DRAFT BASIC ASSESSMENT REPORT

THE PROPOSED CONSTRUCTION OF A SECTION OF A WATER PIPELINE TO CONNECT THE BLOEMSPRUIT WWTW TO MOCKES DAM, BLOEMFONTEIN

Applicant: Mangaung Metro Municipality
MDA Ref No: 40673 New
Date: February 2020

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tourism and environmental affairs
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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 as amended 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 **07 April 2017**. 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.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

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. PROJECT DESCRIPTION

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

An Environmental Authorisation was obtained by the Applicant for the proposed construction of a water pipeline from a section of the Bloemspruit WWTW to Mockes Dam, Bloemfontein in 2016. Note that no construction activities commenced to date. The said project can be summarised as the construction of a pipeline and pump station to transfer treated water from the existing waste water treatment plants to Mockes Dam. The water released in Mockes Dam will gravitate to Maselspoort Dam and will be utilised for the purpose of recycling. This form part of the Renosterspruit Water Recycling project by the applicant, i.e. the Manguang Metropolitan Municipality. Please note that the initial location for the pump station was at the Renosterspruit. However, the applicant decided to construct the pump station within the existing boundaries of the North Eastern Waste Water Treatment Works and thus the pump station itself does not trigger a listed activity (as discussed in the 2016 documentation).

The current project entails the assessment of three additional alternatives for the construction of a section of the already approved pipeline. Please refer to Appendix A for more information on the locality of the alternatives to be investigated as part of the current project.

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

Listed activity as described in GN 327,325 and 324	Description of project activity
GN 327, Listing Notice 1:	
9(i): The proposed development of infrastructure exceeding 1 000 m in length for the bulk transportation of water or stormwater with an internal diameter of 0.36 m or more Excluding where (a) such facilities or infrastructure are for bulk transportation of water, sewage or storm water	The proposed pipeline will have an internal diameter of more than 36 cm. Construction of pipelines and infrastructure for the bulk transportation of water within 32 m of a watercourse will also occur.

drainage inside a road reserve or railway reserve; or (b) where such construction will occur within urban areas but further than 32 m from a watercourse, measured from the edge of the watercourse.	
9(ii): The proposed development of infrastructure exceeding 1 000 m in length for the bulk transportation of water or stormwater with a peak throughput of 120 litres per second or more Excluding where (a) such facilities or infrastructure are for bulk transportation of water, sewage or storm water drainage inside a road reserve or railway reserve; or (b) where such construction will occur within urban areas but further than 32 m from a watercourse, measured from the edge of the watercourse.	The proposed pipeline will have a peak throughput of more than 120 ℓ/sec. Construction of pipelines and infrastructure for the bulk transportation of water within 32 m of a watercourse will occur.
12(ii): The development of infrastructure or structures with a physical footprint of 100 square metres or more, where such development occurs (a) Within a watercourse Excluding (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour	Construction of a pipeline near / through water courses.
19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	Pipeline excavations through / near to watercourses will occur.

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) of GN 326, Regulation 2014 as amended. 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.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. 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.

Background to the proposed project:

Bloemfontein experience water shortages from time to time. This is due to the fact that its main water source, the Welbedacht Dam is silted up, leaving only a small percentage of its original carrying capacity. A major pipeline also reached the end of its design life and bursts regularly.

In addition, water is typically released four times a year from Rustfontein Dam to feed the water need in Bloemfontein. Such water releases usually occurs during the late winter and spring periods, before the onset of the rainy season. These water releases are costly and alternative water resources had to be investigated.

Therefore, Mangaung Metropolitan Municipality has adopted a strategy to utilise local resources to its full potential by re-circulating as much water as

possible, instead of transferring water from the Novo Transfer system. Every drop of water that is purified by recirculation will ensure less water to be transferred from the Welbedacht Dam (Caledon River) or possibly the planned Gariep Dam scheme (Caledon and Orange Rivers).

The construction of the proposed pipeline will enable the municipality to transport treated waste water that conforms to the DWS standards from the existing sewage plants to Mockes Dam. From here, the water will flow to Maselspoort Dam and treated at the Maselspoort Water Treatment Works (WTW) to potable water standards, when required.

This will ensure that the applicant will have sufficient volumes of water available during the dry season, without the costly water releases from Rustfontein Dam. It should be noted that surplus water released into Mockes Dam will not be treated at the Maselspoort WTW for potable water purposes. Rather, the surplus water will be released into the Modder River, corresponding to the current operating procedures.

It should be noted that Maselspoort WTW currently receives bulk water from Mockes Dam that receives water from the Modder River. This river is augmented by continuous effluent from Thaba Nchu and Botshabelo Waste Water Treatment Works (WWTWs). The Modder River flow is also augmented by the Novo Transfer Scheme and is also supported by natural storm water runoff during summer rains. Thus, the proposed project will add to the volume of treated water within the Maselspoort Dam / Modder River.

Please note that the proposed pipeline will only transport treated waste water that conforms to the DWS standards for water to be discharged after treatment at a waste water treatment plant. Please refer to Appendix G_1 for more information regarding the DWS standards for such water.

Locality:
Please refer to Appendix A for more information on the proposed locality.

Type and Technology:
The latest Type and Technology alternatives will be incorporated as part of the proposed project.

The proposed pipe diameter was optimized by taking into consideration available energy and capital expense in order to utilize the available energy in the pipeline for hydropower generation.

The pipe material, GRP, has the highest resistance to corrosion and with its smooth glass like finish the lowest friction losses resulting in more available energy.

Design and Layout:
Please note that three different layout options are currently considered by the applicant. These options will be discussed throughout this document. The proposed pipeline will be constructed within the existing road reserves, as far as possible. The proposed project will also optimise energy solutions to ensure that less pumping is required. Please refer to Appendix A for more information on the proposed layout.

a) Site alternatives

Alternative 1$_{RedRoute}$		
Description	Lat (DDMMSS)	Long (DDMMSS)
	29° 5'44.08"S	26°19'52.46"E
	29° 5'43.24"S	26°20'1.45"E
	29° 5'41.97"S	26°20'11.83"E
	29° 5'41.10"S	26°20'22.81"E
	29° 5'36.88"S	26°20'31.06"E
	29° 5'31.40"S	26°20'40.81"E
	29° 5'26.19"S	26°20'43.87"E
	29° 5'19.03"S	26°20'50.30"E
	29° 5'11.76"S	26°20'57.63"E
	29° 5'4.27"S	26°21'5.00"E
	29° 4'56.59"S	26°21'12.00"E
	29° 4'49.54"S	26°21'19.33"E
	29° 4'41.83"S	26°21'26.61"E
	29° 4'34.30"S	26°21'33.61"E
	29° 4'27.10"S	26°21'40.69"E
	29° 4'23.12"S	26°21'50.83"E
	29° 4'23.52"S	26°21'59.69"E
	29° 4'29.41"S	26°22'6.48"E
Alternative 2$_{GreenRoute}$		
Description	Lat (DDMMSS)	Long (DDMMSS)
	29° 5'44.08"S	26°19'52.46"E
	29° 5'43.24"S	26°20'1.45"E
	29° 5'41.97"S	26°20'11.83"E
	29° 5'41.10"S	26°20'22.81"E
	29° 5'33.37"S	26°20'25.35"E
	29° 5'25.21"S	26°20'29.41"E
	29° 5'19.38"S	26°20'35.89"E
	29° 5'26.19"S	26°20'43.87"E
	29° 5'19.03"S	26°20'50.30"E
	29° 5'11.76"S	26°20'57.63"E

	29° 5'4.27"S	26°21'5.00"E
	29° 4'56.59"S	26°21'12.00"E
	29° 4'49.54"S	26°21'19.33"E
	29° 4'41.83"S	26°21'26.61"E
	29° 4'34.30"S	26°21'33.61"E
	29° 4'27.10"S	26°21'40.69"E
	29° 4'23.12"S	26°21'50.83"E
	29° 4'23.52"S	26°21'59.69"E
	29° 4'29.41"S	26°22'6.48"E
Alternative 3BlueRoute		
Description	Lat (DDMMSS)	Long (DDMMSS)
	29° 5'44.08"S	26°19'52.46"E
	29° 5'45.36"S	26°20'1.41"E
	29° 5'45.33"S	26°20'10.30"E
	29° 5'52.79"S	26°20'12.49"E
	29° 5'56.99"S	26°20'18.04"E
	29° 5'55.71"S	26°20'27.21"E
	29° 5'54.95"S	26°20'35.39"E
	29° 5'54.08"S	26°20'43.43"E
	29° 5'52.56"S	26°20'51.75"E
	29° 5'47.84"S	26°20'58.06"E
	29° 5'42.91"S	26°21'5.35"E
	29° 5'38.25"S	26°21'11.76"E
	29° 5'33.09"S	26°21'18.58"E
	29° 5'26.92"S	26°21'23.15"E
	29° 5'21.05"S	26°21'28.89"E
	29° 5'14.46"S	26°21'35.14"E
	29° 5'8.84"S	26°21'40.62"E
	29° 5'2.50"S	26°21'46.65"E
	29° 4'56.39"S	26°21'52.44"E
	29° 4'50.53"S	26°21'58.35"E
	29° 4'44.28"S	26°22'4.24"E
	29° 4'38.13"S	26°22'10.27"E
	29° 4'33.35"S	26°22'9.58"E
	29° 4'29.41"S	26°22'6.48"E

b) Lay-out alternatives

Alternative 1 RedRoute		
Description	Lat (DDMMSS)	Long (DDMMSS)
Please refer to Appendix A for more information on the proposed layout alternatives	29° 5'36.88"S	26°20'31.06"E

