the FAR of the development).</u></li> </ul> <p>These alternatives were assessed and <u>both Proposals have</u> been identified as the Best Practicable Environmental Option as impacts to the wetland and ESA will be reduced.</p> <p>Both the proposals and alternatives had similar impacts and socio-economic benefits.</p>
<p>What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?</p>	<p>A number of specialist studies have been undertaken to ensure that the proposed development is sustainable and does not result any negative impacts to disadvantaged persons.</p>
<p>What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development’s life cycle?</p>	<p>In identifying the potential impacts associated with the development, the full lifecycle was assessed as well as the findings of specialist studies.</p> <p>Further, the full EMPr includes the roles and responsibilities for the development and ensures that the responsibility of the implementation of the EMPr falls to the developer.</p>
<p>What measures were taken to:</p> <ul style="list-style-type: none"> <li>• ensure the participation of all interested and affected parties,</li> <li>• provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation</li> <li>• ensure participation by vulnerable and disadvantaged persons,</li> <li>• promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,</li> </ul>	<p>A detailed public participation process <u>has been</u> undertaken as part of the BAR process.</p> <p>As part of this, a detailed Interested and Affected Party (I&amp;AP) Database was compiled and included Mogale City Local Municipality , Department of Water and Sanitation, Gauteng Department of Roads and Transport, and Gauteng Department of Agriculture and Rural Development (GDARD). In addition, the I&amp;AP database included the affected ward councillor of the area. These I&amp;APs <u>were</u> notified of the BAR process and provided with an opportunity to comment on the Report.</p>

<ul style="list-style-type: none"> <li>• ensure openness and transparency, and access to information in terms of the process,</li> <li>• ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and</li> <li>• ensure that the vital role of women and youth in environmental management and development were recognized and their full participation therein were promoted?</li> </ul>	<p>Due to the current COVID-19 pandemic and associated State of Emergency, I&amp;APs were contacted telephonically to confirm their preferred communication methods (including site notices, adverts, email/sms delivery of BIDs) are being employed, and it is felt that public participation has been such to ensure participation by all potentially interested or affected people.</p>
<p>Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low- middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)</p>	<p>The proposed development aims to provide required business and commercial space in the larger Muldersdrift area where it is required.</p> <p>This is in line with the Muldersdrift Precinct Plan (Mogale City Local Municipality, 2011) as it falls within the mixed use zone area. The mixed land use district will invest in and strengthen existing communities and achieve more balanced regional development and facilitate the provision of a variety of transportation choices.</p> <p>The development is located adjacent to Beyers Naude Drive which is a major arterial and will allow access to necessary transportation to and from work for employees. This is in line with the Transit Oriented Development (TOD) Principles. This is especially pertinent in that there are current and future residential components planned in the area and thus there will be a demand for business orientated land uses that can provide for the needs of these communities. For this reason, abundant office space is required for in the proposed township.</p> <p>In addition, from a town planning point of view and in terms of good urban design it is desirable to have mixture of use along Beyers Naude Drive not only to buffer the existing agricultural holdings and farm portions but to support other residential neighbourhoods both existing and upcoming also to grow certain areas where the need for alternative land use is wanted. The site is also currently vacant and degraded and thus development in line with the Local Municipalities plans for the area will be beneficial and allow the full potential of the area to be met.</p>
<p>What measures have been taken to ensure that current and / or future workers will be informed of work that potentially might be harmful to human health or the or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?</p>	<p>A site specific EMPr has been compiled and includes include an Environmental Awareness Plan. As part of this, workers will be informed of their rights to refuse work that might be harmful to human health or the environment.</p>
<p>Describe how the development will impact on job creation in terms of, amongst other aspects:</p> <ul style="list-style-type: none"> <li>• the number of temporary versus permanent jobs that will be created,</li> <li>• whether the labour available in the area will be able to take up the job</li> </ul>	<p>A detailed impact assessment has been undertaken and it is not expected that there will be negative socio-economic impacts associated with the development. Instead, the CAPEX value of the project is about R15 million and will create numerous multiplier effects in the area.</p>

