# FINAL BASIC ASSESSMENT REPORT

# The Proposed upgrading of the Magareng Water Reticulation System: Construction of a pipeline across the Vaal River (via bridge / underwater), Warrenton, Northern Cape Province

**Proponent:** Magareng Local Municipality
**MDA Ref No:** 40780
**Date:** October 2018

mda
Town & Regional Planners,
Environmental & Development
Consultants

Physical Address: 9 Barnes Street,
Westdene, Bloemfontein, 9301
Postal Address: PO Box 100982,
Brandhof, 9324
Tel: 051 4471583, Fax: 051 448 9839
E-mail: admin@mdagroup.co.za

the denc

Department:
Environment & Nature Conservation
NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

Private Bag X6102, Kimberley, 8300, Metlife Towers, T-Floor, Tel: 053 807 7300, Fax: 053 807 7328

| | | | |
|---|---|---|---|
| Project applicant: | Magareng Municipality | | |
| Business reg. no. /ID. no.: | | | |
| Contact person: | Mrs Ellen Malephoi Moncho | | |
| Postal address: | P.O. Box 10<br>Warrenton<br>8530 | | |
| Telephone: | 053 497 3111 | Cell: | |
| E-mail: | dovemoncho@gmail.com | Fax: | 053 497 4514 |

Prepared by:

| | | | |
|---|---|---|---|
| Environmental Assessment Practitioner/Firm: | MDA | | |
| Business reg. no. /ID. no.: | | | |
| Contact person: | Neil Devenish | | |
| Postal address: | P.O. Box 100982<br>Brandhof<br>Bloemfontein<br>9324 | | |
| Telephone: | 051 447 1583 | Cell: | |
| E-mail: | neil@mdagroup.co.za | Fax: | 051 448 9893 |

(For official use only)

| | |
|---|---|
| **File Reference Number:** | |
| **Application Number:** | |
| **Date Received:** | |

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

**Kindly note that:**

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

## SECTION A: ACTIVITY INFORMATION

| Has a specialist been consulted to assist with the completion of this section? | YES | |
|---|---|---|

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

### 1. ACTIVITY DESCRIPTION

**a) Describe the project associated with the listed activities applied for**

Proposed upgrading of the Magareng Water Reticulation System: Construction of a pipeline across the Vaal River (via a bridge, or underwater), Warrenton, Northern Cape Province.

Six options are considered by the applicant:

1. **PREFERRED OPTION 1: PIPE OVER ROAD BRIDGE – NO ACTIVITIES WITHIN THE RIVER**

1.1. OPTION DETAILS

- Fixing it to the existing bridge on the downstream side of the river.
- With this option the flow needs to be divided between two smaller pipes fixed to the bridge. This is necessary due to constraints of the physical size of the bridge.
- All construction work to be undertaken from bridge deck with no activity on river bed.

1.2. SCOPE OF WORK

- Narrow the lanes on the bridge and erect temporary road sign to warn about construction activities and reduce the speed.
- Install working cage to centre lever over the parapet.
- Drill holes for brackets and install brackets onto the bridge structure
- Deliver steel pipe section to site, laydown.
- Secure hoisting equipment and lift steel pipe sections into position.
- Bolt down holder brackets to secure pipe into position.
- Install accessories e.g. air valves and valves.
- Test pipe sections under hydraulic pressure and do visual

inspections.
- Commission pipe
- Remove temporary signs

## 2. PREFERRED OPTION 2: PIPE OVER ROAD BRIDGE – ACTIVITIES WITHIN THE RIVER

### 2.1. OPTION DETAILS

- Fixing it to the existing bridge on the downstream side of the river. With this option the flow needs to be divided between two smaller pipes fixed to the bridge. This is necessary due to constraints of the physical size of the bridge. Construction work done by erecting scaffolding on the river bed and occasional transport to move scaffolding.

### 2.2. SCOPE OF WORK

- Narrow the lanes on the bridge and erect temporary road sign to warn about construction activities and reduce the speed.
- Install cofferdams in river bed (Note: Cofferdams to accommodate footings of scaffolding.
- Construct working platform on top of the scaffolding.
- Repeat the above the 3 steps to commission construction for a distance of between 10 and 100m at a time.
- Drill holes for brackets and install brackets onto the bridge structure
- Deliver steel pipe section to site, laydown.
- Secure hoisting equipment and lift steel pipe sections into position.
- Bolt down holder brackets to secure pipe into position.
- Install accessories eg. Air valves and valves.
- Test pipe sections under hydraulic pressure and do visual inspections.
- Commission pipe
- Remove temporary signs

## 3. PREFERRED OPTION 3: PIPE OVER LOW-LEVEL BRIDGE/ MAGARETHA PRINSLOO BRIDGE – PIPE ON BRIDGE DECK

3.1. OPTION DETAILS

- Fixing the pipe to the bridge deck. 5 Pipelines with a diameter of 350 mm each are to be constructed.

3.2. SCOPE OF WORK

- Close low level bridge to all traffic including pedestrian traffic.
- Drill holes for brackets and install brackets onto the bridge deck
- Deliver steel pipe section to site, laydown.
- Secure hoisting equipment and lift steel pipe sections into position.
- Bolt down holder brackets to secure pipe into position.
- Cover pipe with concrete units to lift bridge deck.
- Extend balustrades to restore appearance of the bridge, Lift bridge deckLift
- Install accessories eg. Air valves and valves.
- Test pipe sections under hydraulic pressure and do visual inspections.
- Commission pipe

## 4. PREFERRED OPTION 4: PIPE OVER LOW-LEVEL BRIDGE / MAGARETHA PRINSLOO BRIDGE – ATTACHED TO DOWNSTREAM SIDE OF BRIDGE

4.1. OPTION DETAILS

- Fixing the pipe to the down steam side of the bridge deck. This option will not provide sufficient space for the pipe that will be required in the long term.

4.2. SCOPE OF WORK

- Close low level bridge to all traffic including pedestrian traffic.
- Drill holes for brackets and install brackets on downstream side of bridge deck.
- Deliver steel pipe section to site, laydown.
- Secure hoisting equipment and lift steel pipe sections into position.
- Bolt down holder brackets to secure pipe into position.

- Install accessories eg. Air valves and valves.
- Test pipe sections under hydraulic pressure and do visual inspections.
- Commission pipe

**5. PREFERRED OPTION 5: PIPE BELOW RIVER BED - ON THE EXISTING PIPE LINE POSITION IN COMMISSION AT PRESENT (NOT FAVOURED AS WORKING IN CLOSE PROXIMITY MAY DAMAGE PIPE)**

5.1. OPTION DETAILS

- Crossing the river with the pipe buried within the riverbed. With this option the pipe needs to be encased with concrete and protected with gabions and reno-mattresses

5.2. SCOPE OF WORK

- Set up material laydown area in existing picnic site.
- Decommission old pipe and provide a temporary pipe at a safe distance from where the new pipe is installed. The temporary pipe will be installed above the river bed until such time that the new pipe is commission. Pipe line is to be secured to the river bed with sand bags or any other appropriate means to prevent it from being washed away.
- Construct coffers claims in riverbed for sections of between 100 and 300m length at a time.
- Excavate, blast if necessary in river bed to install the pipe line. Remove blasted material and dispose of at municipal waste site.
- Install pipeline and bolt each pipe section in.
- Test each section of the pipe under hydraulic pressure.
- Backfill each section with a suitable concrete / grout mix.
- Remove debris and all foreign matter and dispose of at municipal waste site.
- Repeat the above steps until the pipe section in the river bed is complete.

**6. PREFERRED OPTION 6 BELOW RIVER BED - IN THE OLD PIPE LINE SERVITUDE THAT IS UPSTREAM FROM THE LOW-LEVEL BRIDGE**

6.1. OPTION DETAILS

- Crossing the river with the pipe buried within the riverbed. With this option the pipe needs to be encased with

concrete and protected with gabions and reno-mattresses

6.2. SCOPE OF WORK

- Set up material laydown area in existing picnic site.
- Construct coffers claims in riverbed for sections of between 100 and 300m length at a time.
- Excavate, blast if necessary in river bed to install the pipe line. Remove blasted material and dispose of at municipal waste site.
- Install pipeline and bolt each pipe section in.
- Test each section of the pipe under hydraulic pressure.
- Backfill each section with a suitable concrete / grout mix. Install gabions and reno-mattresses if necessary.
- Remove debris and all foreign matter and dispose of at municipal waste site
- Repeat the above steps until the pipe section in the river bed is complete.

**b) Provide a detailed description of the listed activities associated with the project as applied for**

| Listed activity as described in GN 734, 735 and 736 | Description of project activity |
|---|---|
| **Regulation 983, Listing Notice 1 (BAR), Activity 9, as amended (Regulation 327 of 2017, Listing Notice 1):**<br>The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water<br>(i) with an internal diameter of 0,36 metres or more; or<br>(ii) with a peak throughput of 120 litres per second or more; excluding where<br>(a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve; or<br>(b) where such development will occur within an urban area. | The proposed pipe line will be 1000mm in diameter. |
| **Regulation 983, Listing Notice 1 (BAR), Activity 12, as amended (Regulation 327 of 2017, Listing** | It is evident that the proposed pipe line will cross the Vaal River (water course) and the development of |

| Listed activity as described in GN 734, 735 and | Description of project activity |
|---|---|
| **Notice 1):**<br>The development of –<br>(xii) infrastructure or structures with a physical footprint of 100square meters or more,<br>Where such development occurs –<br>(c) if no development setback exists, within 32 meters of a watercourse, measured from the edge of a watercourse.<br>Excluding:<br>(dd) where such development occurs within an urban area | infrastructure exceeding 100m² in extent will take place within 32m of a watercourse. |
| **Regulation 983, Listing Notice 1 (BAR), Activity 19, as amended (Regulation 327 of 2017, Listing Notice 1):**<br><br>The infilling or depositing of any material of more than 10 cubic m into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic m from a watercourse. | It is estimated that more than 10 cubic m of material will be deposited / excavated from the Vaal River as part of the proposed project. |

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

***"alternatives"***, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014.Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether 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. 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.

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 degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

**NOTE:**
Project Description

The Magareng Municipality is situated in the Northern Cape Province and lies within the boundaries of the Frances Baard District Municipality. Warrenton, the administrative centre of Magareng Municipality is situated 75km north of Kimberley on the banks of the Vaal River. The N2 between Kimberley and Christiana as well as the N18 route to Vryburg passes through the centre of Warrenton.

The population of Magareng Local Municipality is estimated to be 27 500. This is approximately 8% of the total population of the District. The majority of the area can be classified as peri-urban with very low densities that makes the provision of basic services difficult and expensive.

Magareng Municipality has identified the need to develop and implement Water Conservation and Water Demand Management and embark on a program to eradicate water services backlog. The need to prioritize the iKhutseng water supply is highlighted. Furthermore the bulk supply to the town should be revised to allow for the current and future demands.

An irrigation channel that is situated on the northern side of the Vaal River is currently used as the main source of water for the town Warrenton. During summer, it is extremely hot in the region and water is scarce. Water in the irrigation channel however, is not enough to supply Warrenton with sufficient volume of water. Water is then pumped from the Vaal River to the Water Treatment Works. The existing pipeline and associated infrastructure that is used to transport the water from the Vaal River is insufficient.

The proposed upgrading of the Magareng Water Reticulation System is thus necessary. As part of this process, it is proposed that a pipeline should be attached to an existing bridge, over the Vaal River. Alternatively, a pipeline bridge may be constructed, or the pipeline should be constructed below the surface.

Please see Appendix A for more information on the proposed locality.

Also note that the construction of pipelines within road reserves will be done

in such a manner to minimise construction in the road, and excavation will be contained in the road reserve where possible. There will however be areas where the pipelines will cross a road, and the reinstatement thereof will have to be done.

All electricity ducting is underground, whilst Telkom lines are overhead. Cognisance has to be taken into consideration if pipelines have to be redone. Construction must be conducted in such a manner that, where possible, impacts on electricity supply and Telkom services are kept to a minimum.

**a) Site alternatives**

**NOTE: SIX POSSIBLE OPTIONS ARE CONSIDERED BY THE APPLICANT**


| **Preferred Option 1** Road Bridge – no activities within the river | | | | | | |
|---|---|---|---|---|---|---|
| Description | Lat (DDMMSS) | | | Long (DDMMSS) | | |
| Fixing it to the existing bridge on the downstream side of the river. With this option the flow need to be divided between two smaller pipes fixed to the bridge. This is necessary due to constraints of the physical size of the bridge. All construction work to be undertaken from | 28 | 06 | 25.5 | 24 | 50 | 28.33 |
| | 28 | 06 | 34.02 | 24 | 50 | 43.48 |

| | | | | | | |
|---|---|---|---|---|---|---|
| bridge deck with no activity on river bed. | | | | | | |
| **Preferred Option 2** Road Bridge – activities within the river | | | | | | |
| Description | Lat (DDMMSS) | | | Long (DDMMSS) | | |
| Fixing it to the existing bridge on the downstream side of the river. With this option the flow need to be divided between two smaller pipes fixed to the bridge. This is necessary due to constraints of the physical size of the bridge. Construction work done by erecting scaffolding on the river bed and occasional transport to move scaffolding. | 28 | 06 | 25.5 | 24 | 50 | 28.33 |
| | 28 | 06 | 34.02 | 24 | 50 | 43.48 |
| **Preferred Option 3** Low Level Bridge/ Magaretha Prinsloo Bridge - On Bridge Deck | | | | | | |
| Description | Lat (DDMMSS) | | | Long (DDMMSS) | | |
| Fixing the pipe on a pipe gantry with the height to be above the 1:100 year floodline. Concrete plinths need to be constructed within the river to provide support to the gantry. 5 Pipelines with a diameter of 350 mm each are to be constructed. | 28 | 06 | 24.42 | 24 | 50 | 29.34 |
| | 28 | 06 | 33.31 | 24 | 50 | 43.54 |
| **Preferred Option 4** Low Level Bridge / Magaretha Prinsloo Bridge – Attached to Downstream Side of Bridge | | | | | | |
| Description | Lat (DDMMSS) | | | Long (DDMMSS) | | |
| Fixing the pipe on a pipe gantry with the height to be above the 1:100 year floodline. Concrete plinths need to be constructed within the river to provide support to the gantry. A single pipeline will be constructed. | 28 | 06 | 23.98 | 24 | 50 | 29.25 |
| | 28 | 06 | 33.18 | 24 | 50 | 43.76 |
| **Preferred Option 5** Below River Bed - On the existing pipe line in commission at present | | | | | | |
| Description | Lat (DDMMSS) | | | Long (DDMMSS) | | |
| Crossing the river with the pipe buried within the riverbed. With this option the pipe need to be encased with concrete and protected with gabions and reno-matresses. | 28 | 06 | 23.78 | 24 | 50 | 29.63 |
| | 28 | 06 | 32.73 | 24 | 50 | 43.72 |
| **Preferred Option 6** Below River Bed - In the old pipe line servitude that is upstream from the low-level bridge | | | | | | |
| Description | Lat (DDMMSS) | | | Long (DDMMSS) | | |
| Crossing the river with the pipe buried within the riverbed. With this option the pipe need to be encased with concrete and protected with gabions and reno-matresses. | 28 | 06 | 18.73 | 24 | 50 | 33.05 |
| | 28 | 06 | 30.48 | 24 | 50 | 46.42 |