Alternative 2 GreenRoute		
Description	Lat (DDMMSS)	Long (DDMMSS)
Please refer to Appendix A for more information on the proposed layout alternatives	29° 5'33.37"S	26°20'25.35"E
Alternative 3 BlueRoute		
Description	Lat (DDMMSS)	Long (DDMMSS)
Please refer to Appendix A for more information on the proposed layout alternatives	29° 5'42.91"S	26°21'5.35"E
Alternative 4OpenTrench		
Description	Lat (DDMMSS)	Long (DDMMSS)
No additional layout alternatives were investigated as part of this application		

c) Technology alternatives

Alternative 1 RedRoute
Construction of a pipeline
Alternative 2 GreenRoute
Construction of a pipeline
Alternative 3 BlueRoute
Construction of a pipeline
Alternative 4 OpenTrench
The alternative method of transporting the water apart from a pipe system is via an open trench. Though the average fall from the water shed is towards Mockes Dam, there are several stream crossings that would intercept the water. This makes an open channel design impractical as aqueducts would require mayor civil structures and land acquisition or alternatively the route need to be increase to move upstream of these river crossing. With the above in mind, it is evident that this alternative is not reasonable and / or feasible. Therefore, the preferred alternatives (construction of pipelines), as discussed in the above section, is seen as the preferred alternative. This alternative (construction of an open trench) will not be discussed further in this document.

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

N/A

e) No-go alternative

The no-go alternative is not seen as a reasonable / feasible alternative as this will place the Mangaung Metropolitan Municipality in such a position that it will not be able to provide Bloemfontein with recycled 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 Mangaung Metropolitan Municipality to provide the Bloemfontein area with adequate basic services, as the proposed project entails the transportation of treated waste water, to be recycled at the Maselspoort WTW.

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.

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):

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative 1 RedRoute	4 860 m
Alternative 2 GreenRoute	5 180 m
Alternative 3 BlueRoute	5 460 m

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

Alternative:	**Size of the site/servitude:**
Alternative 1 RedRoute	97 200 m^2
Alternative 2 GreenRoute	103 600 m^2
Alternative 3 BlueRoute	109 200 m^2

***NOTE: if a servitude of 10 m on each side is taken into consideration**

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:

Existing asphalt and dirt roads will be used to gain access to the sites, as far as possible.

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		
The pipeline sections will be constructed within road reserves, where possible. Servitudes will be registered for areas not part of the existing road reserve.			

2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)		NO	
The activity will not have a negative effect on the on the PSDF. The local municipality (i.e. the applicant) strives to provide residents in the area with good service in general. The proposed pipeline sections should be constructed in order to provide basic services to residents in the Bloemfontein area.			
(b) Urban edge / Edge of Built environment for the area	YES		
The proposed pipeline will be constructed within existing road reserves where possible (within the already built environment of the area). New servitudes will be registered for the sections that do not form part of existing road reserves / servitudes.			
(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		
The proposed project is in line with the vision of the said local municipality. The applicant (Mangaung Metropolitan Municipality) strives to provide residents in the area with good service in general. The proposed infrastructure should be constructed in order to provide basic services to the residents.			
(d) Approved Structure Plan of the Municipality	YES		
The proposed project is in line with the municipal plans.			
(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 proposed project will not compromise the integrity of the existing environmental management priorities for the area. Please note that the applicant will ensure that the contractors adhere to the conditions stipulated in this report, the EMPr as well as best practices to limit any possible negative impacts on the environment.			
(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 applicant (Mangaung Metropolitan Municipality) strives to provide residents in the area with good service in general. The proposed infrastructure should be constructed in order to provide basic services to the residents.			
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		
A need was identified to construct a water pipeline in order to connect the Bloemspruit WWTW to Mockes Dam, Bloemfontein. This is required to enable municipal goals of service delivery and protect the environment in the long run.			
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.)		NO	
Wastewater will be treated at the New North Eastern WWTW (adequate capacity). Bloemspruit WWTW may be upgraded in future to handle the required volume of wastewater.			
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 applicant for the proposed pipeline is the Mangaung Metropolitan Municipality itself. The proposed project is provided for in the infrastructure planning of the municipality. Please refer to Appendix I for more information.			

7. Is this project part of a national programme to address an issue of national concern or importance?	YES		
The proposed project entails the construction of pipeline sections in order put the local municipality in such a position to provide residents in the area with basic services. Providing of basic services is part of a national programme.			
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 pipeline sections will be constructed within road reserves as far as possible. In addition, the proposed pipelines should be constructed in locations that require the necessary basic service. Thus, the location factors favour the proposed construction activities.			
9. Is the development the best practicable environmental option for this land/site?	YES		
As an alternative, servitudes can be registered on agricultural land. However, this will imply that more natural vegetation will be lost, as the vegetation in the road reserves (preferred alternatives) was already disturbed during the construction of the road. In addition, more alien / exotic plant species is found within the road reserves than within the agricultural areas. The above option will thus have a larger impact on the environment and will financially be more costly, and therefore it is not seen as a feasible / reasonable alternative. The proposed project is therefore the best practicable environmental option for this land/site.			

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

Negative impacts:

- Previous disturbed areas will be disturbed during the construction phase.
- Erosion may occur during the construction phase.
- Possible pollution may occur during the construction phase.

Positive impacts:

- The proposed project is considered essential to enable the municipality to provide basic services to residents in the area.
- This in turn will have a positive impact on the social as well as economic impacts of the area.

The negative impacts expected during the construction phase of the proposed project can be minimised through the recommended mitigation measures as stipulated in this report, the EMPr as well as best practices.

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES		

It is suggested that future water pipeline projects will also consider the construction of water pipelines within existing road reserves as far as possible as this have the minimal impacts to the environment. This is due to the following:

- The construction of access roads are not required
- Loss of vegetation is kept to a minimum
- No loss of agricultural land
- Most economical alternative as owners of agricultural property do not have to be compensated for the registration of servitudes on their agricultural property

12. Will any person's rights be negatively affected by the proposed activity/ies?		NO	
The residents of Bloemfontein will be positively affected as the proposed pipelines will provide the municipality with the opportunity to provide basic services to the area. The pipeline will be constructed within servitudes and therefore no person's rights will be negatively affected.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?		NO	
It is not anticipated that the proposed activity itself will have an effect on the 'urban edge'.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES		
SIP 6 can be summarised as follows: Integrated municipal infrastructure project • The development of the national capacity to assist the 23 least resourced districts (accommodating 19 million people) to address all the maintenance backlogs and upgrades required in water, electricity and sanitation bulk infrastructure. • The road maintenance programme will enhance service delivery capacity thereby impacting positively on the population. Therefore, the proposed project (construction of pipelines for water provision) contributes to SIP 6.			
15. What will the benefits be to society in general and to the local communities?			
As the project is described as a basic service entity, the lack thereof will lead to major social impacts that will indirectly cause severe environmental concerns. Benefits: Potable water, treated to DWS Standards, will be provided to Bloemfontein Residents.			

16. Any other need and desirability considerations related to the proposed activity?	
The proposed project will enable the municipality to provide basic services (potable water) to the Bloemfontein residents. The pipeline is required to transport treated effluent from the existing WWTWs to the Maselspoort WTW in order to recycle the water.	
17. How does the project fit into the National Development Plan for 2030?	
The proposed project will enable the municipality to provide basic services (potable water) to the Bloemfontein residents. The pipeline is required to transport treated effluent from the existing WWTWs to the Maselspoort WTW in order to recycle the water. This will have a positive impact on the socio-economics of the area.	