<p>opportunities (i.e. do the required skills match the skills available in the area),</p> <ul style="list-style-type: none"> <li>• the distance from where labourers will have to travel,</li> <li>• the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits); and</li> <li>• the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.)</li> </ul>	<p>Further, approximately 150 construction-related and 100 operation-related jobs will be created.</p> <p>The following can be noted in regards to this:</p> <ul style="list-style-type: none"> <li>• The EMPr includes the requirement that local employment should be encouraged to promote skills transfer and development. This will enhance the general area and provide job opportunities to potential job seekers and manage it in the best suitable way.</li> <li>• An assessment of the social environment of the area suggests that there is labour available in the area.</li> <li>• The proposed development occurs in close proximity to numerous residential developments and thus, the distance labourers will have to commute is not expected to be significant.</li> <li>• The proposed development will not result in any losses of any jobs and job-related opportunity costs are not expected.</li> </ul>
<p>What measures were taken to ensure:</p> <ul style="list-style-type: none"> <li>• That there were intergovernmental coordination and harmonization of policies, legislation and actions relating to the environment, and</li> <li>• That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?</li> </ul>	<p>National Legislation i.e. NEMA, NWA, NHRA, NEM:BA were consulted in the preparation of this BAR Report. Provincial guidelines also formed part of the literature review. Spatial development tools also aided the EAP to assess and provide information pertaining to the proposed development.</p> <p><u>A number of comments were received from I&amp;APs or organs of state and are included in the comments and response register.</u></p>
<p>Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?</p>	<p>The site specific EMPr includes realistic and achievable mitigation measures which aim to reduce any negative impacts as well as to enhance any positive benefits associated with the project.</p>
<p>What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?</p>	<p>The site specific EMPr includes detailed roles and responsibilities. In addition, a penalty system for contractors will be included.</p>
<p>Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?</p>	<p><u>Two types of alternatives were assessed:</u></p> <ul style="list-style-type: none"> <li>• <u>Sewer line alternatives (i.e. how the development will manage and connect to existing infrastructure); and</u></li> <li>• <u>Layout alternatives (with particular focus on the FAR of the development).</u></li> </ul> <p>These alternatives were assessed and <u>both Proposals have</u> been identified as the Best Practicable Environmental Option as impacts to the wetland and ESA will be reduced.</p> <p>A detailed assessment of alternatives was undertaken and took into account the following:</p> <ul style="list-style-type: none"> <li>• The findings of the specialist studies;</li> <li>• The results of the impact assessment; and</li> <li>• The need for the project.</li> </ul>



**10. The Period for which the Environmental Authorisation is Required  
(Consider when the Activity is Expected to be Concluded)**

The proposed period for which the environmental authorization should be valid prior to operation is 10 years with an option to extend if necessary. Should construction not commence within this period, the authorization will lapse, and new authorization process would be required.

However, once the project has commenced, it cannot be seen to have an expiry date (i.e. during the operational phase), because of the nature of the project and because the project is intending to construct permanent infrastructure on the proposed site.

**11. Environmental Management Programme (EMPr) (must include post construction monitoring requirements and when these will be concluded.)**

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

EMPr attached

## **SECTION F: APPENDIXES**

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

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

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

Appendix A1 – Site Plan for Proposal and Alternative

Appendix A2 - Locality Maps

Appendix A3 - Sensitivity Maps

### **Appendix B: Photographs**

### **Appendix C: Facility illustration(s)**

### **Appendix D: Route position information**

### **Appendix E: Public participation information**

Appendix E1 – Proof of site notice

Appendix E2 – Written notices issued as required in terms of the regulations

Appendix E3 – Proof of newspaper advertisements

Appendix E4 – Communications to and from interested and affected parties

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

Appendix E6 - Comments and Responses Report

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

Appendix E8 –Comments from I&APs on amendments to the BA Report

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

### **Appendix G: Specialist reports**

Appendix G1 – Baseline Ecological Status Assessment

Appendix G2 – Wetland Assessment

Appendix G3 – Heritage Impact Assessment

Appendix G4 –Geotechnical Study

Appendix G5 – Outline Scheme Report

Appendix G6 – Traffic Impact Assessment

### **Appendix H: EMPr**

### **Appendix I: Other information**

Appendix I1 – Impact Assessment

Appendix I2 – Company profile and CVs

Appendix I3 – National Screening Tool Report

Appendix I4 – PP Plan approval

## **CHECKLIST**

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

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