In the case of linear activities:

**Alternative:** **Latitude (S):** **Longitude (E):**

**Preferred Option 1** **Road Bridge – no activities within the river**

Fixing it to the existing bridge on the downstream side of the river. With this option the flow need to be divided between two smaller pipes fixed to the bridge. This is necessary due to constraints of the physical size of the bridge. All construction work to be undertaken from bridge deck with no activity on river bed.

| | | | | | | |
|---|---|---|---|---|---|---|
| • Starting point of the activity | 28 | 06 | 25.5 | 24 | 50 | 28.33 |
| • Middle/Additional point of the activity | 28 | 06 | 29.12 | 24 | 50 | 34.59 |
| • End point of the activity | 28 | 06 | 34.02 | 24 | 50 | 43.48 |

**Preferred Option 2** **Road Bridge – activities within the river**

Fixing it to the existing bridge on the downstream side of the river. With this option the flow need to be divided between two smaller pipes fixed to the bridge. This is necessary due to constraints of the physical size of the bridge. Construction work done by erecting scaffolding on the river bed and occasional transport to move scaffolding.

| | | | | | | |
|---|---|---|---|---|---|---|
| • Starting point of the activity | 28 | 06 | 25.5 | 24 | 50 | 28.33 |
| • Middle/Additional point of the activity | 28 | 06 | 29.12 | 24 | 50 | 34.59 |
| • End point of the activity | 28 | 06 | 34.02 | 24 | 50 | 43.48 |

**Preferred Option 3** **Low Level Bridge / Magaretha Prinsloo Bridge - On Bridge Deck**

Fixing the pipe on a pipe gantry with the height to be above the 1:100 year floodline. Concrete plinths need to be constructed within the river to provide support to the gantry. 5 Pipelines with a diameter of 350 mm each are to be constructed.

| | | | | | | |
|---|---|---|---|---|---|---|
| • Starting point of the activity | 28 | 06 | 24.42 | 24 | 50 | 29.34 |
| • Middle/Additional point of the activity | 28 | 06 | 29.06 | 24 | 50 | 36.71 |
| • End point of the activity | 28 | 06 | 33.31 | 24 | 50 | 43.54 |

**Preferred Option 4** **Low Level Bridge / Magaretha Prinsloo Bridge – Attached to Downstream Side of Bridge**

Fixing the pipe on a pipe gantry with the height to be above the 1:100 year floodline. Concrete plinths need to be constructed within the river to provide support to the gantry. A single pipeline will be constructed.

| | | | | | | |
|---|---|---|---|---|---|---|
| • Starting point of the activity | 28 | 06 | 23.98 | 24 | 50 | 29.25 |
| • Middle/Additional point of the activity | 28 | 06 | 28.78 | 24 | 50 | 36.91 |
| • End point of the activity | 28 | 06 | 33.18 | 24 | 50 | 43.76 |

**Preferred Option 5** **Below River Bed - On the existing pipe line in commission at present**

Crossing the river with the pipe buried within the riverbed. With this option the pipe need to be encased with concrete and protected with gabions and reno-matresses.

| | | | | | | |
|---|---|---|---|---|---|---|
| • Starting point of the activity | 28 | 06 | 23.78 | 24 | 50 | 29.63 |
| • Middle/Additional point of the activity | 28 | 06 | 28.40 | 24 | 50 | 36.98 |

| | | | | | | |
|---|---|---|---|---|---|---|
| • End point of the activity | 28 | 06 | 32.73 | 24 | 50 | 43.72 |

**Preferred Option 6** **Below River Bed - In the old pipe line servitude that is upstream from the low-level bridge**

Crossing the river with the pipe buried within the riverbed. With this option the pipe need to be encased with concrete and protected with gabions and reno-matresses.

| | | | | | | |
|---|---|---|---|---|---|---|
| • Starting point of the activity | 28 | 06 | 18.73 | 24 | 50 | 33.05 |
| • Middle/Additional point of the activity | 28 | 06 | 20.00 | 24 | 50 | 39.51 |
| • End point of the activity | 28 | 06 | 30.48 | 24 | 50 | 46.42 |

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

### b) Lay-out alternatives

| **Preferred Option 1, 2, 3, 4, 5 & 6** | | |
|---|---|---|
| Description | Lat (DDMMSS) | Long (DDMMSS) |
| The proposed layout is dependent on the existing pipeline infrastructure, road reserve and other existing infrastructure. | Coordinates are provided in previous section | |
| **Alternative 7** Lay-out | | |
| Description | | |
| A new route was investigated. However, it will not be environmentally or economically feasible, as new servitudes will have to be registered, construction activities will be undertaken on areas not previously disturbed, etc. Therefore, this option is not seen as a feasible and / or reasonable alternative. | | |

### c) Technology alternatives

| **Preferred Option 1** Road Bridge – no activities within the river |
|---|
| Fixing it to the existing bridge on the downstream side of the river. With this option the flow need to be divided between two smaller pipes fixed to the bridge. This is necessary due to constraints of the physical size of the bridge. All construction work to be undertaken from bridge deck with no activity on river bed. |
| **Preferred Option 2** Road Bridge – activities within the river |
| Fixing it to the existing bridge on the downstream side of the river. With this option the flow need to be divided between two smaller pipes fixed to the bridge. This is necessary due to constraints of the physical size of the bridge. Construction work done by erecting scaffolding on the river bed and occasional transport to move scaffolding. |
| **Preferred Option 3** Low Level Bridge / Magaretha Prinsloo Bridge - On Bridge Deck |
| Fixing the pipe on a pipe gantry with the height to be above the 1:100 year floodline. Concrete plinths need to be constructed within the river to |

| |
|---|
| provide support to the gantry. 5 Pipelines with a diameter of 350 mm each are to be constructed. |
| **Preferred Option 4** Low Level Bridge / Magaretha Prinsloo Bridge – Attached to Downstream Side of Bridge |
| Fixing the pipe on a pipe gantry with the height to be above the 1:100 year floodline. Concrete plinths need to be constructed within the river to provide support to the gantry. A single pipeline will be constructed. |
| **Preferred Option 5** Below River Bed - On the existing pipe line in commission at present |
| Crossing the river with the pipe buried within the riverbed. With this option the pipe need to be encased with concrete and protected with gabions and reno-matresses. |
| **Preferred Option 6** Below River Bed - In the old pipe line servitude that is upstream from the low-level bridge |
| Crossing the river with the pipe buried within the riverbed. With this option the pipe need to be encased with concrete and protected with gabions and reno-matresses. |
| **Alternative 8** Technology |
| Fixing a single pipe to the existing bridge. However, this is not seen as a feasible alternative, due to the constraints of the physical size of the bridge. |

**e) No-go alternative**

| |
|---|
| Should the proposed activity not be undertaken, sufficient volume of potable water will not be made available to Warrenton. Thus, the no-go alternative is not seen as a feasible and / or reasonable alternative. |

**Paragraphs 3 – 13 below should be completed for each alternative.**

## 3. PHYSICAL SIZE OF THE ACTIVITY

**a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):**

For linear activities:

| **Alternative:** | **Length of the activity:** |
|---|---|
| **Preferred Option 1** Road Bridge – no activities within the river | 520m |
| **Preferred Option 2** Road Bridge – activities within the river | 520m |
| **Preferred Option 3** Low Level Bridge / Magaretha Prinsloo Bridge - On Bridge Deck | 520m |
| **Preferred Option 4** Low Level Bridge/ Magaretha Prinsloo Bridge – Attached to Downstream Side of Bridge | 520m |
| **Preferred Option 5** Below River Bed - On the existing pipe line in commission at present | 520m |
| **Preferred Option 6** Below River Bed - In the old pipe line servitude that is upstream from the low-level bridge | 520m |

**b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):**

| **Alternative:** | **Size of the site/servitude:** |
|---|---|
| **NOTE: Road Servitude of 48 m was taken into consideration** | |

| | |
|---|---|
| **Preferred Option 1** Road Bridge – no activities within the river | 24960 m² |
| **Preferred Option 2** Road Bridge – activities within the river | 24960 m² |
| **Preferred Option 3** Low Level Bridge/ Magaretha Prinsloo Bridge - On Bridge Deck | 24960 m² |
| **Preferred Option 4** Low Level Bridge / Magaretha Prinsloo Bridge – Attached to Downstream Side of Bridge | 24960 m² |
| **Preferred Option 5** Below River Bed - On the existing pipe line in commission at present | 24960 m² |
| **Preferred Option 6** Below River Bed - In the old pipe line servitude that is upstream from the low-level bridge | 24960 m² |

## 4. SITE ACCESS

| | | |
|---|---|---|
| Does ready access to the site exist? | YES | |
| If NO, what is the distance over which a new access road will be built | | m |

Describe the type of access road planned:

NOTE: Access to all three preferred options is available. However, should the existing access roads not be sufficient, a dirt road will be constructed.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

## 5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (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 map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (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 degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

## 6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

## 7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

## 8. SITE PHOTOGRAPHS

Colour photographs from the centre 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 Appendix B to this report**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

## 9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C 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.

## 10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

| | | | |
|---|---|---|---|
| **1. Is the activity permitted in terms of the property's existing land use rights?** | YES | | |
| Yes. Pipelines to be constructed within existing servitudes. | | | |
| **2. Will the activity be in line with the following?** | | | |
| **(a) Provincial Spatial Development Framework (PSDF)** | YES | | |
| The proposed activity will not have a negative impact on the PSDF. | | | |
| **(b) Urban edge / Edge of Built environment for the area** | YES | | |
| Pipeline to be constructed in areas where construction activities were already undertaken. | | | |
| **(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).** | YES | | |
| Pipeline to be constructed in areas where construction activities were already undertaken. | | | |
| **(d) Approved Structure Plan of the Municipality** | YES | | |
| This project is a project by the local municipality. | | | |
| **(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)** | YES | | |
| The project will not compromise the integrity of the existing environmental Management Priorities in the area. | | | |
| **(f) Any other Plans (e.g. Guide Plan)** | YES | | |
| N/A | | | |
| **3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?** | YES | | |
| The proposed project entails the construction of a pipeline for the transportation of water to Warrenton. | | | |

| | | | |
|---|---|---|---|
| **4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)** | YES | | |
| The proposed project entails the construction of a pipeline for the transportation of water to Warrenton. | | | |
| **5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)** | YES | | |
| Please take note of the following:<br>• The proposed project is a project by the local municipality and thus the municipality is aware of the municipal services required for this project.<br>• The proposed construction activities will take place within close proximity of the town Warrenton.<br>• Thus, no additional capacity has to be created in order to cater for the development. | | | |
| **6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)** | YES | | |
| The proposed project is a project by the local municipality and thus the project is provided for in the infrastructure planning of the said municipality. | | | |
| **7. Is this project part of a national programme to address an issue of national concern or importance?** | YES | | |
| The project entails the construction of a pipeline in order to convey water to Warrenton. | | | |
| **8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)** | YES | | |
| The proposed project entails the construction of a pipeline in order to provide water to Warrenton | | | |

| | | | |
|---|---|---|---|
| **9. Is the development the best practicable environmental option for this land/site?** | YES | | |

The areas proposed for the construction of a pipeline over / through the Vaal River were previously disturbed due to previous construction activities. As an alternative, a pipeline can be constructed on an area not previously disturbed. However, this will have a larger impact on the environment. Therefore, the proposed project is the best practicable environmental option for this site.

| | | | |
|---|---|---|---|
| **10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?** | YES | | |

**Negative:**

- Vegetation loss
- Possible erosion
- Possible soil and groundwater pollution
- Impeding and / or alteration of beds / banks of the Vaal River

Note that these impacts will only have a negative impact for a short period of time.

**Positive:**

- Employment opportunities
- Removal of alien vegetation
- Water will be available for the residents in Warrenton.

The impacts associated with the proposed project will be limited if the conditions stipulated in this document, the EMPr as well as best practices are implemented.

| | | | |
|---|---|---|---|
| **11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?** | | NO | |

It is suggested that future (similar) projects will also:

Investigate the availability of existing infrastructure to be used for the attachment of the pipelines / construction of pipelines at areas previously disturbed, instead if constructing a new pipeline in an area not previously disturbed.

| | | | |
|---|---|---|---|
| **12. Will any person's rights be negatively affected by the proposed activity/ies?** | YES | | |
| Noise levels may be high during the construction phase. The construction phase will also lead to the formation of nuisance dust. However, this will be limited via dust suppression activities (when required). In addition, construction activities will be limited to normal working hours, where possible. Noise levels will have to comply with the requirements as set out in the OSH Act. | | | |
| **13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?** | | NO | |
| The proposed activity will not compromise the urban edge. | | | |
| **14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?** | YES | | |
| August 2014: SIP 18: Water and sanitation infrastructure | | | |
| **15. What will the benefits be to society in general and to the local communities?** | | | Please explain |
| • Employment opportunities<br>• Availability of potable water | | | |
| **16. Any other need and desirability considerations related to the proposed activity?** | | | Please explain |
| N/A | | | |
| **17. How does the project fit into the National Development Plan for 2030?** | | | Please explain |
| Availability of potable water | | | |
| **18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.** | | | |

Section 23 of NEMA (Act 107, 27 November 1998) reads as follows:
'23. (1) The purpose of this Chapter is to promote the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities,
(2) The general objective of integrated environmental management is to -
(a) promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment:
(b) identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximizing benefits and promoting compliance with the principles of environmental management set out in section 2;
(c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;

(d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;

(e) ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and

(f) identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.

(3) The Director-General must coordinate the activities of organs of state referred to in section 24(1) and assist them in giving effect to the objectives of this section and such assistance may include training, the publication of manuals and guidelines and the co-ordination of procedures.'