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:

(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 relevant Environmental Department.
2. Integration of various principles of environmental management was 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 potions 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. Considered the environmental attributes in management and decision-making with reference to the environment.
6. Mitigation and management activities best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management were investigated.
7. The report follows the laws to identify, predict and evaluate the actual and potential impacts associated with the development.
8. 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.
9. A public participation process was followed. Consideration of the 2014 EIA Regulations has been applied in this regards.
10. 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.
11. Relevant guidelines and procedures were used to produce this document. Therefore, relevant information is reflected, for sufficient co-governance to be implemented.
12. 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) is summarised 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) taking 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; and

(ix) that a risk-averse and cautious approach is applied.

(4)(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.

(4)(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.

(4)(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.

(4)(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.

(4)(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.

(4)(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.

(4)(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.

(4)(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.

(4)(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.

(4) (k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.

(4)(l) There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.

(4)(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.

(4)(n) Global and international responsibilities relating to the environment must be discharged in the national interest.

(4)(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.

(4)(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.

(4)(q) The vital role of women and youth in environment management and development must be recognised and their full participation therein must be promoted.

(4)(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.

With the above in mind, 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, where applicable.
6. The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers will be respected and protected.

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 development near a watercourse	DESTEA	1998
National Water Act, 1998 (Act 36 of 1998)	Proposed development near a watercourse	DWS	1998
National Heritage Resources Act (Act No 25 of 1999)	Proposed development near a watercourse	SAHRA	1999
Environmental Conservation Act (Act 73 of 1989)	Proposed development near a watercourse	DESTEA	1989
National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004)	Endangered / Vulnerable vegetation types and Protected Species (TOPS)	DEA / DESTEA	2004
National Heritage Resources Act (Act No 25 of 1999)	Proposed construction of a pipeline	SAHRA	1999
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 / DESTEA	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 an authorized landfill site.

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

Authorised solid waste disposal sites in Bloemfontein. Hazardous waste (if any) should be disposed of at an 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 in a municipal sewage system?		NO
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:

NOTE: Although the proposed project will not produce any effluent to be treated on / off site, the proposed activities will, during its operational phase, transport **treated** waste water to Mockes Dam. The transported water may be treated to potable water quality at Maselspoort WTW.

Facility name:	Mockes Dam		
Contact person:	Victor Mapeshoane		
Postal address:	Mangaung Metropolitan Municipality P.O. Box 3704 Bloemfontein		
Postal code:	9300		
Telephone:		**Cell:**	083 662 3395
E-mail:	victor.mapeshoane@mangaung.co.za	**Fax:**	

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

The applicant (Mangaung Metropolitan Municipality) strives to provide residents in the area with good service in general. The proposed pipeline should be constructed in order to provide basic sanitary services as well as potable water to the residents and community members in general as it will imply that treated water will be available for further treatment (to potable water quality) at the Maselspoort WTW.

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?	N/A

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:

NOTE: The emissions associated with the project during the construction phase will mostly be exhaust emission and dust. Dust will be controlled during the construction phase, when necessary. The vehicles travelling to and from the proposed site will contribute to the emissions released into the atmosphere during the operational phase of the proposed project. However, these emissions are not controlled by any legislation.

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:

Nuisance noise may be generated during the construction period. However, the significance thereof will be low and limited to areas under construction.

In addition, blasting activities may also contribute to the generation of noise in the area, during the construction phase. The soil types in the area are classified as mostly soft with less than 10% of excavation classified as hard and therefore it is not anticipated that blasting activities will occur. However, in the event that blasting is required, these activities may contribute to the generation of noise. The required PPE will be worn by construction workers, during any blasting event. In addition, the contractors should comply with the relevant legislation in this regard.

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:	N/A
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.	

NOTE:
The required application [Section 21 (c) & (i)] will be submitted by the applicant in due course.

14. ENERGY EFFICIENCY

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

The pipeline will be designed in such a manner that the water in the pipeline will move by means of gravity, as far as possible, to minimise the requirement of pump stations, thus minimising energy usage.

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:	Please refer to list attached, as part of **Appendix A**.

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:	Mostly within the existing road reserve. Alternatively, agriculture (farms).

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.

Please refer to Appendix A for a list of current land-use zonings.

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.

Alternative 1 RedRoute:

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**

Alternative 2 GreenRoute:

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**

Alternative 3 BlueRoute:

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**

NOTE:
Most of the pipeline route has a general gradient of 1:50-1:20. Certain sections near waterways have a gradient 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					

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Preferred Alternative 1, 2 and 3
Shallow water table (less than 1.5m deep)	NO
Dolomite, sinkhole or doline areas	NO
Seasonally wet soils (often close to water bodies)	YES (at waterways)
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 (at waterways)

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 -	**Natural veld**	Natural veld with	Veld dominated	Gardens

good condition[E]	**with scattered aliens[E]**	heavy alien infestation[E]	by alien species[E]	
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

NOTE: Summary of Ecological Report:
The proposed pipeline will be constructed from the Renoster Spruit, will pass through the Roodewal Small Holdings, and will join the tarred road at the north eastern border of the small holdings. The pipeline will form part of the main water provision for the city and as such will function as transport for treated waste water to the purification plant at the Maselspoort Dam and from there back to Bloemfontein for re-use. The pipeline will cross peri-urban, transformed and natural areas, several watercourses will also be crossed by the pipeline. The assessment will include two alternative pipeline routes as well as a small additional third deviation. Both pipeline routes will have an estimated length of 5 km.

Alternative 1$_{RedRoute}$ & Alternative 2$_{GreenRoute}$

The vegetation along the northern pipeline route has mostly been transformed from the natural condition with only a few remnant patches of natural vegetation remaining and these also not in a good condition. The vegetation along the route is therefore no longer considered to consist of the threatened Bloemfontein Dry Grassland. This alternative pipeline route should therefore result in a significantly lower impact than the southern alterative. However, there is still a low likelihood of protected species occurring along the patches of remnant natural vegetation and a walkthrough survey of at least these sections should be undertaken to identify and mark protected species. Should any protected species be identified which will be affected by the pipeline construction they should be removed and transplanted adjacent to the pipeline in an area of suitable and similar habitat. Permits must be obtained for those specimens to be transplanted.

Alternative 3$_{BlueRoute}$

The southern pipeline route alternative contains sections which has been modified and transformed significantly from the natural condition and these portions are consequently of relatively low conservation value. However, several large portions of relatively natural vegetation still remain, especially in the eastern section of the pipeline. Consisting of Bloemfontein Dry Grassland, a Threatened Ecosystem, and highly likely containing protected species, these sections should be regarded as sensitive and having a significant conservation value. The condition of the vegetation in these sections does however seem to be somewhat degraded along the border fences which should decrease the impact the proposed pipeline

will have. Adequate mitigation will however be required which should include minimising the disturbance footprint and conducting a walkthrough survey to identify and mark protected species along the pipeline route. It is recommended that any protected plant specimens which will be affected by the pipeline construction should be removed and transplanted adjacent to the pipeline in an area of suitable and similar habitat. Permits must be obtained for those specimens to be transplanted.

Both pipeline routes cross the same two small seasonal stream systems and these will be the subject of this study.

From the description of the riparian vegetation of both stream systems it is clear that obligate wetland vegetation is present along both and therefore clearly indicate the presence of wetland conditions. These are more pronounced along the eastern stream, a much larger system. Exotic vegetation indicate varying degrees of disturbance at all points of crossing although in both instances the crossings along the northern pipeline route is indicative of more disturbances than the crossings along the southern pipeline route.

The small seasonal stream systems which will be affected by the pipeline is still natural to some extent but has been significantly modified by several impacts which is mostly associated with the surrounding small holding land uses and infrastructure such as roads. An Index of Habitat Integrity (IHI) was conducted and indicated that the watercourses have an Instream IHI of Category C: Moderately Modified and Riparian IHI of Category C/D: Moderately to Largely Modified.

The EI&S of the two small stream systems 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 is not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water of major rivers.

The two pipeline routes will cross the two affected stream systems twice for each alternative. This is then a total of four crossing points.

The proposed pipeline will result in several significant impacts on these watercourses. The material being transported by the pipeline being treated 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. It is further recommended that the aboveground installation of the pipeline on pylons at crossings be done as far as possible as this will cause fewer disturbances. 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 sites 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 watercourses should preferably be undertaken during the winter months (July to September) when base flow will be at its lowest level.

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.

5. SURFACE WATER

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

Perennial River		NO	
Non-Perennial River	YES		
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.

Please refer to Appendix A for an indication of all the water crossings associated with the proposed project.

NOTE: The Renoster Spruit is naturally a non-perennial stream. However, due to various man-made activities, water is being released into the Renoster Spruit and therefore water may be flowing down the spruit on a more regular (or even permanent) basis.

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)

NOTE:
The primary option for the construction of a pipeline near the Road Bridge at the Renoster Spruit is trenching through the water crossing. An alternative is the construction of a pipe bridge, or to attach the pipeline to the existing bridge. Approval from SAHRA is required should the attachment of the pipeline to the existing bridge be considered.

If any of the boxes marked with an "[N] "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 "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?	YES (Please refer to Appendix A for more information)	
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 itself is not classified as a protected area as per any provincial conservation plan etc., the area near to the watercourses is seen as areas worth protecting.

Please refer to Appendix A for an indication on the position of the approved pipeline route (with a previous Environmental Authorisation) in relation to the current proposed pipeline route alternatives.

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:		NO

Summary of Phase 1 Heritage Impact Report:

A Phase 1 Heritage Impact Assessment was carried out for three proposed water pipeline alternatives along Roodewal Midway Road between the Renosterspruit and Blesbok Avenue in Bloemfontein, Free State Province. The proposed pipeline will function as transport for treated water to the purification plant at the Maselspoort Dam and from there back to Bloemfontein for re-use. As far as the palaeontological heritage is concerned, likelihood of palaeontological impact resulting from these linear developments is considered low for each of the three alternative routes as a result of the low topography terrain and presence of a well-developed, superficial overburden. Development for any of the three alternatives can proceed provided that all excavation activities are solely restricted to the current layout. However, any excavation exceeding depths of >1m into freshly exposed sedimentary strata (Adelaide Subgroup bedrock sediments) will require brief monitoring by a qualified palaeontologist so that any chance fossil finds can be retrieved and reported to SAHRA for further verification and mitigation. As far as the archaeological heritage is concerned, the proposed development is considered to be of low archaeological significance and is assigned a site rating of Generally Protected C. Development for any of the three alternatives can proceed with no further archaeological assessments required.

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:

Will any building or structure older than 60 years be affected in any way?	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	NO

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

NOTE: Should it be necessary to attach the pipeline onto existing bridge infrastructures, an application will be submitted to SAHRA and the Heritage Coordinator in Bloemfontein for approval

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

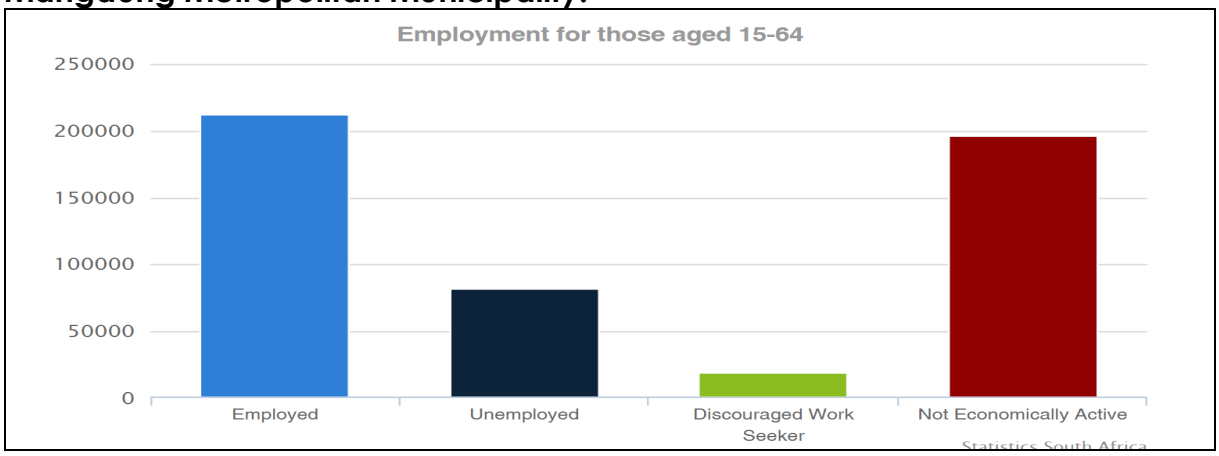
Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

NOTE:

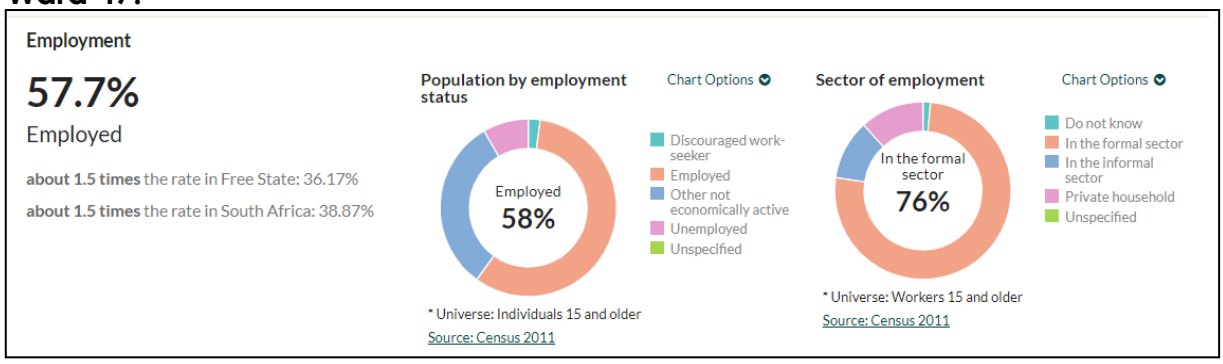
The information in this section was obtained from the following web addresses:
http://www.statssa.gov.za/?page_id=1021&id=mangaung-municipality
&
https://wazimap.co.za

Level of unemployment:

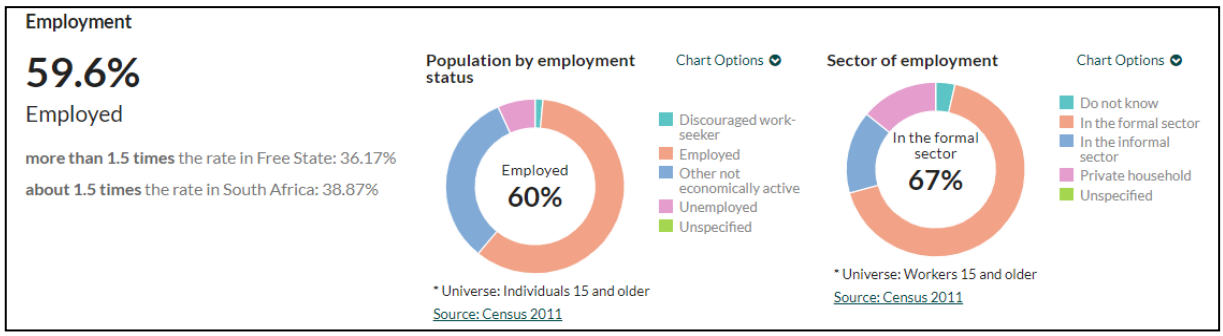
Mangaung Metropolitan Municipality:



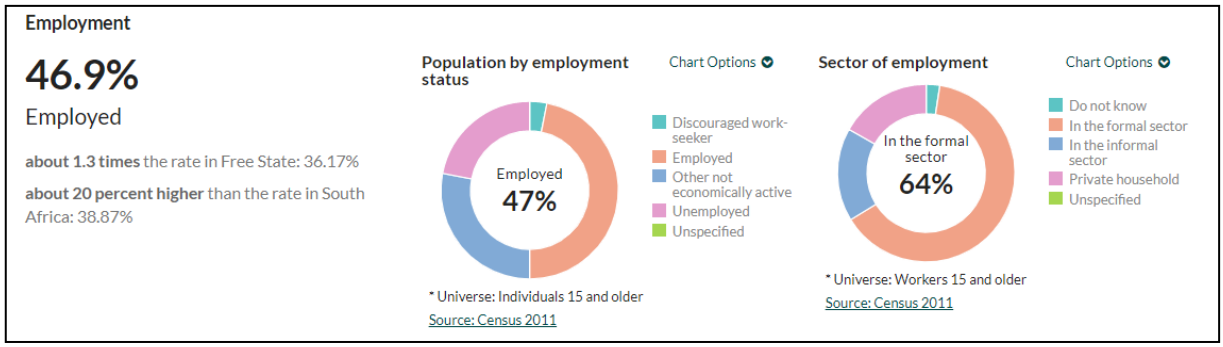
Ward 47:



Ward 44:

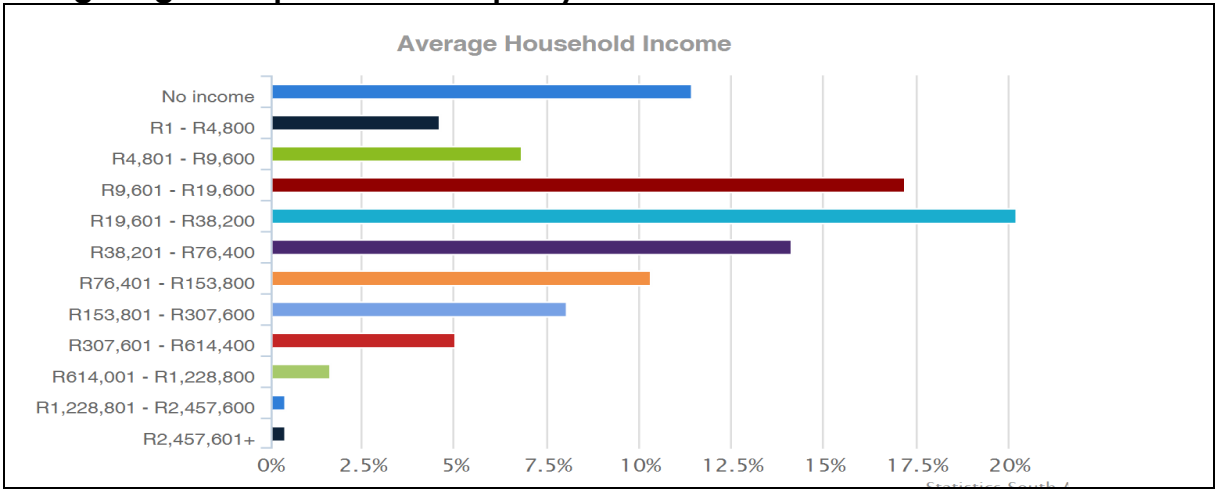


Ward 17:

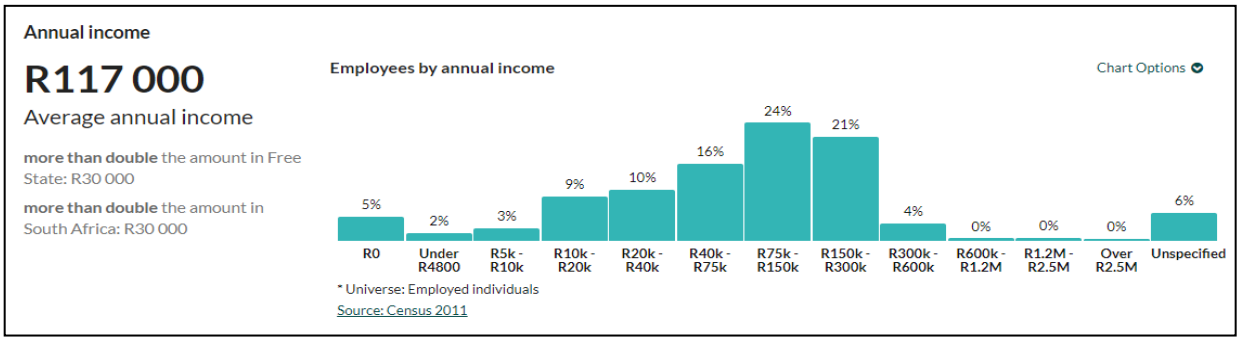


Economic profile of local municipality:

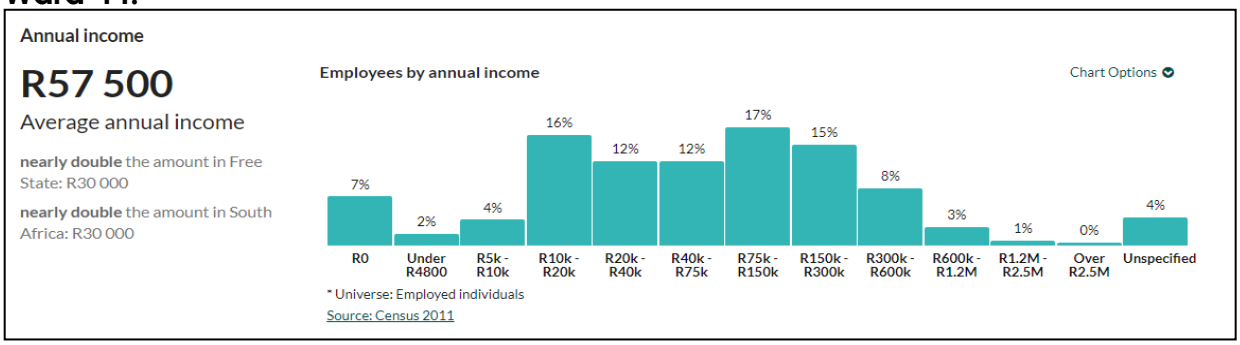
Mangaung Metropolitan Municipality:



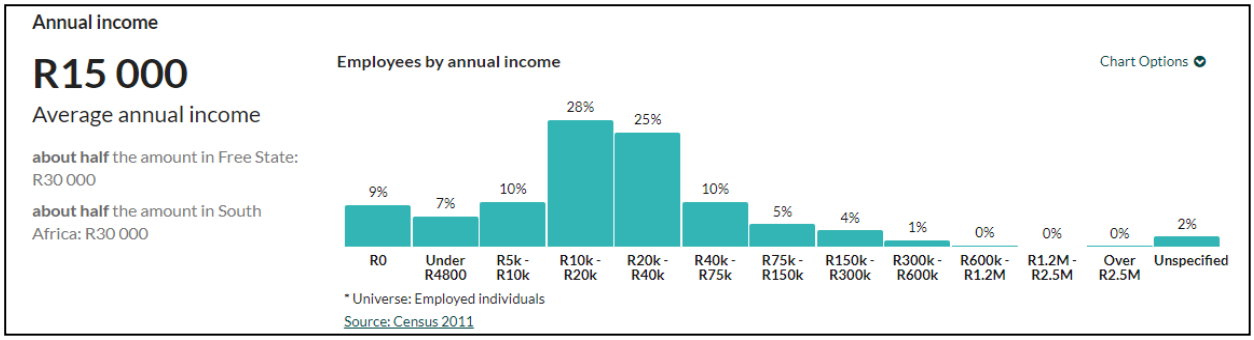
Ward 47:



Ward 44:

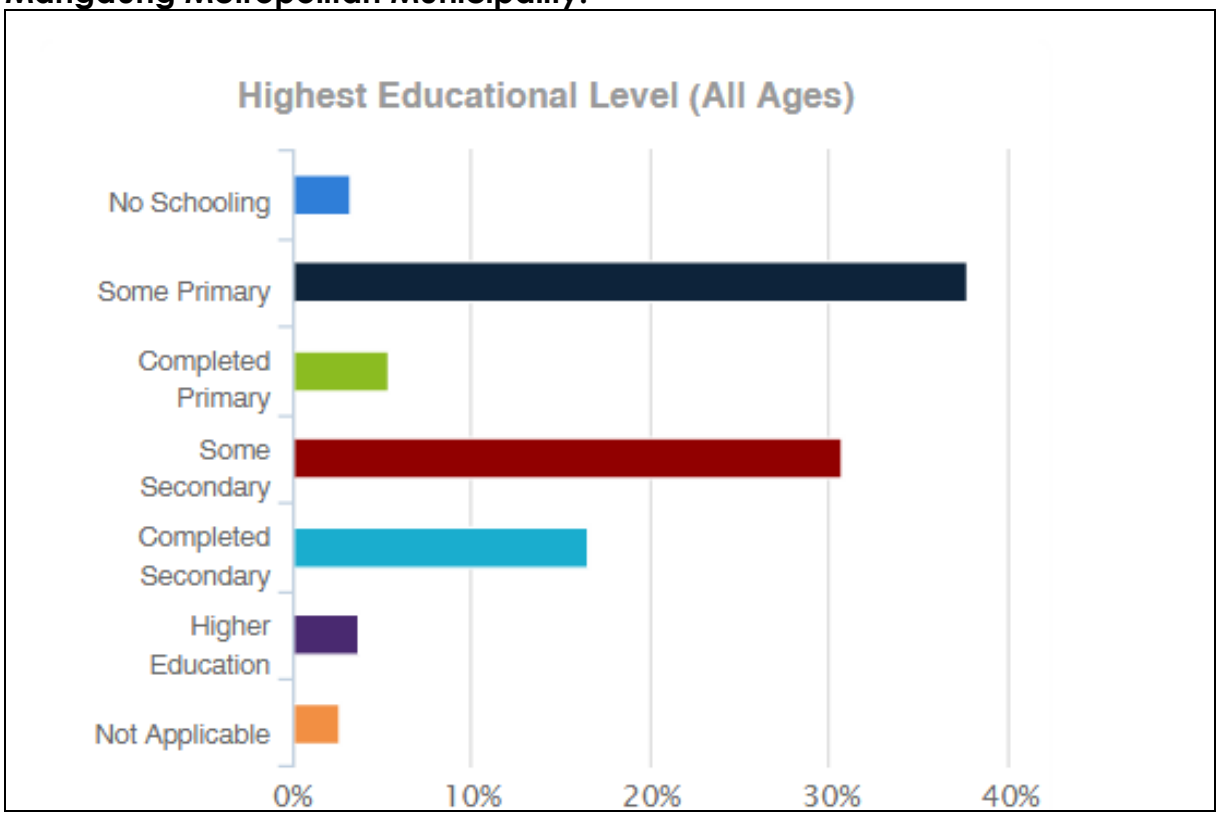


Ward 17:

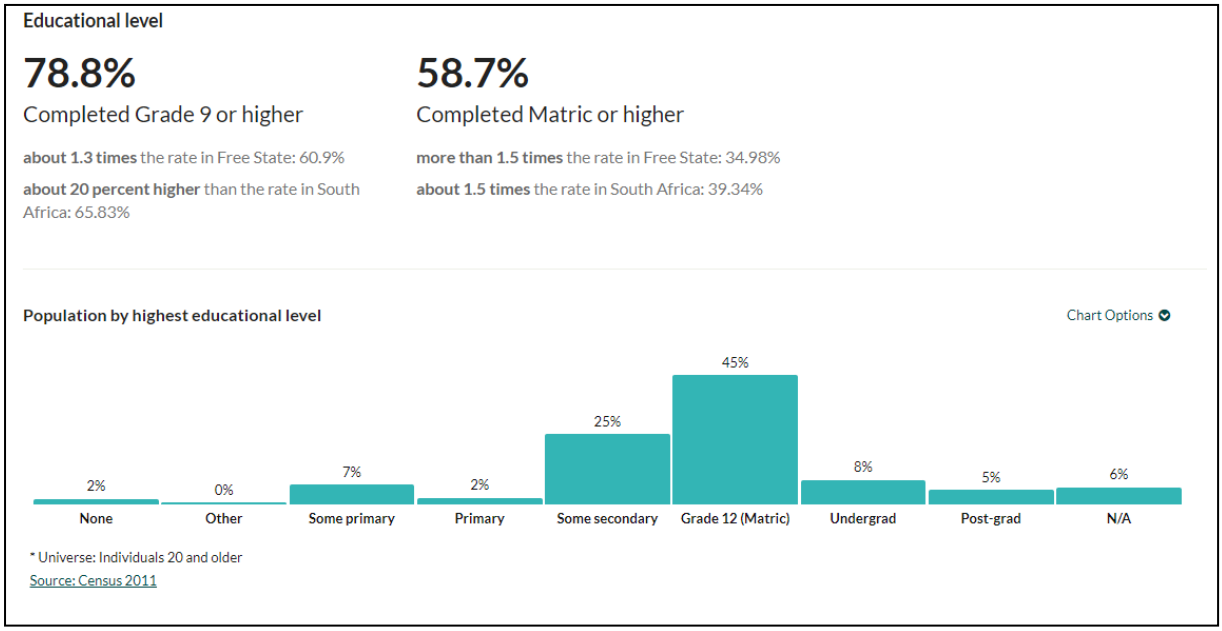


Level of education:

Mangaung Metropolitan Municipality:



Ward 47:



Ward 44:

Educational level

72.1%
Completed Grade 9 or higher

about 20 percent higher than the rate in Free State: 60.9%

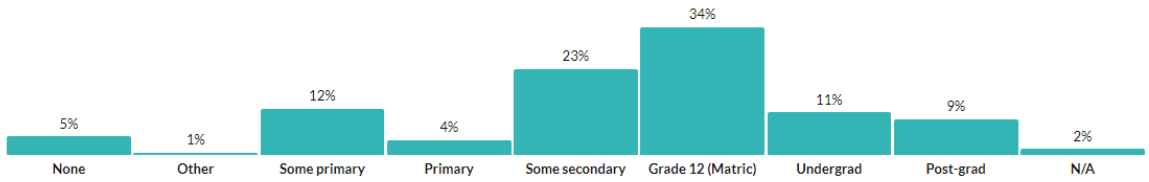
about 10 percent higher than the rate in South Africa: 65.83%

54.3%
Completed Matric or higher

about 1.5 times the rate in Free State: 34.98%

about 1.4 times the rate in South Africa: 39.34%

Population by highest educational level Chart Options



* Universe: Individuals 20 and older
Source: Census 2011

Ward 17:

Educational level

61.8%
Completed Grade 9 or higher

about the same as the rate in Free State: 60.9%

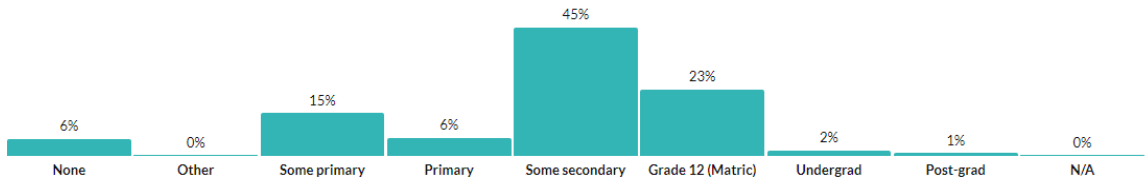
a little less than the rate in South Africa: 65.83%

26.5%
Completed Matric or higher

about three-quarters of the rate in Free State: 34.98%

about two-thirds of the rate in South Africa: 39.34%

Population by highest educational level Chart Options



* Universe: Individuals 20 and older
Source: Census 2011

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 102 000 000	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown. The proposed project is a service delivery 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?	Approximately 30 000 man-days	
What is the expected value of the employment opportunities during the development and construction phase?	Approximately R6 000 000	
What percentage of this will accrue to previously disadvantaged individuals?	Approximately 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?	Approximately 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)	**Alternative 1$_{RedRoute}$ & Alternative 2$_{GreenRoute}$:** The vegetation along the northern pipeline route has mostly been transformed from the natural condition with only a few remnant patches of natural vegetation remaining and these also not in a good condition. The vegetation along the route is therefore no longer considered to consist of the threatened Bloemfontein Dry Grassland. This alternative pipeline route should therefore result in a significantly lower impact than the southern alterative. However, there is still a low likelihood of protected species occurring along the patches of remnant natural vegetation and a walkthrough survey of at least these sections should be undertaken to identify and mark protected species. Should any protected species be identified which will be affected by the pipeline construction they should be removed and transplanted adjacent to the pipeline in an area of suitable and similar habitat. Permits must be obtained for those specimens to be transplanted. **Alternative 3$_{BlueRoute}$:** The southern pipeline route alternative contains sections which has been modified and transformed significantly from the natural condition and these portions are consequently of relatively low conservation value. However, several large portions of relatively natural vegetation still remain, especially in the eastern section of the pipeline. Consisting of Bloemfontein Dry Grassland, a Threatened Ecosystem, and highly likely containing protected species, these sections should be regarded as sensitive and having a significant conservation value. The condition of the vegetation in these sections does however seem to be somewhat degraded along the border fences which should decrease the impact the proposed pipeline will have. Adequate mitigation will however be required which should include minimising the disturbance footprint and conducting a walkthrough survey to identify and mark protected species along the pipeline route. It is recommended that any protected plant specimens which will be affected by the pipeline construction should be removed and transplanted adjacent to the pipeline in an area of suitable and similar habitat. Permits must be obtained for those specimens to be transplanted.

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	10%	Refer to the section below
Near Natural (includes areas with low to moderate level of alien invasive plants)	10%	
Degraded (includes areas heavily invaded by alien plants)	40%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	40%	

Alternative $1_{RedRoute}$ & Alternative $2_{GreenRoute}$:
The northern route is dominated by undulating terrain with most of the natural vegetation having been transformed previously or in a quite degraded condition. Remnant patches of natural vegetation are present but overall not in a good condition. The route will be situated to the north of the tarred Maselspoort road and will also be mostly situated adjacent to an existing gravel road. This also further decreases the condition of the vegetation along the route. This pipeline route also contains a small alternative deviation but will be discussed as a whole as it does not contain any elements different from the rest of the pipeline route.