With the above in mind, the following objectives were taken into consideration:

1. An application for environmental authorisation was submitted to the Department.
2. Integration of various principles of environmental management were implemented in order to make decisions regarding the significant effect of the proposed project on the environment
3. Identified, predicted and evaluated the actual potential impact of the proposed project on the environment, the socio-economic conditions and heritage, as well as the consequences and alternatives and options for mitigation of activities. This was done to minimize the possible negative impacts on the environment and maximizing benefits to mankind.
4. Taken the effects of activities on the environment into consideration before actions are to be taken in connection with them.
5. A public participation process was followed.
6. Considered the environmental attributes in management and decision-making with reference to the environment.
7. Mitigation and management activities best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management were investigated.
8. The report follows the laws to identify, predict and evaluate the actual and potential impacts associated with the development.
9. Specialists investigated the site to determine baseline and to predict the impacts associated with the proposed project. The preferred alternative has been identified as the one that will have the least negative impact on the environment, as sensitive areas will be avoided as far as possible. In addition, already disturbed areas will be utilized as far as possible.
10. A public participation process was followed. Consideration of the 2014 EIA Regulations has been applied in this regards.
11. An EMPr is included, with mitigation measures that should be implemented during the planning, construction, operation and possible decommissioning of the proposed project. These mitigation measures are in line with the environmental requirements and Best Practise Principles.

12. Relevant guidelines and procedures were used to produce this document. Therefore, relevant information is reflected, for sufficient co-governance to be implemented.
13. The proposed project provides for the needs of the applicant while ensure compliance with environmental management principles.

19. **Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.**

Section 2 of NEMA (Act 107, 27 November 1998) reads as follows:

( 1 ) The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and—

(a) shall apply alongside all other appropriate and relevant considerations, including the State's responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination;
(b) serve as the general framework within which environmental management and implementation plans must be formulated:
(c) serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment;
(d) serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and
(e) guide the interpretation, administration and implementation of this Act, and any other law concerned with the protection or management of the environment.
(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
(3) Development must be socially, environmentally and economically sustainable.
(4) *(a)* Sustainable development requires the consideration of all relevant factors including the following:
(i) That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied:
(ii) into account the limits of current knowledge about the consequences of decisions and actions; and
(iii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.
(iv) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;

(v) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
(vi) that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;
(vii) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;

viii) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;
(ix) that a risk-averse and cautious approach is applied, which takes
(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.
(c) Environmental justice must be pursued 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.
(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.
(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.
(g) Decisions must take into account the interest, needs and values of all the interested and affected parties, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge.
(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.
(i) The social, economic and environmental impacts of activities, including disadvantages and benefits must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration and assessment.
j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.

(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.
(l) There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.
(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.
(n) Global and international responsibilities relating to the environment must be discharged in the national interest.
(o) The environment is held in public trust for the people. The beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.
(p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.
(q) The vital role of women and youth in environment management and development must be recognised and their full participation therein must be promoted.
(r) 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.
The applicant of the proposed project took the following into consideration:
1. That the disturbance of ecosystems and loss of biological diversity are minimised and remedied by implementing the mitigation measures in this document, the EMPr as well as best practices.
2. Environmental management must be integrated
3. Adverse environmental impacts (if any) shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.
4. The participation of all interested and affected parties in environmental governance must be promoted by means of the public participation process that forms part of the basic assessment process.
5. Community wellbeing and empowerment must be promoted by providing employment opportunities during the construction as well as operational phase.
6. The right of workers to refuse work that is harmful to human health or the environment

## 11. 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, if applicable:

| Title of legislation, policy or guideline | Applicability to the project | Administering authority | Date |
|---|---|---|---|
| National Environmental Management Act, 1998 (Act 107 of 1998) | Proposed construction of a pipeline | NC DENC | 1998 |
| National Heritage Resources Act (Act No 25 of 1999) | Proposed construction of a pipeline | SAHRA | 1999 |
| National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004) | Proposed construction of a pipeline | NC DENC | 2004 |
| Environmental Conservation Act (Act 73 of 1989) | Conservation of the environment, by implementing best practices | DEA / NC DENC | 1989 |
| National Environmental Management Biodiversity Act, 2004 (Act 10 0f 2004) | Endangered / Vulnerable vegetation types and Protected Species (TOPS) | DEA / NC DENC | 2004 |
| Northern Cape Nature Conservation Act (Act 9 of 2009)(NCNCA) | Conservation of the environment, by implementing best practices | DEA / NC DENC | 2009 |
| National Forests Act (Act No. 84 of 1998) (NFA) | Conservation of protected trees (if any) | DAFF | 1998 |
| National Veld and Forest Fires Act, Act 101 of 1998 (NVFFA) | Mitigation measures to be implemented in case of a fire | DAFF | 1998 |
| NEM Laws Amendment Act Department (Act 25 of 2014) | Amended regulations for the Public Participation Process. | DEA / NC DENC | 2014 |
| Conservation of Agricultural Resources Act (Act 43 of 1983) | Agricultural land traversed by the pipeline (if any). Alien vegetation in and surrounding site. | DAFF | 1983 |
| National Water Act, 1998 (Act 36 of 1998) | Activities in proximity to 32m from watercourses. | DWS | 1998 |

## 12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

### a) Solid waste management

| | |
|---|---|
| Will the activity produce solid construction waste during the construction/initiation phase? | YES |
| If YES, what estimated quantity will be produced per month? | Unknown $m^3$ |

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

The contractor will be responsible for the disposal of waste generated during the construction phase. The contractor will remove the construction waste and dispose thereof at a suitable authorized landfill site.

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

Solid waste disposal sites in Warrenton. Hazardous waste (if any) should be disposed of at a suitable authorized hazardous landfill site such as Holfontein.

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

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

N/A

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

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

N/A

*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, then 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 NEM:WA? | NO |

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

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

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

### b) Liquid effluent

| | |
|---|---|
| Will the activity produce effluent, other than normal sewage, that will be disposed of | NO |

| | | |
|---|---|---|
| in a municipal sewage system? | | |
| If YES, what estimated quantity will be produced per month? | | $m^3$ |
| Will the activity produce any effluent that will be treated and/or disposed of on site? | | 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.*

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

If YES, provide the particulars of the facility:

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

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

| |
|---|
| |

**c) Emissions into the atmosphere**

| | | |
|---|---|---|
| Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities? | | NO |
| If YES, is it controlled by any legislation of any sphere of government? | | NO |

If YES, the applicant must 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:

- The emissions associated with the proposed activity can be described as general vehicle emissions and dust formation.
- Construction activities will be limited to day time hours, where possible.
- In addition, dust can also be seen as a potential issue during construction due to blasting activities.
- This will be temporary and the formation of dust will be controlled, when necessary.
- A blasting permit will be obtained before blasting activities is undertaken.
- Adjacent landowners will be notified of proposed blasting 24 hours prior to blasting activities.
- Generation of dust may also occur during general maintenance work, during the operational phase.

**d) Waste permit**

| | | |
|---|---|---|
| Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA? | | NO |

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

**e) Generation of noise**

| | | |
|---|---|---|
| Will the activity generate noise? | YES | |
| If YES, is it controlled by any legislation of any sphere of government? | | NO |

Describe the noise in terms of type and level:

- Noise associated with the development activities will be from general vehicular activities as well as construction activities including blasting, when required.
- Heavy vehicles will be equipped with silencers.
- A blasting permit will be obtained before blasting activities is undertaken.
- The adjacent landowners will be notified of proposed blasting 24 hours prior to blasting activities.
- In addition, construction activities will be limited to day time hours, where possible.
- Additional noise may be generated during the operational phase when maintenance work is required.
- Noise levels will have to comply with the requirements as set out in the OSH Act.

## 13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

| Municipal | Water board | Groundwater | River, stream, dam or lake | Other | The activity will not use water |
|---|---|---|---|---|---|

| | | |
|---|---|---|
| If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month: | | litres |
| Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs? | YES | |

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

An application to DWS, for the impeding and / or alteration of beds / banks of water course(s) will be submitted in due course.

## 14. ENERGY EFFICIENCY

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

N/A

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

| |
|---|
| N/A |

## SECTION B: SITE/AREA/PROPERTY DESCRIPTION

**Important notes:**

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

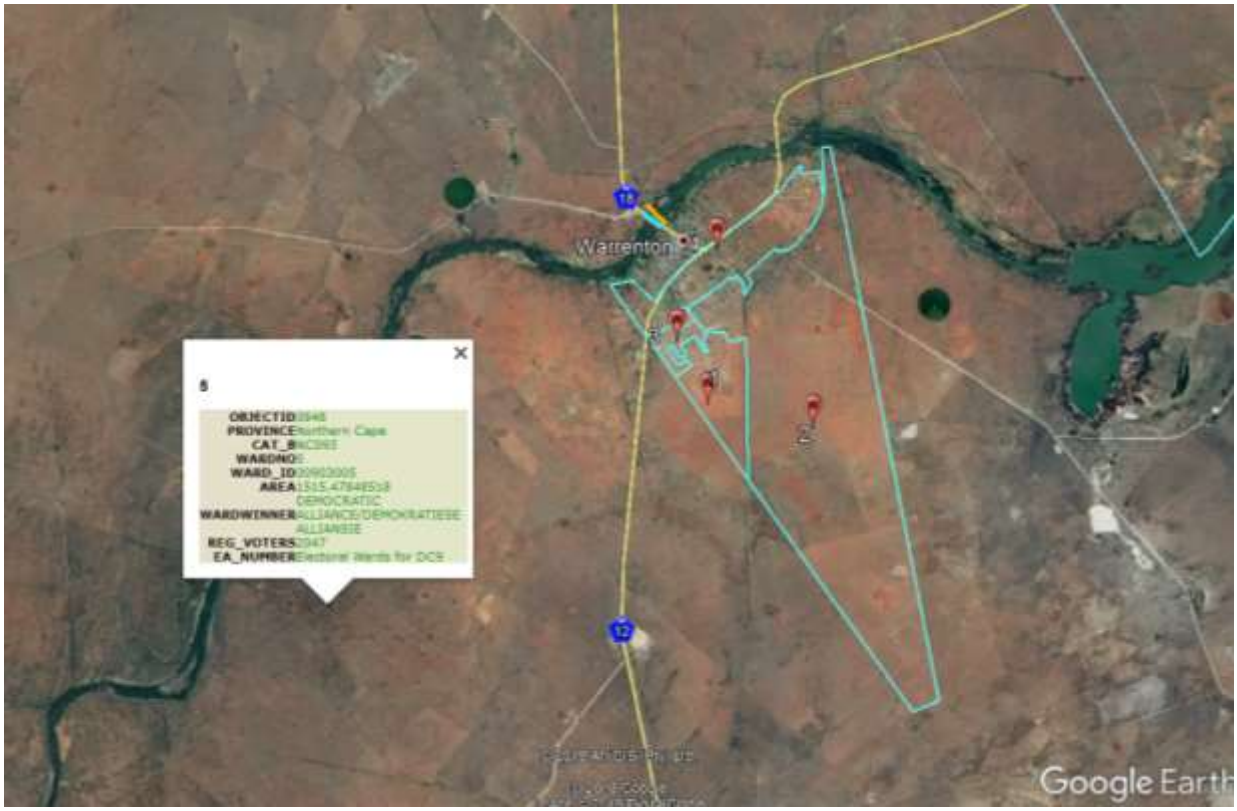
Section B Copy No. (e.g. A): [ ]

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? YES [ ]

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

| | | |
|---|---|---|
| **Property description/physical address:** | **Province** | Northern Cape |
| | **District Municipality** | Frances Baard District Municipality |
| | **Local Municipality** | Magareng Local Municipality |
| | **Ward Number(s)** | 5 |


Warrenton
Google Earth

| | | |
|---|---|---|
| **Preferred Option 1 Road Bridge – no activities within the river** | **Farm name and number** | Park 127 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000012700000 |
| | **Farm name and number** | Remainder of the farm Farm Kraanvogel 27 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700000000002700000 |
| | **Farm name and number** | Remainder of Erf 1 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000000100000 |
| | **Farm name and number** | Remainder of Erf 565 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000056500000 |

| | | |
|---|---|---|
| **Preferred Option 2 Road Bridge – activities within the river** | **Farm name and number** | Park 127 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000012700000 |
| | **Farm name and number** | Remainder of the farm Farm Kraanvogel 27 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700000000002700000 |
| | **Farm name and number** | Remainder of Erf 1 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000000100000 |
| | **Farm name and number** | Remainder of Erf 565 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000056500000 |

| | | |
|---|---|---|
| **Preferred Option 3 Low Level Bridge/ Magaretha Prinsloo Bridge - On Bridge Deck** | **Farm name and number** | Remainder of Erf 2238 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000223800000 |
| | **Farm name and number** | Remainder of Erf 1601 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000160100000 |
| | **Farm name and number** | Remainder of Erf 540 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000054000000 |
| | **Farm name and number** | Park 127 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000012700000 |

| | | |
|---|---|---|
| **Preferred Option 4 Low Level Bridge/ Magaretha Prinsloo Bridge – Attached to Downstream Side of Bridge** | **Farm name and number** | Remainder of Erf 2238 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000223800000 |
| | **Farm name and number** | Remainder of Erf 1601 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000160100000 |
| | **Farm name and number** | Remainder of Erf 540 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000054000000 |
| | **Farm name and number** | Remainder of Erf 2289 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000228900000 |

| | | |
|---|---|---|
| **Preferred Option 5 Below River Bed - On the existing pipe line in commission at present** | **Farm name and number** | Remainder of Erf 2238 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000223800000 |
| | **Farm name and number** | Remainder of Erf 1601 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000160100000 |
| | **Farm name and number** | Remainder of Erf 540 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000054000000 |

| | | |
|---|---|---|
| **Preferred Option 6 Below River Bed - In the old pipe line servitude that is upstream from the low-level bridge** | **Farm name and number** | Remainder of Erf 327 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000032700000 |
| | **Farm name and number** | Remainder of Park 156 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000015600000 |
| | **Farm name and number** | Remainder of Erf 540 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000054000000 |
| | **Farm name and number** | Remainder of Erf 1 |
| | **Portion number** | Remainder |
| | **SG Code** | C00700070000000100000 |
| | **Farm name and number** | Remainder of Erf 778 |
| | **Portion number** | Remainder |
| | **SG Code** | C03700030000077800000 |