The pipeline route is situated in its entirety in the Roodewal Small Holdings and does not border on any significant natural areas. The survey indicated that small remnants of the natural grassland are present but evidently not in a good condition. The remainder of the pipeline route has been degraded to such an extent as not being good representative samples of the natural vegetation type. The small holdings entail intensive stock farming, crop cultivation and general disturbance associated with small-scale farming

activities. Spatial data also confirms that the natural vegetation type, Bloemfontein Dry Grassland, is considered transformed along this pipeline route.

The following description of the terrestrial vegetation along this pipeline route should also give a good indication of the condition it is in. Naturally this area should consist of Bloemfontein Dry Grassland, a vegetation type characterised by a dominant grass layer, often dominated by the climax grass, *Themeda triandra*, but also a prominent dwarf shrub component with a diversity of geophytic species. This has however been altered along the majority of the pipeline route. The grass layer has been much diminished and dwarf karroid shrubs are dominant in many areas. Dominant dwarf shrubs include *Lycium horridum, Pentzia incana, Rosenia humilis, Felicia muricata, Hertia pallens, Salsola rabieana* and *Chrysocoma* ciliata. A few pioneer herbaceous species has also become prominent with *Nidorella resedifolia*, forming dominant patches in some areas. Other prominent herbaceous species also include *Senecio consanguineus* and *Osteospermum scariosum*. The small geophyte, *Moraea pallida*, is abundant. This species is unpalatable and even poisonous to stock and proliferates where overgrazing occurs as along the pipeline route. Overgrazing and disturbance of the grass layer has also resulted in the increased establishment of shrubs and trees, especially the tree, *Vachellia karroo*, and shrub, *Asparagus larcinus*. A few exotic weeds has also established due to the degraded condition and include *Datura ferox* and *Opuntia humifusa*. The latter also being serious invasive and forms extensive clumps in this area. As mentioned, the natural grass layer is much diminished. However, the climax grass, *Themeda triandra* is still present in a few areas where remnants of the natural vegetation remain. Where a grass layer is still present these are often dominated by pioneer species such as *Chloris virgata, Eragrostis lehmanniana, Tragus koelerioides, Cynodon dactylon* and *Aristida congesta*.

In conclusion, the vegetation along the northern pipeline route has mostly been transformed from the natural condition with only a few remnant patches of natural vegetation remaining and these also not in a good condition. The vegetation along the route is therefore no longer considered to consist of the threatened Bloemfontein Dry Grassland. This alternative pipeline route should therefore result in a significantly lower impact than the southern alternative. However, there is still a low likelihood of protected species occurring along the patches of remnant natural vegetation and a walkthrough survey of at least these sections should be undertaken to identify and mark protected species. Should any protected species be identified which will be affected by the pipeline construction they should be removed and transplanted adjacent to the pipeline in an area of suitable and similar habitat. Permits must be obtained for those specimens to be transplanted.

Alternative 3$_{BlueRoute}$:
The southern route is dominated by undulating terrain with a substantially higher degree of remaining natural vegetation present. The route will cross the tarred Maselspoort road and will mostly avoid roads, being situated along the border of small holdings. Several large natural areas occur to the south of the pipeline route.

The western portion of this route is located within the small holdings and although portions of natural vegetation remain they have been degraded to such an extent as not being good representative samples of the natural vegetation type. The small holdings entail intensive stock farming, crop cultivation and general disturbance associated with small-scale farming activities. The eastern portion of this route also contains extensive disturbance but also large areas of comparative natural grassland. Here the pipeline route exits the small holdings and is bordered to the south by extensive natural areas but to the north by small holdings. A large historical borrow pit is situated along the pipeline route and is therefore a transformed portion. The eastern portion bordering the pipeline route to the south is however still largely natural and is confirmed by available spatial data indicating it is still forming part of the Bloemfontein Dry Grassland, a Threatened Ecosystem.
The following description of the terrestrial vegetation along this pipeline route should also give a good indication of the condition it is in. Naturally this area should consist of Bloemfontein Dry Grassland, a vegetation type characterised by a dominant grass layer, often dominated by the climax grass, *Themeda triandra*, but also a prominent dwarf shrub component with a diversity of geophytic species. The western portion of this pipeline route situated in the small holdings has however been altered to a significant extent. The grass layer has been much diminished and dwarf karroid shrubs are dominant in many areas. Dominant dwarf shrubs include *Lycium horridum, Pentzia incana, Rosenia humilis, Felicia muricata* and *Chrysocoma* ciliata. Where a grass layer is still present these are often dominated by pioneer species such as *Chloris virgata, Eragrostis lehmanniana* and *Aristida congesta*. However, there are still areas containing patches of climax *Themeda triandra*, which indicates that remnants of the natural vegetation type is still present and it is highly likely that protected species of conservation value will still be present here.

As mentioned the eastern section of this pipeline route is situated in an area consisting of natural vegetation. Access to this section could however not be provided and only limited sampling was undertaken here. From this sampling the following assumptions could be made. The area consists of a dominant grass layer with the climax grass, *Themeda triandra* dominating and thus indicating that the vegetation is still largely natural. Patches of dwarf karroid shrubs are still present but not prominent and therefore further substantiate that the vegetation is still largely natural. A few geophytic species were also

observed, including *Eriospermum porphyrium* and *Colchicum longipes*. It is therefore also highly likely that protected species may occur along this section. It was however also noted that the border between the small holdings and natural areas to the south contained significant levels of disturbance most likely as a result of the edge effect often present along borders between degraded and natural areas. The impact that the pipeline will have should therefore be limited as long as the disturbance footprint is kept to a minimum and confined to the small strip along the border fence. As a result of disturbance several pioneer herbaceous species are prominent along the border and include *Salvia verbenaca, Senecio consanguineus, Arctotis arctotheca, Chenopodium album* as well as the exotic weed, *Alternanthera pungens*. An old borrow pit also occurs in the eastern section of the pipeline route which is consequently associated with significant transformation of the natural vegetation. Here dolerite outcrops are also abundant and as a result several tree species have also established here including *Vachellia karroo, Searsia lancea* as well as an exotic invasive tree, *Melia azedarach*.

In conclusion, the southern pipeline route alternative contains sections which has been modified and transformed significantly from the natural condition and these portions are consequently of relatively low conservation value. However, several large portions of relatively natural vegetation still remain, especially in the eastern section of the pipeline. Consisting of Bloemfontein Dry Grassland, a Threatened Ecosystem, and highly likely containing protected species, these sections should be regarded as sensitive and having a significant conservation value. The condition of the vegetation in these sections does however seem to be somewhat degraded along the border fences which should decrease the impact the proposed pipeline will have. Adequate mitigation will however be required which should include minimising the disturbance footprint and conducting a walkthrough survey to identify and mark protected species along the pipeline route. It is recommended that any protected plant specimens which will be affected by the pipeline construction should be removed and transplanting adjacent to the pipeline in an area of suitable and similar habitat. Permits must be obtained for those specimens to be transplanted.

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 (water resource)				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)

Alternative 1$_{RedRoute}$ & Alternative 2$_{GreenRoute}$:
The vegetation along the northern pipeline route has mostly been transformed from the natural condition with only a few remnant patches of natural vegetation remaining and these also not in a good condition. The vegetation along the route is therefore no longer considered to consist of the threatened Bloemfontein Dry Grassland. This alternative pipeline route should therefore result in a significantly lower impact than the southern alterative. However, there is still a low likelihood of protected species occurring along the patches of remnant natural vegetation and a walkthrough survey of at least these sections should be undertaken to identify and mark protected species. Should any protected species be identified which will be affected by the pipeline construction they should be removed and transplanted adjacent to the pipeline in an area of suitable and similar habitat. Permits must be obtained for those specimens to be transplanted.

Alternative 3$_{BlueRoute}$:
The southern pipeline route alternative contains sections which has been modified and transformed significantly from the natural condition and these portions are consequently of relatively low conservation value. However, several large portions of relatively natural vegetation still remain, especially in the eastern section of the pipeline. Consisting of Bloemfontein Dry Grassland, a Threatened Ecosystem, and highly likely containing protected species, these sections should be regarded as sensitive and having a significant conservation value. The condition of the vegetation in these sections does however seem to be somewhat degraded along the border fences which should decrease the impact the proposed pipeline will have. Adequate mitigation will however be required which should include minimising the disturbance footprint and conducting a walkthrough survey to identify and mark protected species along the pipeline route. It is recommended that any protected plant specimens which will be affected by the pipeline construction should be removed and transplanted adjacent to the pipeline in an area of suitable and similar habitat. Permits must be obtained for those specimens to be transplanted.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Die Volksblad	
Date published	28 June 2019	
Site notice position	**Latitude**	**Longitude**
	29°05'44.64"S	26° 19'54.09"E
Date placed	27 June 2019	

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 326

NOTE:

Identification of possible IAPs includes:
- MMM City Manager
- MMM Planning Division
- MMM Environmental Division
- MMM Ward Councillor: Ward 47
- Dept. of Agriculture
- Dept. of Water and Sanitation
- SAHRA
- FSHRA
- ESKOM
- TELKOM
- Adjacent landowners

Site notices were placed on site.
Landowners & Adjacent Landowners were notified by means of registered mail / hand deliveries.
Authorities were notified via registered mail.
A legal notice was placed in Die Volksblad.