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

**Current land-use zoning as per local municipality IDP/records:**

| Farm | Erf | Park |
|---|---|---|
| Remainder of the farm Farm Kraanvogel 27 | Remainder of Erf 1 | Park 127 |
| | Remainder of Erf 565 | Park 156 |
| | Remainder of Erf 2289 | |
| | Remainder of Erf 2238 | |
| | Remainder of Erf 1601 | |
| | Remainder of Erf 327 | |
| | Remainder of Erf 540 | |
| | Remainder of Erf 778 | |

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required? | | NO |

## 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

**Preferred Option 1** Road Bridge – no activities within the river

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 |

**Preferred Option 2** Road Bridge – activities within the river

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 |

**Preferred Option 3** Low Level Bridge / Magaretha Prinsloo Bridge - On Bridge Deck

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 |

**Preferred Option 4** Low Level Bridge/ Magaretha Prinsloo Bridge – Attached to Downstream Side of Bridge

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 |

**Preferred Option 5** Below River Bed - On the existing pipe line in commission at present

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 |

**Preferred Option 6** Below River Bed - In the old pipe line servitude that is upstream from the low-level bridge

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 |

## 2. LOCATION IN LANDSCAPE

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

| | | | | | |
|---|---|---|---|---|---|
| 2.1 Ridgeline | | 2.4 Closed valley | | 2.7 Undulating plain / low hills | |
| 2.2 Plateau | | 2.5 Open valley | | 2.8 Dune | |
| 2.3 Side slope of hill/mountain | | 2.6 Plain | | 2.9 Seafront | |
| 2.10 At sea | | | | | |

**NOTE: The proposed construction site is located in the Vaal River. The river is bordered to Warrenton Town (urban area) and an open area to the south, and an open area (agricultural activities) to the north.**

## 3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

| | Preferred Option 1, 2, 3, 4, 5 & 6: | |
|---|---|---|
| Shallow water table (less than 1.5m deep) | YES | |
| Dolomite, sinkhole or doline areas | | NO |
| Seasonally wet soils (often close to water bodies) | YES | |
| Unstable rocky slopes or steep slopes with loose soil | | NO |
| Dispersive soils (soils that dissolve in water) | | NO |
| Soils with high clay content (clay fraction more than 40%) | | NO |
| Any other unstable soil or geological feature | | NO |
| An area sensitive to erosion | YES | |

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

## 4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

| | | | | |
|---|---|---|---|---|
| Natural veld - good condition[E] | Natural veld with scattered aliens[E] | Natural veld with heavy alien infestation[E] | Veld dominated by alien species[E] | Gardens |
| Sport field | Cultivated land | Paved surface | Building or other structure | Bare soil |

If any of the boxes marked with an "E "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

**NOTE:**
**Summary of ecological report:**

The topography of the site consists of the floodplain and main channel of the Vaal River. The site itself consists largely of natural vegetation although the presence of the road- and footbridge does cause local transformation. The topography of the surrounding area is relatively flat without any pronounced hills and gradually slopes towards the river.

The site consists mostly of natural vegetation although degradation as a result of bridge structures has caused significant disturbance and some transformation of the vegetation. The vegetation layer contains a high percentage of exotic weeds which are also indicative of significant disturbance. The Vaal River is characterised by high levels of disturbance, especially as a result of upstream impacts. This will undoubtedly have an effect on the vegetation condition at the site. Other impacts include the proximity of the urban area of Warrenton and existing bridge structures over the river.

The surrounding terrestrial vegetation is dominated by a relatively closed tree/shrub layer dominated by species such as *Vachellia tortilis, Diospyros lycioides, Tarchonanthus camphoratus* and *Searsia lancea*. A sparse grass layer is present and dominated by grasses such as *Themeda triandra, Eragrostis lehmanniana, E. superba, Aristida congesta* and *Schmidtia pappophoroides.* Dwarf shrubs and herbs are also common and include *Pentzia quiquifida, P. incana, Chaenostoma halimifolium, Heliotropium ciliatum* and *Aptosimum procumbens*.

The vegetation and habitat where the pipeline is to be installed can be considered as still largely natural although the presence of abundant exotic weeds indicate that significant disturbance of the river has occurred. As a result of the transformed and degraded condition of the Vaal River the habitat will also be somewhat transformed from the natural condition.
The main channel and marginal zone of the Vaal River can be characterised as a channel wetland (SANBI 2009).

The results of the IHI indicated that the Vaal River has an Instream IHI of category D: Largely Modified and Riparian IHI of category D: Largely Modified. This is largely due to the change in flooding regime and other significant upstream impacts as well as damming, alluvial diamond mining and centre-pivot irrigation.

The EI&S of the floodplains associated with the Vaal River has been rated as being Moderate: Floodplains that are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these floodplains are not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water of major rivers.

Although the Vaal River is highly degraded by the discussed impacts it still provides a vital water transportation and ecosystem service and should therefore be considered as sensitive. A high number of downstream users are also still dependant on it.

Construction of the proposed pipeline over the river is likely to result in some impacts. The material being transported by the pipeline being potable water, will have a negligible impact should leaks or spillages occur into watercourses. This is therefore not considered a likely impact. The installation of the pipeline will however result in the disturbance of the bed and banks of the watercourses. This in turn will promote erosion, prevent the banks from stabilising and lead to increased sedimentation of the watercourses. As a result disturbance of the banks should be kept to a minimum and erosion remediated where it occurs. Removal of vegetation should also be kept to a minimum. The disturbance caused by construction will also cause susceptible conditions for further establishment of exotics. It is therefore recommended that weed eradication be initiated at the crossing site prior to construction and continued until rehabilitation of the pipeline route has been completed. When excavating in watercourses the upper 30 cm, or topsoil, should be removed together with the vegetation and stored as sods on the site. These should then be replaced on top of the installed pipeline. Subsoil should be used as backfilling and not as top dressing. Only removed sods and topsoil should be utilised to rehabilitate the bed and bank surface. The soil surface should also be re-instated to the virgin soil level and not depressed or elevated as this will promote erosion and cause flow barriers. After rehabilitation any excess soil or material should be removed and disposed of at a registered disposal facility. Installation of the pipeline through the river should preferably be undertaken during the winter months (July to September) when baseflow will be at its lowest level.

The three alternative pipeline routes will also have differing impacts on the river:

a) Attachment of the pipeline to either the road- or footbridge will have a very low impact. Disturbance of the bed and banks will be negligible if any of these alternatives are considered.
b) Utilizing the alternative of the existing pipeline imbedded in the riverbed will result in significant impacts as this will require disturbance of the bed and banks of the river. This alternative is therefore the least desirable.

## 5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

| | | | |
|---|---|---|---|
| Perennial River | YES | | |
| Non-Perennial River | | NO | |
| Permanent Wetland | | NO | |
| Seasonal Wetland | | NO | |
| Artificial Wetland | | NO | |
| Estuarine / Lagoonal wetland | | NO | |

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

**NOTE:**
**Information on the Vaal River:**

The vegetation and habitat where the pipeline is to be installed can be considered as still largely natural although the presence of abundant exotic weeds indicate that significant disturbance of the river has occurred. As a result of the transformed and degraded condition of the Vaal River the habitat will also be somewhat transformed from the natural condition.
The main channel and marginal zone of the Vaal River can be characterised as a channel wetland (SANBI 2009).

The results of the IHI indicated that the Vaal River has an Instream IHI of category D: Largely Modified and Riparian IHI of category D: Largely Modified. This is largely due to the change in flooding regime and other significant upstream impacts as well as damming, alluvial diamond mining and centre-pivot irrigation.

The EI&S of the floodplains associated with the Vaal River has been rated as being Moderate: Floodplains that are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these floodplains are not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water of major rivers.

Although the Vaal River is highly degraded by the discussed impacts it still provides a vital water transportation and ecosystem service and should therefore be considered as sensitive. A high number of downstream users are also still dependant on it.

Construction of the proposed pipeline over the river is likely to result in some impacts. The material being transported by the pipeline being potable water, will have a negligible impact should leaks or spillages occur into watercourses. This is therefore not considered a likely impact. The installation of the pipeline will however result in the disturbance of the bed and banks of the watercourses. This in turn will promote erosion, prevent the banks from stabilising and lead to increased sedimentation of the watercourses. As a result disturbance of the banks should be kept to a minimum and erosion remediated where it occurs. Removal of vegetation should also be kept to a minimum. The disturbance caused by construction will also cause susceptible conditions for further establishment of exotics. It is therefore recommended that weed eradication be initiated at the crossing site prior to construction and continued until rehabilitation of the pipeline route has been completed. When excavating in watercourses the upper 30 cm, or topsoil, should be removed together with the vegetation and stored as sods on the site. These should then be replaced on top of the installed pipeline. Subsoil should be used as backfilling and not as top dressing. Only removed sods and topsoil should be utilised to rehabilitate the bed and bank surface. The soil surface should also be re-instated to the virgin soil level and not depressed or elevated as this will promote erosion and cause flow barriers. After rehabilitation any excess soil or material should be removed and disposed of at a registered disposal facility. Installation of the pipeline through the river should preferably be undertaken during the winter months (July to September) when baseflow will be at its lowest level.

The three alternative pipeline routes will also have differing impacts on the river:

a) Attachment of the pipeline to either the road- or footbridge will have a very low impact. Disturbance of the bed and banks will be negligible if any of these alternatives are considered.
b) Utilizing the alternative of the existing pipeline imbedded in the riverbed will result in significant impacts as this will require disturbance of the bed and banks of the river. This alternative is therefore the least desirable.

## 6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

| | | |
|---|---|---|
| Natural area | Dam or reservoir | Polo fields |
| Low density residential | Hospital/medical centre | Filling station H |

| | | |
|---|---|---|
| Medium density residential | School | Landfill or waste treatment site |
| High density residential | Tertiary education facility | Plantation |
| Informal residential[A] | Church | Agriculture |
| Retail commercial & warehousing | Old age home | River, stream or wetland |
| Light industrial | Sewage treatment plant[A] | Nature conservation area |
| Medium industrial [AN] | Train station or shunting yard [N] | Mountain, koppie or ridge |
| Heavy industrial [AN] | Railway line [N] | Museum |
| Power station | Major road (4 lanes or more) [N] | Historical building |
| Office/consulting room | Airport [N] | Protected Area |
| Military or police base/station/compound | Harbour | Graveyard |
| Spoil heap or slimes dam[A] | Sport facilities | Archaeological site |
| Quarry, sand or borrow pit | Golf course | Other land uses (describe) |

If any of the boxes marked with an "[N] "are ticked, how this impact will / be impacted upon by the proposed activity? Specify and explain:

| |
|---|
| N/A |

If any of the boxes marked with an "[An]" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

| |
|---|
| N/A |

If any of the boxes marked with an "[H]" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

| |
|---|
| N/A |

Does the proposed site (including any alternative sites) fall within any of the following:

| | | |
|---|---|---|
| Critical Biodiversity Area (as per provincial conservation plan) | | NO |
| Core area of a protected area? | | NO |
| Buffer area of a protected area? | | NO |
| Planned expansion area of an existing protected area? | | NO |
| Existing offset area associated with a previous Environmental Authorisation? | | NO |
| Buffer area of the SKA? | | NO |

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

**NOTE:**
Although the area does not fall within any of the above mentioned areas, best practices should be implemented during the construction phase in order to limit any environmental impacts, as the proposed construction site is within the Vaal River.

## 7. CULTURAL/HISTORICAL FEATURES

| Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain: | YES | |
|---|---|---|
| The Margaretha Prinsloo Bridge is assigned a site rating of Local Significance (Grade 3) and should preferably be avoided with regards to the proposed development. | | |

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

A phase 1 Heritage Impact was carried out for a new pipeline crossing over the Vaal River at the Margaretha Prinsloo Bridge on the N18 National Road outside Warrenton, Northern Cape Province. A foot survey of the study area revealed severely degraded terrain with no evidence for the accumulation and preservation of intact fossil material and *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art (engravings) or glacial striations, prehistoric structures, graves or historically significance buildings older than 60 years (besides the Margaretha Prinsloo Bridge) within the boundaries of the proposed footprint options. The proposed bridge and existing pipeline footprint options are underlain by severely degraded superficial sediments resting on a pre-Karoo platform of Ventersdorp basalts and andesites of the Allanridge Formation, the former as a result of previous construction activities. The bridge and existing pipeline footprint options are considered to be of no to very low paleontological significance respectively. Likewise, impact on potentially *in situ* archaeological remains, engraving localities, graves or historically significant structures (besides the Margaretha Prinsloo Bridge) within the proposed footprint options is considered unlikely. The Margaretha Prinsloo Bridge is assigned a site rating of Local Significance (Grade 3) and should preferably be avoided with regards to the proposed development. The modern bridge and old existing pipeline route are assigned site ratings of Generally Protected C (GP.C).

| Will any building or structure older than 60 years be affected in any way? | | |
|---|---|---|
| **Preferred Option 1** **Road Bridge – no activities within the river** | | NO |
| **Preferred Option 2** **Road Bridge – activities within the river** | | NO |
| **Preferred Option 3** **Low Level Bridge / Margaretha Prinsloo Bridge - On Bridge Deck** | YES | |
| **Preferred Option 4** **Low Level Bridge/ Margaretha Prinsloo Bridge –To Downstream Side of Bridge** | YES | |
| **Preferred Option 5** **Below River Bed - On the existing pipe line in commission at present** | | NO |
| **Preferred Option 6** **Below River Bed - In the old pipe line servitude that is upstream from the low-level bridge** | | NO |

| | | |
|---|---|---|
| Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)? | | |
| **Preferred Option 1** **Road Bridge – no activities within the river** | | NO |
| **Preferred Option 2** **Road Bridge – activities within the river** | | NO |
| **Preferred Option 3** **Low Level Bridge / Margaretha Prinsloo Bridge - On Bridge Deck** | YES | |
| **Preferred Option 4** **Low Level Bridge / Margaretha Prinsloo Bridge –To Downstream Side of Bridge** | YES | |
| **Preferred Option 5** **Below River Bed - On the existing pipe line in commission at present** | | NO |
| **Preferred Option 6** **Below River Bed - In the old pipe line servitude that is upstream from the low-level bridge** | | NO |

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

**NOTE:**
An application will be submitted to SAHRA, should Preferred Option 3 or 4 be considered.

## 8. SOCIO-ECONOMIC CHARACTER

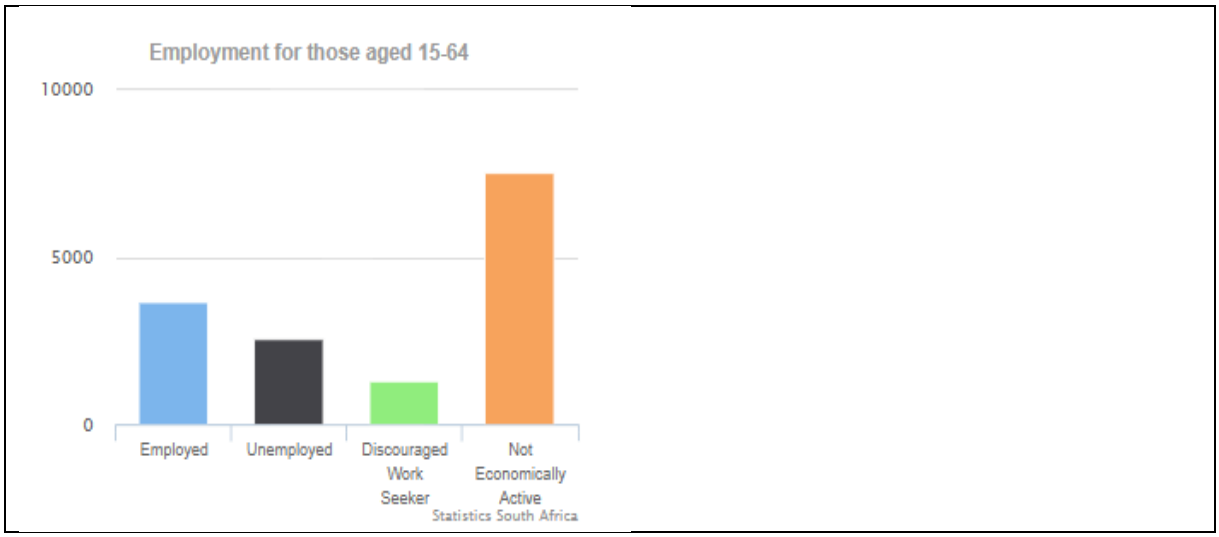
### a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

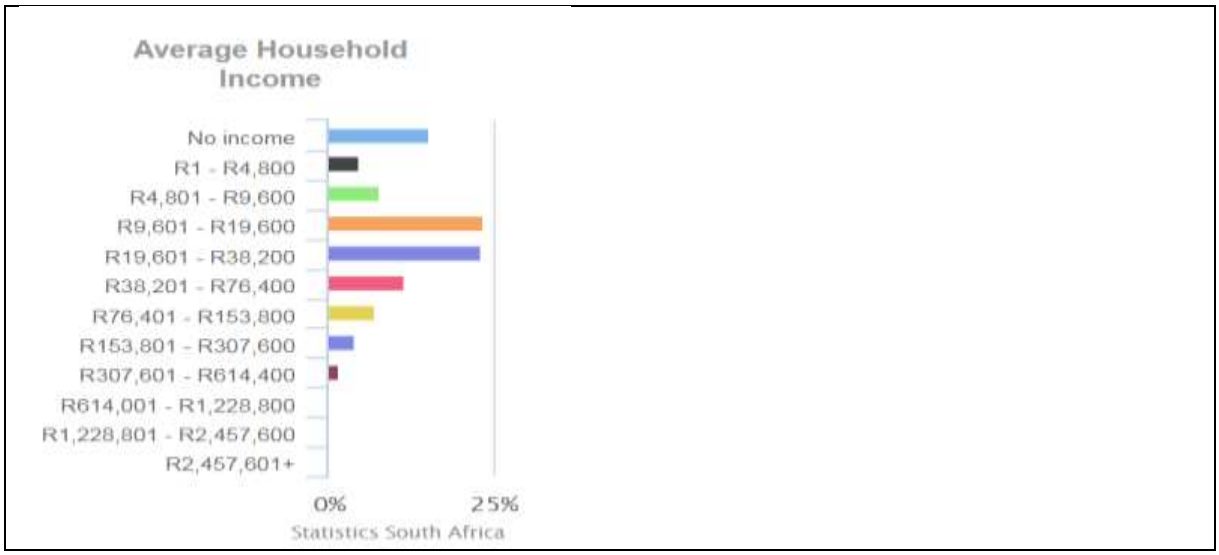
**NOTE:**
According to Census 2011, Magareng Local Municipality has a total population of 24 204 people, of whom 80,0% are black African, 13,9% are coloured, 5,1% are white and 0,7% are Indian/Asian. The other population groups make up the remaining 0,3%. In this municipality. 41,7% of households are headed by females.

Of those aged 20 years and older, 5,0% have completed primary school, 32,6% have some secondary education, 24,0% have completed matric, and 3,5% have some form of higher education, while 16,6% of those aged 20 years and older have no form of schooling.

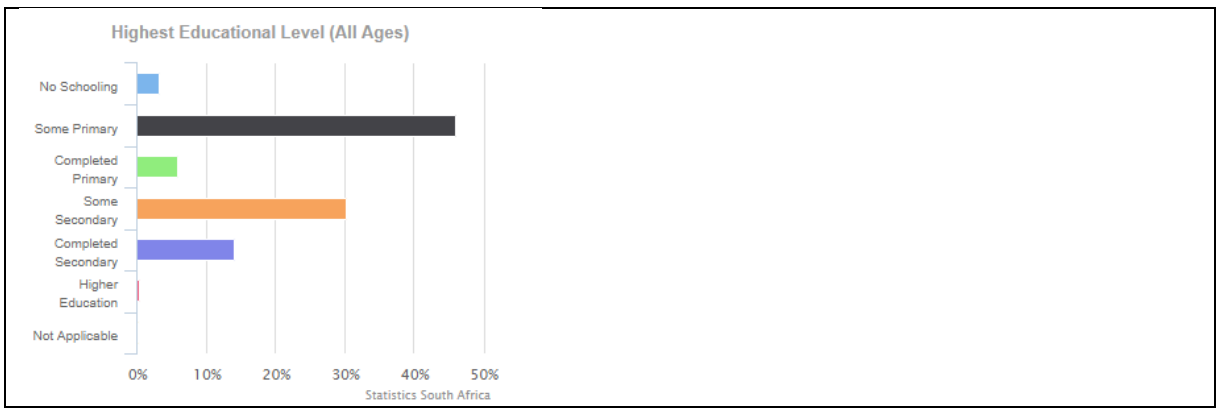
Level of unemployment:




Economic profile of local municipality:




Level of education:



**b) Socio-economic value of the activity**

| | | |
|---|---|---|
| What is the expected capital value of the activity on completion? | R 50 000 000 (note, this project forms part of a larger water reticulation project) | |
| What is the expected yearly income that will be generated by or as a result of the activity? | N/A, as this is a water service project | |
| Will the activity contribute to service infrastructure? | YES | |
| Is the activity a public amenity? | YES | |
| How many new employment opportunities will be created in the development and construction phase of the activity/ies? | Unknown, depending on contractor | |
| What is the expected value of the employment opportunities during the development and construction phase? | Unknown, depending on contractor | |
| What percentage of this will accrue to previously disadvantaged individuals? | 80% | |
| How many permanent new employment opportunities will be created during the operational phase of the activity? | Unknown | |
| What is the expected current value of the employment opportunities during the first 10 years? | Unknown | |
| What percentage of this will accrue to previously disadvantaged individuals? | 80% | |

## 9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

**a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)**

| Systematic Biodiversity Planning Category | If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan |
|---|---|

| | | | | |
|---|---|---|---|---|
| Critical Biodiversity Area (CBA) | Ecological Support Area (ESA) | Other Natural Area (ONA) | No Natural Area Remaining (NNR) | According to Mucina & Rutherford (2006) the vegetation on the site and along the Vaal River consists of Highveld Alluvial Vegetation (AZa 5) while the surrounding area consists of Kimberley Thornveld (SVk 4). Both of these vegetation types are currently listed as being of Least Concern (LC) (National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)). They are not currently subjected to any significant development pressures. The vegetation on the site is relatively disturbed by road and bridge crossings but still remains largely natural.<br>The results of the IHI indicated that the Vaal River has an Instream IHI of category D: Largely Modified and Riparian IHI of category D: Largely Modified. This is largely due to the change in flooding regime and other significant upstream impacts as well as damming, alluvial diamond mining and centre-pivot irrigation. Although the Vaal River is highly degraded by the discussed impacts it still provides a vital water transportation and ecosystem service and should therefore be considered as sensitive. A high number of downstream users are also still dependent on it. |

| Systematic Biodiversity Planning Category | | | | If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan |
|---|---|---|---|---|
| Critical Biodiversity Area (CBA) | Ecological Support Area (ESA) | Other Natural Area (ONA) | No Natural Area Remaining (NNR) | Although the Vaal River is highly degraded by the discussed impacts it still provides a vital water transportation and ecosystem service and should therefore be considered as sensitive. A high number of downstream users are also still dependent on it. |

**b) Indicate and describe the habitat condition on site**

| Habitat Condition | Percentage of habitat condition class (adding up to 100%) | Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc). |
|---|---|---|
| Natural | 20% | The largest impact on the site itself is the existing road- and footbridges which causes significant obstruction of flow. The majority of the site is still considered to be natural although the bridge structures do cause local transformation and the presence of a high abundance of exotic species indicates significant disturbance. The most prominent impacts are the upstream alluvial diamond mining, centre-pivot irrigation and construction of containment dams which alter the flooding regime and the functioning and habitat of the river and its floodplains. An Index of Habitat Integrity (IHI) was conducted along the Vaal River at the site (Appendix B). The results of the IHI indicated that the Vaal River has an Instream IHI of category D: Largely Modified |
| Near Natural (includes areas with low to moderate level of alien invasive plants) | 40% | |
| Degraded (includes areas heavily invaded by alien plants) | 30% | |
| Transformed (includes cultivation, dams, urban, plantation, roads, etc) | 10% | |

| | | |
|---|---|---|
| | | and Riparian IHI of category D: Largely Modified. This is largely due to the change in flooding regime and other significant upstream impacts as well as damming, alluvial diamond mining and centre-pivot irrigation.<br><br>The EI&S of the floodplains associated with the Vaal River has been rated as being Moderate: Floodplains that are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these floodplains are not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water of major rivers.<br><br>Although the Vaal River is highly degraded by the discussed impacts it still provides a vital water transportation and ecosystem service and should therefore be considered as sensitive. A high number of downstream users are also still dependant on it. |

**c) Complete the table to indicate:**

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

| **Terrestrial Ecosystems** | | **Aquatic Ecosystems** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)** | Least Threatened | Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands) | | | Estuary | | Coastline | |
| | | YES | | | | NO | | NO |

**d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)**

**NOTE:**
Summary of Ecological Report

**Terrestrial Ecosystem:**
According to Mucina & Rutherford (2006) the vegetation on the site and along the Vaal River consists of Highveld Alluvial Vegetation (AZa 5) while the surrounding area consists of Kimberley Thornveld (SVk 4). Both of these vegetation types are currently listed as being of Least Concern (LC) (National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)). They are not currently subjected to any significant development pressures. The vegetation on the site is relatively disturbed by road and bridge crossings but still remains largely natural.

**Aquatic Ecosystem:**
The results of the IHI indicated that the Vaal River has an Instream IHI of category D: Largely Modified and Riparian IHI of category D: Largely Modified. This is largely due to the change in flooding regime and other significant upstream impacts as well as damming, alluvial diamond mining and centre-pivot irrigation. Although the Vaal River is highly degraded by the discussed impacts it still provides a vital water transportation and ecosystem service and should therefore be considered as sensitive. A high number of downstream users are also still dependent on it.

Although the Vaal River is highly degraded by the discussed impacts it still provides a vital water transportation and ecosystem service and should therefore be considered as sensitive. A high number of downstream users are also still dependent on it.

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT AND NOTICE

| | | |
|---|---|---|
| **Publication name** | Die Noordkaap | |
| **Date published** | 28 February 2018 | |
| **Site notice position** | **Latitude** | **Longitude** |
| | 28° 06' 26.92"S | 24° 50' 31.26"E |
| **Date placed** | 6 March 2018 | |

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

## 2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

| Title, Name and Surname | Affiliation/ key stakeholder status | Contact details (tel number or e-mail address) |
|---|---|---|
| Department of Agriculture, Land Reform and Rural Development | | For Attention: Mr G.N. Esterhuysen<br>Telephone: 054 337 8000<br>Facsimile: 054 337 8001<br>P.O. Box 52<br>Upington<br>8800 |
| ESKOM | Possible Servitude | Andrea van Gensen<br>Environmental Manager<br>Land Development & Environment<br>Northern Cape Operating Unit<br>Eskom Holdings SOS Limited<br>DSC Office Block 69<br>Memorial Road<br>PO Box 606<br>Kimberley<br>8301 |
| SANRAL | Servitude / landowner:<br>Remainder of the Erf 2298<br>Remainder of Erf 1601<br>Remainder of Erf 2238 | Colene Runkel (WR)<br>Statutory Control<br><br>1 Havenga Street<br>Oakdale Bellville, Bellville,<br>Western Cape, 7530,<br>South Africa<br>021 957 4613<br>runkelc@nra.co.za |
| TELKOM | Possible Servitude | For Attention: Ms H. Van den Heever<br>Telkom Wayleave Operations Manager<br>Facsimile: 051 401 6238<br>Tel: 051 401 6829 |

| | | |
|---|---|---|
| | | Private Bag X20700<br>Bloemfontein<br>9300<br>wayleacr@telkom.co.za |
| Department of Roads and Public Works: Northern Cape Province | Possible Servitude<br>/<br>Landowner:<br>Remainder of Farm 27 (Vaal River) | PO Box 3132<br>Kimberley<br>8300<br>9-11 Stokroos Street<br>Square Hill Park<br>Kimberley<br>8301<br>053 839 2100<br><br>For Attention: Mr I. Bulane<br>Department of Roads and Public Works<br>072 086 6241<br>P.O. Box 3132<br>Kimberley<br>8300<br>leecha1@vodamail.co.za |
| Rural Development and Land Reform: Northern Cape Province | Landowner:<br>Remainder of Farm 27 (Vaal River) | New Public Building<br>Knight and Stead Street<br>Kimberley<br>6th Floor<br>0538314090 |
| Magareng Local Municipality | Landowner:<br>Remainder of Erf 327<br>Remainder of Erf 392<br>Remainder of Lot / Holding 1<br>Park: Remainder of Erf 156 256<br>Park Erf 127<br>Park Erf 156 | Mrs Millicent Masuku<br>P.O. Box 10<br>Warrenton<br>8530 |
| Engelbrecht Boerdery Trust | Landowner:<br>Remainder of Erf 540 | P.O. Box 50<br>Augrabies<br>8874<br><br>30 Voortrekker Street<br>Kakamas<br>8870 |
| Michael Guillaume Horn | Landowner:<br>Remainder of Erf 565 | P.O. BOX 65<br>Magogong |

| | | |
|---|---|---|
| | | 8575<br><br>T: 0534710119 |
| Jan Johannes Erasmus | Landowner:<br>Remainder of Erf 778 | 21 Long Street<br>Warrenton<br>8530<br>T: 0795619482 |
| NOTE: Adjacent landowners were notified via site notices and an advert in a local newspaper. | | |

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

## 3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

| Summary of main issues raised by I&APs | Summary of response from EAP |
|---|---|
| **1. ESKOM**<br>1.1. The proposed pipeline will be constructed in close proximity to the existing ESKOM infrastructure.<br>1.2. An application to ESKOM's Land and Rights Department should be submitted in order to investigate the possible affects. | Please note that formal wayleave applications will be submitted by the appointed contractor, before any construction activities are undertaken. |
| **2. TELKOM**<br>2.1. Mr David Gopane (053 927 4041 / 081 401 1563) should be contacted two weeks before any construction activities are undertaken.<br>2.2. Any changes / deviations from the original plans must immediately be communicated to this office.<br>2.3. Any damages / cables stolen by a third party will be repaired / replaced by your | Please note that formal wayleave applications will be submitted by the appointed contractor, before any construction activities are undertaken. |

| | |
|---|---|
| account.<br>2.4. Please make use of pilot holes in order not to damage our infrastructures.<br>2.5. An as-built plan should be forwarded to this office within 30 days of completion of construction.<br>2.6. This approval is valid for 6 months. | |

## 4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

NOTE: NO COMMENTS OTHER THAN THOSE DESCRIBED IN THE ABOVE SECTION, WERE RECEIVED TO DATE. A RESPONSE TO ALL FURTHER COMMENTS RECEIVED WILL BE FORWARDED TO NC DENC.

## 5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

| Authority/Organ of State | Contact person | Tel No | Fax No | e-mail | Postal address |
|---|---|---|---|---|---|
| Head of Department (Acting): Department of Roads And Public Works | Ms Ruth Palm | | | | P.O. Box 3132 Kimberley 8301 |
| HoD: Department of Agriculture & Land Reform: NC | Mr Wvd Mothibi | | | | Private Bag X5018 Kimberley 8300 |
| Department of Public Works: NC Property Manager | | | | | Private Bag X5002 Kimberley 8300 |
| Ward | | | | | P.O. Box 10 |

| Authority/Organ of State | Contact person | Tel No | Fax No | e-mail | Postal address |
|---|---|---|---|---|---|
| Councillor: Ward 5 | | | | | Warrenton 8530 |
| Local Municipal Manager | Mrs Millicent Masuku | | | | P.O. Box 10 Warrenton 8530 |
| District Municipal Manager | Ms Mamikie Bogatsu | 053 838 0998 | | fatima.ruiters@fbdm.co.za (personal assistant of the Municipal Manager) | 51 Drakensberg Avenue, Carters Glen, Kimberley 8301 |
| Chief Director: Northern Cape DWS | Mr Abe Abrahams | 053 830 8800/6 7600<br><br>082 883 6741 | Fax: (053) 831 4534 | AbrahamsA@dws.gov.za | 28 Central Road Beaconsfield KIMBERLY 8301<br><br>Private Bag X6101 KIMBERLEY 8300 |
| Department of Agriculture, Forestry & Fisheries | Jacoline Mans | | 054 334 0030 | jacolinema@daff.gov.za | P.O. Box 2782 Upington 8800 |
| SAHRA | | 021 462 4509 | 021 462 4502 | | P.O. Box 4637 CAPE TOWN 8000 |
| Northern Cape Heritage | Mr Ratha Timothy (Manager) | 053 8312537 0790369 295 | 053 8331435 | ratha.timothy@gmail.com | 1 Monridge Parl Cnr. Kekewich Drive & Memorial Road Kimberley 8300 |
| SANRAL | Colene Runkel (WR) Statutory Control | 021 957 4613 | | runkelc@nra.co.za | 1 Havenga Street Oakdale Bellville Bellville Western Cape |

| Authority/Organ of State | Contact person | Tel No | Fax No | e-mail | Postal address |
|---|---|---|---|---|---|
| | | | | | 7530 |
| ESKOM | Andrea van Gensen | | | | Environmental Manager<br>Land Development & Environment<br>Northern Cape Operating Unit<br>Eskom Holdings SOS Limited<br>DSC Office Block 69<br>Memorial Road<br>PO Box 606<br>Kimberley<br>8301 |
| TELKOM | Ms H. Van den Heever | 051 401 6829 | 051 401 6238 | wayleacr@telkom.co.za | Telkom Wayleave Operations Manager<br>Private Bag X20700<br>Bloemfontein<br>9300 |

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

## 6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

# SECTION D: 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.

## 1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

| Compliance and Monitoring | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| Record keeping of compliance and monitoring reports | **Direct impacts:**<br>• Non-conformance | High Negative | • The applicant will ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction.<br>• An Environmental Control Officer (ECO) will be appointed to monitor the construction phase. Note that the ECO may be appointed separately or can be part of the contractor's team.<br>• Regular monitoring and / or spot inspections at least every fortnight during the construction phase is recommended.<br>• Inspections should be documented and any shortcomings addressed immediately.<br>• A report will be provided by the independent ECO to the contractor upon completion thereof. The findings thereof should be made available to the competent authority (for example NC DENC, DWS), should it be requested.<br>• Any emergency or unforeseen impact will be reported to the relevant environmental department within 24 hours after identification for telephonic approval and will be confirmed in writing.<br>• Material Safety Data Sheets (MSDS) should be available on site. Where possible and available, MSDS should include information on ecological impacts and measures to minimize negative |
| | **Indirect impacts:**<br>• Non-conformance | High Negative | |
| | **Cumulative impacts:**<br>• Non-conformance | High Negative | |

| Compliance and Monitoring | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | environmental impacts during accidental releases or escapes.<br>• Procedures in the MSDS should be implemented in case of an emergency<br>• The following documents should be available on site, and made available to the competent authority on request (if applicable):<br>- Complaints Register<br>- Environmental Incident Register<br>- Disposal Certificates of Waste and Waste Water Generated during the construction / operational phase<br>- Environmental Monitoring (Audit) Reports<br>- Written Corrective Action Instructions<br>- Environmental Authorisation<br>- DWS Permit / License<br>- Blasting Permit<br>- EMPr<br>- Necessary drawings for the attachment to bridges (if any) are to be submitted to the relevant authority (i.e. SANRAL / Provincial Department of Roads / Municipality's Department of Roads) for approval, and the upgrades are to be implemented |

| Planning and Design phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| Planning and design | **Direct impacts:**<br>• None | Medium – High Negative | • No environmental mitigation measures are required during the planning phase on the proposed site, as no mitigation measures are to be implemented on site during the planning phase.<br>• However, the applicant, engineers, environmental consultants and specialists should take the following steps during the planning phase:<br>• Permits will be obtained for the removal / transplantation of protected species (if any) that are located within the construction area where no alternatives are possible.<br>• A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction and operational phase.<br>• The necessary Environmental Authorisation will be obtained before any activities listed in the Regulations are undertaken.<br>• In addition, the necessary DWS registrations will be obtained, before any construction activities near watercourses are undertaken.<br>• The necessary precautions with regard to road safety will be implemented for construction work to be undertaken within road crossings (if any).<br>• Proper sanitation, potable water and waste facilities will be in place before construction activities are undertaken. |
| | **Indirect impacts:**<br>• None | Medium – High Negative | |
| | **Cumulative impacts:**<br>• None | Medium – High Negative | |

| Planning and Design phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | • A blasting permit will be obtained before blasting activities is undertaken (if any).<br>• The design and layout of the proposed project will take the possibility of flooding, erosion and pollution into consideration.<br>• Necessary drawings for the attachment to bridges (if any) are to be submitted to the relevant authority (i.e. SANRAL / Provincial Department of Roads / Municipality's Department of Roads) for approval, and the upgrades are to be implemented<br>• The Contractor must acquire a permit, issued by the relevant heritage resources authority, in the instance that any destruction, damage, excavation, alteration, defacing or any other disruption are to take place to any archaeological material (including bridges older than 60 years). |
| | **Note:**<br>• Should the above not be taken into consideration during the Planning and Design Phase, the environmental impacts associated with the construction and operation phase will be of high significance as the environment will possibly be negatively affected. | | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| General measures to consider | **Direct impacts:**<br>• Loss of vegetation<br>• Loss of animal life<br>• Erosion<br>• Pollution<br>• Noise<br>• Nuisance dust | Negative | • Any construction is disruptive and the environment must be given consideration with every activity undertaken<br>• All relevant standards relating to legislation should be adhered to (including waste emissions, waste disposal, noise regulations, etc.)<br>• According to Section 28 of the NEMA Act 107, every person who cause, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring and if it can't be avoided or stopped, to minimize and rectify such pollution or degradation of the environment.<br>• The pollution control provision in Section 19(1) of the National Water Act (Act 36 of 1998) should be adhered to at all times.<br>• ECO should be provided with a layout of the site, indicating the position of the following prior to the site establishment, for acceptance:<br>• Ablution Facilities<br>• Storage Areas<br>• Ready-mix Areas<br>• Stockpile Areas<br>• Waste Disposal Facilities |
| | **Indirect impacts:**<br>• Possible outbreaks of fire<br>• Pollution (groundwater, surface water, soil and air)<br>• Erosion<br>• Loss of biodiversity (vegetation & animal life)<br>• Nuisance dust | High Negative | |
| | **Cumulative impacts:**<br>• Possible outbreaks of fire<br>• Pollution(groundwater, surface water, soil and air)<br>• Erosion | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | • Loss of biodiversity (vegetation & animal life) | | • Hazardous Substances Storage Area<br>• Etc.<br>• Designate the boundaries of the active construction start-up site, by erecting fencing / danger tape (where applicable)<br>• Fence off operational footprint area (if possible) to ensure all operational activities are contained within the designate area.<br>• All construction and operational activities must be contained within the demarcated servitude determined in consultation with the ECO.<br>• Care will be taken to prevent unnecessary damage to vegetation near to construction activities.<br>• The necessary precautions with regard to road safety will be implemented for construction work within road crossings (if any).<br>• Proper sanitation, water and waste facilities will be in place for construction workers throughout the construction phase.<br>• Chemical toilets will be cleaned and serviced regularly and proof thereof will be available on site.<br>• Potable water will be made available daily to workers on site.<br>• Fire-fighting equipment will be available on site, |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | where applicable.<br>• If artefacts or graves are uncovered during construction activities, work in the immediate vicinity will be stopped until the project Archaeologist and SAHRA has been consulted.<br>• Adjacent landowners will be notified of proposed blasting, 24 hours prior to blasting activities.<br>• All relevant IAPs will be notified 24 hours prior to any known potential risks associated with the site and the activities to be undertaken on site [for example, release of water contained in the Vaal River (if any)] |
| Site access | **Direct impacts:**<br>• Loss of vegetation<br>• Loss of animal life<br>• Erosion<br>• Pollution<br>• Storm water contamination | Medium Negative | • Necessary drawings for the upgrading of intersections / attachment to bridges (if any) are to be submitted to SANRAL / Provincial Department of Roads / Municipality's Department of Roads for approval, and the upgrades are to be implemented<br>• The current access road should be improved, when required<br>• Proper storm water measures are to be implemented to avoid run-off of water and washing of sand / soil onto the road<br>• Erosion measures will be implemented<br>• Removal of vegetation will be kept to the required area |
| | **Indirect impacts:**<br>• Loss of vegetation<br>• Loss of animal life<br>• Erosion<br>• Surface water contamination | High Negative | |
| | **Cumulative impacts:** | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | • Loss of vegetation<br>• Loss of animal life<br>• Erosion<br>• Surface and groundwater contamination | | • No animals will be hunted / captured on site (only to be undertaken by a relevant specialist) |
| Employee conduct on site | **Direct impacts:**<br>• Loss of vegetation<br>• Loss of animal life<br>• Erosion<br>• Pollution<br>• Storm water contamination<br>• Occurrence of waste on site<br>• Various health and safety aspects | Medium Negative | • No animals may be harmed / captured / trapped and / or hunted. This must be strictly enforced.<br>• Animals found at the construction site will be removed and relocated to an appropriate area, by a suitable, qualified person<br>• No open fires allowed. Provision will be made that no accidental fires are started.<br>• No firewood will be collected on site or in surrounding areas, without written approval from the landowner.<br>• No smoking or open fires will be allowed near storage facilities<br>• No waste may be dumped on site<br>• Employees should make use of the ablution facilities provided |
| | **Indirect impacts:**<br>• Loss of vegetation<br>• Loss of animal life<br>• Erosion<br>• Pollution<br>• Storm water contamination<br>• Occurrence of waste on site | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | • Various health and safety aspects<br>• Fire outbreaks | | |
| | **Cumulative impacts:**<br>• Loss of vegetation<br>• Loss of animal life<br>• Erosion<br>• Pollution<br>• Storm water contamination<br>• Occurrence of waste on site<br>• Various health and safety aspects<br>• Fire outbreaks | High Negative | |
| Soil, erosion and vegetation management | **Direct impacts:**<br>• Destruction of vegetation<br>• Loss of topsoil<br>• Loss of vegetative species of conservational concern<br>• Noise elevation due to construction activities<br>• Nuisance dust | Medium Negative | • Construction activities will be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction vehicles will also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily.<br>• Access roads or temporary crossings must be non-erosive, structurally stable and not induce flooding / safety hazard.<br>• If any access road or temporary crossing is impaired, it will be repaired immediately to |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | generation<br>• Visual impact of rock and spoil material dumps | | prevent any future / further damage.<br>• All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat.<br>• Erosion management is important. Rehabilitation measures must be monitored to ensure that no erosion has occurred and the disturbed areas have been adequately re-vegetated.<br>• Concurrent rehabilitation of disturbed areas will be undertaken to help the recovery of the vegetation.<br>• Stockpiled soil will be stockpiled in an area where it will not be disturbed by vehicles.<br>• Stockpiled soil will be protected from washing away during rainstorms. For example:<br>- one layer of bricks or stones can be placed around the stockpiled topsoil.<br>- Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events.<br>- Stockpiles should not be higher than 1.5 m.<br>- The gradient of stockpiles should not be greater than 1:1.5.<br>• Stockpiles should be located away from drainage lines, watercourses and areas of temporary flood<br>• All soil excavated is to be separated into top- and |
| | **Indirect impacts:**<br>• Erosion<br>• Establishment of alien / invader vegetation species<br>• Possible impact on heritage artefacts<br>• Loss of fauna on site. | Medium Negative | |
| | **Cumulative impacts:**<br>• Erosion<br>• Establishment of alien vegetation species | Medium Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | subsoil. Subsoil must be used for backfilling and topsoil for landscaping and rehabilitation of disturbed areas<br>• Stockpiled material will be placed on the cleared areas once construction is completed. Re-spreading of topsoil is preferably to be done to a maximum of 10 cm.<br>• Fertilisers should be used where topsoil and subsoil was mixed or not up to original standard<br>• Indigenous tree species in the vicinity of the operational site should be marked with danger tape. Disturbance to such species should be avoided, where possible. Permit should be obtained for the removal / transplantation of these species<br>• A permit for the removal of protected plant species will be obtained before the removal of these species (if any).<br>• An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase.<br>• Any proclaimed weed or alien species that germinates during the contract period will be cleared by hand / approved chemicals before flowering thereof. |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | • Imported fill material will be monitored during and after construction for the presence of any alien species. Any such species will be removed immediately.<br>• Fire fighting equipment will be available on site.<br>• Species, especially grasses, trees and shrubs occurring in the region will be used to rehabilitate disturbed areas.<br>• Compacted soils (such as dirt tracks not to be utilised during the operational phase) must be ripped to ensure the establishment of natural occurring vegetation.<br>• Concurrent rehabilitation should be undertaken, where possible.<br>• Vegetation clearance will be limited to the required area.<br>• Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways.<br>• Dust control measures will be implemented if nuisance dust generation occurs during the construction period.<br>• All archaeological findings (if any) should be recorded and reported to SAHRA. No construction activities in the area may proceed without the authorisation from SAHRA. |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | • Storm water measures will be implemented in order to manage storm water and this will also prevent erosion.<br>• Visual inspections for the occurrence of erosion should be undertaken on a weekly basis.<br>• No animals may be captured / harmed / killed on site.<br>• Any occurrences of harmed animals should be reported to the ECO and recorded as such. |
| Minimise contamination and sterilisation of soil | **Direct impacts:**<br>• Slow regrowth of natural occurring vegetation during the rehabilitation phase<br>• Loss of vegetation | Medium Negative | • Use of potentially polluting and hazardous substances should be strictly controlled<br>• If soil is significantly contaminated by hazardous substances, then this soil is considered as hazardous and should be disposed of according to best practices<br>• Repair / maintenance will be conducted on site, and impacts like oil spills should be appropriately mitigated. Spill response procedures must be clearly defined and well known by all staff.<br>• All threatened or protected plant species as specified by the NEM: Biodiversity Act (2004) will be identified on site. Permits are required for the removal / transplantation of these plants |
| | **Indirect impacts:**<br>• Loss of vegetation<br>• Loss of animal life<br>• Establishment of alien vegetation<br>• Erosion | High Negative | |
| | **Cumulative impacts:**<br>• Loss of vegetation<br>• Loss of animal life<br>• Establishment of alien vegetation | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | • Erosion | | |
| Trenching, placing of pipeline and covering of pipeline | **Direct impacts:**<br>• Visual impact of rock and spoil material dumps from trench excavation all along the route<br>• Noise elevation due to construction activities<br>• Nuisance dust generation | Medium – High Negative | • Site will be kept neat and tidy.<br>• Appropriate area will be identified as a stockpiling area.<br>• Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways.<br>• Dust control measures will be implemented if nuisance dust generation occurs during the construction period.<br>• Stockpiled material will be stored in such a way to limit the loss thereof. For example:<br>- Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events.<br>- Stockpiles should not be higher than 1.5 m.<br>- The gradient of stockpiles should not be greater than 1:1.5.<br>• Noise control measures will be implemented.<br>• All employees will be provided with the correct PPE |
| | **Indirect impacts:**<br>• Erosion<br>• Establishment of alien / invader vegetation species<br>• Possible impact on heritage artefacts<br>• Loss of fauna on site | Medium – High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | **Cumulative impacts:**<br>• Erosion<br>• Establishment of alien vegetation species | Medium – High Negative | • Establishment of alien / invader vegetation will be monitored and these species will be removed by hand or by an approved chemical before gestation thereof.<br>• All archaeological findings (if any) should be recorded and reported to SAHRA. No construction activities in the area may proceed without the authorisation from SAHRA.<br>• Storm water measures will be implemented in order to manage storm water and this will also prevent erosion.<br>• Visual inspections for the occurrence of erosion should be undertaken on a weekly basis.<br>• No animals may be captured / harmed / killed on site.<br>• Any occurrences of harmed animals should be reported to the ECO and recorded as such. |
| Ablution Facilities | **Direct impacts:**<br>• Pollution of surface water runoff<br>• Pollution of soil | Negative | • No open areas or the surrounding vegetation may be used as 'toilet facilities'<br>• Toilets should be available for all employees. Where waterborne sewerage is not available, the ECO must designate an area within the boundaries of the site for the erection of portable chemical toilets.<br>• Toilet facilities shall occur at a minimum ration of 1 toilet per 15 employees. |
| | **Indirect impacts:**<br>• Pollution of surface water runoff<br>• Pollution of soil<br>• Pollution of | Medium Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | groundwater<br>• Odour<br>• Unnatural enrichment of soil | | • Toilets shall be maintained in a hygienic state and serviced when required.<br>• Temporary toilets should be serviced regularly and the contents be removed to a licensed disposal facility. |
| | **Cumulative impacts:**<br>• Pollution of surface water runoff<br>• Pollution of soil<br>• Pollution of groundwater<br>• Odour<br>• Unnatural enrichment of soil | High Negative | |
| Safeguard water resources | **Direct impacts:**<br>• Contamination of surface water resources | High Negative | • No activities will be undertaken within 32 m of a watercourse / within the 1:100 year floodline / 500m of a wetland, without the necessary authorisations (for example from NC DENC and DWS).<br>• Caution will be taken to ensure that construction materials are not dumped or stored within storm water management systems.<br>• Construction activities in the storm water infrastructure will be limited through proper demarcation and appropriate environmental awareness training.<br>• The Contractor is responsible to inform all staff of |
| | **Indirect impacts:**<br>• Erosion<br>• Change in flow of water course<br>• Pollution (surface water, groundwater and soil) | High Negative | |
| | **Cumulative impacts:**<br>• Erosion | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | • Change in flow of water course<br>• Pollution (surface water, groundwater and soil) | | the need to be vigilant against any practice that will have a harmful effect on waterways.<br>• Infilling, excavation, drainage and hardening of surfaces will not occur unnecessarily in storm water infrastructure.<br>• Emergency plans will be in place in case of fuel spillages (to limit the occurrence of soil as well as groundwater pollution).<br>• A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction or operational phase.<br>• The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected.<br>• Weather forecasts from the South African Weather Bureau of up to three days in advance will be monitored on a daily basis to avoid exposing soil or construction works or materials during a storm event and appropriate action will be taken in advance to protect construction works should a storm event be forecasted.<br>• All no-go areas will be demarcated under guidance of the Environmental Control Officer (ECO).<br>• The design of drainage systems will ensure there is |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | no contamination, eutrophication or increased. Drainage systems will be maintained regularly in order to minimize the runoff of harmful chemical substances into the waterway(s).<br>• It will be ensured that the construction activities have minimal effects on the flow of water through the storm water infrastructure.<br>• No erosion or siltation may occur due to any construction or operational activities.<br>• **Wetland / Rivers:** Construction and operational activities should take the wetland / river boundaries and associated buffer zones that should be avoided, into consideration<br>• Occurrence of erosion will be monitored. Reparations will be undertaken as soon as possible. |
| Workings within / near to watercourses | **Direct impacts:**<br>• Temporary blockage of water<br>• Loss of vegetation<br>• Loss of aquatic animal life<br>• Erosion<br>• Scouring | Medium – High Negative | • Storm water measures will be implemented in order to manage storm water and this will also prevent erosion.<br>• Construction activities in waterways should be undertaken in such a manner that no containment of water is required, where possible. 2/3 of the waterways may be diverted at a time, where required.<br>• The necessary authorisations should be obtained from DWS, should the containment of water be required. |
| | **Indirect impacts:**<br>• Ponding of water | Medium – High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | during construction at waterways (due to blockage of waterways).<br>• Surface and groundwater pollution due to spillage of potential hazardous substances such as hydraulic material and untreated sewage explained above.<br>• Impact on waterways (including the natural habitat of the area), soil disturbances and including pollution.<br>• Possible change of flow of water in waterways during the construction activities near / through the waterways.<br>• Erosion<br>• Scouring<br>• Loss of biodiversity | | • All scour outlets will be provided with stone pitched or gabion mattress lined channels.<br>• River beds will be covered with gabion mattress including embankment stabilization above the excavation area (where required)<br>• Visual inspections for the occurrence of erosion should be undertaken on a weekly basis |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | **Cumulative impacts:**<br>• Erosion<br>• Loss of vegetation<br>• Scouring<br>• Possible change of flow of water in waterways<br>• Loss of biodiversity | High Negative | |
| Handling of waste / Waste Management (Note that waste refers to all construction debris and domestic waste generated due to construction activities.) | **Direct impacts:**<br>• Spillage of material to be utilised during the construction phase as well as untreated sewage to the surrounding environment<br>• Dumping of construction rubble and general waste on site | Medium – High Negative | • The contractor is responsible for the removal of construction waste.<br>• Suitable containers (weather and vermin proof) will be placed on site to collect all solid waste. These will be emptied regularly.<br>• No littering is permitted. During the construction and operational phase the site will be maintained in a neat and tidy condition.<br>• All solid waste produced will be disposed of at an authorized landfill site. Recyclable waste may also be sold to recycling contractors.<br>• No dumping, burning or burying of waste will be undertaken on site.<br>• All hazardous waste will be disposed of at an authorized hazardous landfill site.<br>• Recyclable hazardous waste will be re-used or sold to recycling contractors, where possible<br>• A waste management plan will be compiled and |
| | **Indirect impacts:**<br>• Surface and groundwater pollution due to spillage of potential hazardous | Medium – High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | substances such as hydraulic material and untreated sewage.<br>• Impact on waterways (including the natural habitat of the area), including pollution.<br>• Pollution of soil | | designed to ensure adequate waste management activities.<br>• Areas used for waste storage and loading of materials should be lined and bund walls have to be erected to contain any spills that might occur.<br>• Waybills providing evidence of correct disposal procedure must be provided for the ECO's inspection.<br>• Waste classification should be undertaken.<br>• Visual inspections for the occurrence of pollution should be undertaken daily.<br>• Spills should be cleaned up immediately according to best practices<br>• DWS should be notified of any spillage / pollution of water sources (groundwater and / or surface water) within 24 hours of occurrence<br>• Record should be kept on site to indicate date of visual inspection, any spillages observed, and manner in which spill was treated. |
| | **Cumulative impacts:**<br>• Pollution of downstream watercourses<br>• Pollution of soil<br>• Pollution of groundwater<br>• Air pollution | Medium – High Negative | |
| Health, safety and security | **Direct impacts:**<br>• Road safety at road crossings<br>• Injuries on site<br>• Health issues on site (for example, due to pollution) | Medium Negative | • Site should be fenced / marked with danger tape, where possible.<br>• The contractors will comply with the Occupational Health and Safety Act, National Building Regulations and any other national, regional or local regulations with regard to safety on site.<br>• Construction contracts will include safety and |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | • Unauthorised entry | | security measures for staff.<br>• Precautions to ensure that construction staff and sites are visible and proper PPE will be provided to all employees.<br>• Suitable warning and information signage should be available at the storage facilities. In addition, telephone numbers of emergency services (including local firefighting services) must be posted conspicuously on site<br>• Employees should be made aware of the health risks associated with any hazardous substances / dangerous goods used or stored on site. This includes soil that was contaminated with oil or diesel, etc.<br>• Employees should receive relevant safety training in handling of hazardous substances / dangerous goods associated with the proposed project.<br>• Construction work within road reserves will accommodate road users as far as possible. This includes the following:<br>- Roads will be crossed in half widths at a time to minimise the impact on vehicular traffic, where possible.<br>- Construction along and across existing roads will be executed in such a manner that both pedestrian and vehicular traffic is |
| | **Indirect impacts:**<br>• Loss of vegetation and animal life due to possible fire outbreaks<br>• Road safety issues at road crossings<br>• Injuries on site<br>• Health issues on site (for example, due to pollution)<br>• Unauthorised entry | Medium Negative | |
| | **Cumulative impacts:**<br>• Loss of vegetation and animal life due to possible fire outbreaks<br>• Road safety issues at road crossings<br>• Injuries on site<br>• Health issues on site (for example, due to pollution)<br>• Unauthorised entry | Low Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | accommodated at all times.<br>- The contractor will be required to maintain adequate access to all public and private property at all times.<br>- Contractor will supply, erect and maintain road signs for all work areas conforming to the prescribed layout and requirement of the South African Road Traffic Signs Manual and other relevant notices.<br>• Fire extinguishers will be available on site and in the construction camp (if any).<br>• The contractor will be required to maintain adequate access to all public and private property at all times.<br>• Speed limits of 20km/h will be enforced.<br>• All relevant IAPs will be notified prior to any blasting activities<br>• All relevant IAPs will be notified 24 hours prior to any known potential risks associated with the site and the activities to be undertaken on site [for example, release of water contained in the Vaal River (if any)]<br>• The necessary precautions with regard to road safety will be implemented for construction work within road crossings.<br>• All injuries should be recorded. |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| Heritage | **Direct impacts:**<br>• Harm to unknown heritage resources | Negative | • Approval is required from SAHRA for the attachment of pipelines to the high water or low water bridge.<br>• In the case of the discovery of any heritage, archaeological or palaeontological significance, the work in the area will be stopped and reported to the archaeologist and SAHRA. Any construction activities in the nearby vicinity may only commence after approval is obtained from SAHRA as well as the ECO.<br>• Known heritage resources (if any) must be avoided as far as possible.<br>• Employees should be encouraged and informed of the need to be on the look-out for potential fossils / buried archaeological material.<br>• In the case of the discovery of any stone tools or other archaeological or palaentological material, the work in the immediate vicinity should temporarily cease and reported to the archaeologist and SAHRA. Should any human remains be exposed, the archaeologist as well as the local SAPS should be notified.<br>• If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash |
| | **Indirect impacts:**<br>• Loss of heritage resources | High Negative | |
| | **Cumulative impacts:**<br>• Loss of heritage resources | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Tel: 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Tel: 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.<br>• Appropriate measures should be undertaken by the ECO until the archaeologist / SAPS visits the site. This should include the following:<br>• Site should be fenced with 'danger tape'<br>• Position of finding should be recorded<br>• Depth of finding should be recorded<br>• Digital image of the finding should be taken<br>• No information on the findings may be made public without the consent of the archaeologist / SAPS.<br>• Construction activities in the area may only continue after approval from the archaeologist |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | and SAHRA. |
| Noise and dust control | **Direct impacts:**<br>• Elevation of noise levels<br>• Generation of nuisance dust | Negative | • Construction activities will be limited to normal daytime hours, where possible<br>• Noise levels will be kept as low as possible during the construction phase in order not to disturb adjacent landowners<br>• Proper mitigation measures will be implemented to limit noise (e.g. the installation of silencers, where required).<br>• Proper mitigation measures will be implemented to limit the formation of dust (e.g. wetting of construction area, when required).<br>• The speed of the construction vehicles will be limited to avoid dangerous conditions, the formation of dust and the excessive deterioration of roads being used. |
| | **Indirect impacts:**<br>• Air pollution<br>• Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding landowners / occupants | Negative | |
| | **Cumulative impacts:**<br>• Air pollution<br>• Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding landowners / | Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | occupants | | |
| Handling and Storage of materials | **Direct impacts:**<br>• Soil pollution<br>• Air pollution<br>• Fire outbreaks<br>• Surface water pollution<br>• Injuries<br>• Health issues | High Negative | • All chemicals used during the development, including fuel, will be stored in a proper storeroom or protected area to prevent pollution.<br>• Vehicles will be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere.<br>• Where applicable, the contractors will ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where necessary.<br>• Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground.<br>• All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment.<br>• Spill response equipment must be available during the handling and loading of hazardous waste (if any)<br>• Hazardous substances such as above ground fuel tanks are to be stored in bunded areas. |
| | **Indirect impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Air pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | High Negative | |
| | **Cumulative impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Air pollution<br>• Surface and | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | groundwater pollution<br>• Injuries<br>• Health issues | | • Bund walls will have a capacity of at least 110% of the total capacity of the stored volume.<br>• No oil, diesel or other chemicals may be spilled or discharged anywhere and contact with bare soil should be avoided at all cost.<br>• Drip trays will be used during the servicing of vehicles as well as the transfer of chemicals / substances from transportation vehicles.<br>• A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages from the fuel tanks / wash-bay during the operational phase.<br>• The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected.<br>• Material stockpiles, such as bricks and pipes, must be stable and well secured to avoid collapse and possible injury<br>• Material and Safety Data Sheets (MSDSs) should be readily available on site for all hazardous materials. MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.<br>• Storage areas should be kept clean and free from any accumulation of combustible matter (such as |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | | | paper) and any possible source of ignition should be removed |
| Hazardous waste management | **Direct impacts:**<br>• Soil pollution<br>• Air pollution<br>• Fire outbreaks<br>• Surface water pollution<br>• Injuries<br>• Health issues | High Negative | • Hazardous wastes must be separated from general wastes, stored within secondary containment in appropriate containers<br>• Proper storage facilities for the storage of hazardous / dangerous goods must be provided to prevent the migration of spillage into the soil and or groundwater<br>• Certificates / waybills of hazardous waste disposals are to be available on request as well as auditing purposes. This includes the removal of soil contaminated with hydrocarbons.<br>• Storage of hazardous substances and refuelling areas are to be bunded with an impermeable liner to protect groundwater quality and must comply with the relevant SANS codes<br>• Areas used for the storage of hazardous materials are to be clearly indicated as such. |
| | **Indirect impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Air pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | High Negative | |
| | **Cumulative impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Air pollution | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | • Surface and groundwater pollution<br>• Injuries<br>• Health issues | | |
| Hazardous and Flammable materials: Delivery | **Direct impacts:**<br>• Soil pollution<br>• Air pollution<br>• Fire outbreaks<br>• Surface water pollution<br>• Injuries<br>• Health issues | High Negative | • All deliveries (especially of hazardous nature) must be supervised<br>• Subcontractors and delivery companies should be informed of the delivery procedures and made aware of restrictions as to where materials may be stored<br>• Loads must be secured to prevent spillage during transportation thereof.<br>• Hazardous substances are to be transported in sealed drums or bags |
| | **Indirect impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Air pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | High Negative | |
| | **Cumulative impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | • Soil pollution<br>• Air pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | | |
| Hazardous and Flammable materials: Cement and / or concrete mixing | **Direct impacts:**<br>• Soil pollution<br>• Air pollution<br>• Fire outbreaks<br>• Surface water pollution<br>• Injuries<br>• Health issues | High Negative | • Limit cement and concrete mixing to single sites, where possible<br>• No mixing allowed directly onto the ground<br>• All visible remains of excess material will be treated as hazardous waste<br>• Solid concrete waste may be treated as inert construction rubble. However, wet cement and liquid slurry and cement powder must be treated as hazardous waste |
| | **Indirect impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Air pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | High Negative | |
| | **Cumulative impacts:**<br>• Loss of vegetation and | High Negative | |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | animal life due to fire outbreaks<br>• Soil pollution<br>• Air pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | | |
| Hazardous and Flammable materials: Gas Storage | **Direct impacts:**<br>• Air pollution<br>• Fire outbreaks<br>• Injuries<br>• Health issues | High Negative | • All combustible materials are to be store at least 3 m from any gas storage areas. In case of any flammable or any other gas storage areas, open flames, welding and cutting operations, smoking, etc. shall be prohibited in or near the storage area.<br>• No gas will be delivered until the site is registered with local Fire Safety<br>• Cylinders should always be stored in a well-ventilated area away from spark, flames or any source of heat or ignition.<br>• Cylinders should always be handled, stored, used and transported in an upright position. It should not be dropped, dragged or rolled on their sides or allowed to skid. Cylinders that are too large to be carried shall be tilted and rolled on the rims of their foot rings or bases.<br>• Valves should be kept properly closed |
| | **Indirect impacts:**<br>• Air pollution<br>• Fire outbreaks<br>• Injuries<br>• Health issues | High Negative | |
| | **Cumulative impacts:**<br>• Air pollution<br>• Fire outbreaks<br>• Injuries<br>• Health issues | High Negative | |
| Hazardous and | **Direct impacts:** | High Negative | • Storage areas must be bunded and hard surfaced |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| Flammable materials: Chemicals, Grease and Oil Storage | • Soil pollution<br>• Fire outbreaks<br>• Surface water pollution<br>• Injuries<br>• Health issues | | in order to protect groundwater quality<br>• Compliance with SANS codes and hazardous substances bylaws should be adhered to<br>• All lids must be properly sealed / closed to prevent Volatile Organic Compounds (VOCs) and other potentially harmful gaseous compounds from escaping |
| | **Indirect impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | High Negative | |
| | **Cumulative impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | High Negative | |
| Hazardous and Flammable | **Direct impacts:**<br>• Fire outbreaks | High Negative | • Spill kits are to be made permanently available at areas which have the potential to be subjected to |

| Construction phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| materials: Hydrocarbon spillages | • Surface water pollution<br>• Injuries<br>• Health issues | | spillage of hazardous substances and dangerous goods<br>• Remediation of spillages must be conducted immediately and closed out within 24 hours<br>• No waste water or waste will be disposed of into the surrounding environment at any time. Water collected in bunded areas must be collected in containers and disposed of as hazardous waste<br>• Machinery will be kept maintained in line with manufactures specifications to minimise the risk of hydrocarbon spillages<br>• An incident reporting system will be implemented in order to ensure incidents, where spillages has occurred, are closed out and appropriate measures are taken to prevent further incidents.<br>• Incidents must be reported to DWS within 24 hours<br>• Contaminated soil must be disposed of in a hazardous materials skip and removed to a licensed hazardous landfill facility by a licensed contractor<br>• Contaminated water must be decanted into drums and stored until disposal by a registered waste transported is undertaken |
| | **Indirect impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | High Negative | |
| | **Cumulative impacts:**<br>• Loss of vegetation and animal life due to fire outbreaks<br>• Soil pollution<br>• Surface and groundwater pollution<br>• Injuries<br>• Health issues | High Negative | |

| Operational phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| This phase consists of the use of the water pipeline | **Direct impacts:**<br>• Deterioration of the infrastructure in the long term. | Medium – Low Negative | • Maintenance and repair will be undertaken on the infrastructure when necessary.<br>• Soil erosion occurrences will be attended to immediately.<br>• Establishment of alien vegetation will be monitored and alien species will be removed by hand or by an approved chemical before gestation thereof.<br>• Proper monitoring of various aspects (such as monitoring of the potable water quality should the potable water not be obtained from the municipal supplies) should be undertaken on a regular basis.<br>• Water to be transported in the pipeline should adhere to the DWS standards.<br>• An emergency plan should be developed in case the water does not conform to the DWS standards.<br>• Visual inspections should be undertaken at least every 6 months to investigate the occurrence of sedimentation and erosion.<br>• Proper erosion mitigation measures should be implemented.<br>• Stabilise the banks of the watercourses, where necessary. |
| | **Indirect impacts:**<br>• Establishment of alien / invader species due to previous disturbance will also be associated with this phase.<br>• Erosion<br>• Possible change in the morphology of the watercourses due to erosion of the banks | Medium – Low Negative | |
| | **Cumulative impacts:**<br>• Establishment of alien / invader species due to previous disturbance will also be associated with | Medium – Low Negative | |

| Operational phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | this phase.<br>• Erosion<br>• Possible change in the morphology of the watercourses due to erosion of the banks | | |

| Decommissioning phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| It is not anticipated that the proposed project will cease in the nearby future. However, if decommissioning is decided upon, a rehabilitation plan will be developed and submitted for approval. The end-use of the area will be kept in mind during the compilation of the rehabilitation plan.<br><br>Activities associated with the decommissioning phase will be limited to the rehabilitation of areas disturbed during the construction phase. All disturbed areas will be rehabilitated | **Direct impacts:**<br>• Rehabilitation of disturbed area<br>• Re-vegetation<br>• Limit occurrence of erosion<br>• Proper stormwater control<br>• No ponding on site<br>• Limit visual impact | Medium Positive | Temporary structures and office sites (if any) will be dismantled and removed after completion of the construction phase of the project.<br>All waste, equipment, materials, etc. used during construction will be cleared from the site. The contractors will ensure that the site is cleared and rehabilitated to the satisfaction of the ECO.<br>An alien plant control and monitoring programme will be implemented.<br>Re-vegetation of disturbed areas will be undertaken with site indigenous species. Hydro-seeding will be implemented if the establishment of natural occurring vegetation does not occur within reasonable time.<br>• After completion of the construction phase, a waterway monitoring program will be initiated that ensure that all are adequately rehabilitated.<br>• Temporary concrete surfaces (if any) will be removed and compacted areas ripped.<br>• The establishment of natural occurring vegetation will be encouraged at disturbed areas. Hydro-seeding will be undertaken if natural regrowth is insufficient.<br>• Establishment of extensive alien species will be monitored. |
| | **Indirect impacts:**<br>• Rehabilitation of disturbed area | Medium Positive | |
| | **Cumulative impacts:**<br>• Rehabilitation of disturbed area | Medium Positive | |

| Decommissioning phase | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| according to best practices.<br><br>A rehabilitation plan will be developed, if it is decided to remove the proposed pipeline and associated infrastructure before the cessation of the operation aspects of the proposed project.<br>The rehabilitation plan will include management and mitigation measures to be implemented during the decommissioning of the project | | | |

| No-go Option | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| Keeping the status quo – no sufficient volumes of potable water available to the community | **Direct impacts:**<br>• No direct environmental impacts. | N/A | • Additional potable water resources should be investigated to assist the Municipality to provide basic services to the community. |
| | **Indirect impacts:**<br>• The Municipality will not be able to provide the community with sufficient volume of potable water, resulting in a water shortage and possible water restrictions on a regular basis | High Negative | |
| | **Cumulative impacts:**<br>• As the project is described as a basic service, the lack thereof will lead to major social and economic impacts that will indirectly cause severe | High Negative | |

| No-go Option | | | |
|---|---|---|---|
| **Activity** | **Impact summary** | **Significance without mitigation** | **Proposed mitigation** |
| | environmental concerns. | | |

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

## 2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity 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.

**NOTE:**

Preferred Option 1 and 3 will have the least environmental impacts, as all construction activities will be undertaken on the bridges (no activities in the Vaal River).

A permit application, in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999) will be submitted to SAHRA, should Option 3 or 4 be considered. All mitigation measures as stipulated by SAHRA will be implemented, should one of these options be followed.

In contrast, Preferred Option 5 and 6 will have the largest environmental impacts, as all construction activities will be undertaken in the Vaal River itself. However, should the recommendations of the ecological report, heritage report, this document and EMPr be implemented, the impact on the pipeline's construction phase will be kept to a minimum.

**Preferred Option 1, 2, 3, 4, 5 & 6**

The expected impacts relating to the proposed pipeline are mostly temporary (during the construction phase) and the mitigation measures referred to in the current document, the EMPr and Specialist Reports will ensure that the disturbance is kept to a minimum and ensure that adequate rehabilitation takes place.

A permit application, in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999) will be submitted to SAHRA, should Option 3 or 4 be considered. All mitigation measures as stipulated by SAHRA will be implemented, should one of these options be followed.

**No-go alternative (compulsory)**

The no-go alternative is not seen as a reasonable / feasible alternative as this will place the Magareng Local Municipality in such a position that it will not be able to provide Warrenton with sufficient volume of potable water, resulting in a possible water shortage and water restrictions on a regular basis.

The proposed pipeline and associated infrastructure is considered essential to enable the Magareng Local Municipality to provide the Warrenton area with adequate basic services, as the proposed project entails the transportation of potable water.

As the project is described as a basic service, the lack thereof will lead to major social and economic impacts that will indirectly cause severe environmental concerns. The impacts expected during the construction phase of the proposed project can be minimised through the recommended mitigation measures and therefore the no-go alternative is not ideal.

## SECTION E. RECOMMENDATION OF PRACTITIONER

| | | |
|---|---|---|
| Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)? | YES | |

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

| |
|---|
| N/A |

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

| | | |
|---|---|---|
| Refer to the EMPr in Appendix F for recommended mitigation measures. | | |
| Is an EMPr attached? | YES | |

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

**Neil Devenish**
NAME OF EAP

_____ _____

SIGNATURE OF EAP DATE

**SECTION F: APPENDIXES**

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information