A copy of the dBAR and fBAR will be provided to all the registered parties.
All registered parties will be given the opportunity to comment on the BAR documents.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 326

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Please note that other stake holders were notified by means of on-site notices as well as a notification in Die Volksblad.		

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
Mr Labuschagne info@bloemplan.co.za Telephonically requested additional information regarding the pipeline route. Mr Labuschagne needed clarification on the position of the proposed pipeline.	MDA forwarded a GoogleEarth Marker to Mr Labuschagne on the 5th of September. MDA confirmed that it is proposed that the pipeline will be constructed on the Remainder of the farm Roodewal 262. The applicant will contact the landowner of the said farm directly to discuss the possibility to register a servitude for the pipeline on the said property.
Ms Marguerite Cronje Take note of the proposed routes.	A copy of the dBAR will be forwarded to all registered IAPs.
NOTE: No other comments were received to date. Any comments received during the Public Participation Process, will be included in the fBAR.	

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.

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
MMM Planning Division	Collin Dihemo	051405 8212	051405 8707	collin.dihemo@mangaung.co.za	P.O. Box 3704 Bloemfontein 9300
MMM Environmental Division	Mpolokeng Kolobe	051405 8871	051405 8310	mpolokeng.kolobe@mangaung.co.za	P.O. Box 3704 Bloemfontein 9300
MMM Ward Councillor: Ward 47		051405 8212	051405 8707		P.O. Box 3704 Bloemfontein 9300
MMM City Manager		051405 8911	051405 8707		P.O. Box 3704 Bloemfontein 9300
SAHRA		021462 4509	021462 4502	online submission: http://www.sahra.org.za/	111 Harrington Street CAPE TOWN 8001
TELKOM	Telkom Wayleave Operations Manager For Attention: Ms H. Van den Heever	051 401 6829	051 401 6238	wayleacr@telkom.co.za	Private Bag X20700 Bloemfontein 9300

Authority / Organ of State	Contact person	Tel No	Fax No	E-mail	Postal Address
ESKOM	Environmental Officer Land Development and Environment Eskom Distribution :Mahlatse Moeng	051 404 2287	086 604 5709	Mahlatse.Moeng@eskom.co.za	Eskom Distribution-FSOU Eskom Centre First Floor 120 Henry Street Westdene Bloemfontein 9300
FSHRA		051414 750		mbatha.npz@sacr.fs.gov.za	C/O Henry and East Burger Street Business Partner Building Office 307 Bloemfontein 9301
DWS	Mr Masia Mgwambani or Mr W. Grobler	051405 9000			Private Bag X528 Bloemfontein 9300
Department of Agriculture	The Assistant Director	051506 1585			P.O. Box 34521 Faunasig Bloemfontein 9325 94 Charlotte Maxeke St, Bloemfontein, 9301

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 as amended 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:** • 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. • 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. • Regular monitoring and / or spot inspections at least every fortnight during the construction phase is recommended. • Inspections should be documented and any shortcomings addressed immediately. • 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 DESTEA, DWS), should it be requested. • 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. • Material Safety Data Sheets (MSDS) should be
	Indirect impacts: • Non-conformance	High Negative	
	Cumulative impacts: • Non-conformance	High Negative	

Compliance and Monitoring			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			available on site. Where possible and available, MSDS should include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes. • Procedures in the MSDS should be implemented in case of an emergency. • The following documents should be available on site, and made available to the competent authority on request (if applicable): - Complaints Register - Environmental Incident Register - Disposal Certificates of Waste and Waste Water Generated during the construction / operational phase - Environmental Monitoring (Audit) Reports - Written Corrective Action Instructions - Environmental Authorisation - DWS Permit / License - Blasting Permit - EMPr - Necessary drawings for construction activities near roads are to be submitted to the relevant authority

Compliance and Monitoring			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			(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:** • 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. • However, the applicant, engineers, environmental consultants and specialists should take the following steps during the planning phase: - 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. - A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction and operational phase. - The necessary Environmental Authorisation will be obtained before any activities listed in the Regulations are undertaken. - In addition, the necessary DWS registrations will be obtained, before any construction activities near watercourses are undertaken. - The necessary precautions with regard to road safety will be implemented for construction work
	Indirect impacts: • None	Medium – High Negative	
	Cumulative impacts: • None	Medium – High Negative	

Planning and Design phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			to be undertaken within road crossings (if any). - Proper sanitation, potable water and waste facilities will be in place before construction activities are undertaken. - A blasting permit will be obtained before blasting activities is undertaken (if any). - The design and layout of the proposed project will take the possibility of flooding, erosion and pollution into consideration. - Necessary drawings construction activities near roads 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 - 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:		

Planning and Design phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• 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:** • Loss of vegetation • Loss of animal life • Erosion • Pollution • Noise • Nuisance dust	Negative	• Any construction is disruptive and the environment must be given consideration with every activity undertaken • All relevant standards relating to legislation should be adhered to (including waste emissions, waste disposal, noise regulations, etc.) • 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. • The pollution control provision in Section 19(1) of the National Water Act (Act 36 of 1998) should be adhered to at all times. • ECO should be provided with a layout of the site, indicating the position of the following prior to the site establishment, for acceptance: - Ablution Facilities - Storage Areas
	Indirect impacts: • Possible outbreaks of fire • Pollution (groundwater, surface water, soil and air) • Erosion • Loss of biodiversity (vegetation & animal life) • Nuisance dust	High Negative	
	Cumulative impacts: • Possible outbreaks of fire	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Pollution(groundwater, surface water, soil and air) • Erosion • Loss of biodiversity (vegetation & animal life)		- Ready-mix Areas - Stockpile Areas - Waste Disposal Facilities - Hazardous Substances Storage Area - Construction areas within 32m of a watercourse - Etc. • Designate the boundaries of the active construction start-up site, by erecting fencing / danger tape (where applicable) • Fence off operational footprint area (if possible) to ensure all operational activities are contained within the designated area. • All construction and operational activities must be contained within the demarcated servitude determined in consultation with the ECO. • Care will be taken to prevent unnecessary damage to vegetation near to construction activities. • The necessary precautions with regard to road safety will be implemented for construction work within road crossings (if any). • Proper sanitation, water and waste facilities will be

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			in place for construction workers throughout the construction phase. • Chemical toilets will be cleaned and serviced regularly and proof thereof will be available on site. • Potable water will be made available daily to workers on site. • Fire-fighting equipment will be available on site, where applicable. • 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. • Adjacent landowners will be notified of proposed blasting, 24 hours prior to blasting activities. • 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.
Site access	**Direct impacts:** • Loss of vegetation • Loss of animal life • Erosion • Pollution	Medium Negative	• Necessary drawings for the upgrading of intersections / attachment to bridges (if any) / construction activities near roads are to be submitted to SANRAL / Provincial Department of Roads / Municipality's Department of Roads for

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Storm water contamination		approval, and the upgrades are to be implemented • The current access road should be improved, when / where required • Proper storm water measures are to be implemented to avoid run-off of water and washing of sand / soil onto the road • Erosion measures will be implemented where necessary • Removal of vegetation will be kept to the required area • No animals will be hunted / captured on site (only to be undertaken by a relevant specialist)
	Indirect impacts: • Loss of vegetation • Loss of animal life • Erosion • Surface water contamination	High Negative	
	Cumulative impacts: • Loss of vegetation • Loss of animal life • Erosion • Surface and groundwater contamination	High Negative	
Employee conduct on site	**Direct impacts:** • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste	Medium Negative	• No animals may be harmed / captured / trapped and / or hunted. This must be strictly enforced. • Animals found at the construction site will be removed and relocated to an appropriate area, by a suitable, qualified person. • No open fires allowed. Provision will be made that no accidental fires are started. • No firewood will be collected on site or in

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	on site • Various health and safety aspects		surrounding areas, without written approval from the landowner. • No smoking or open fires will be allowed near storage facilities. • No waste may be dumped on site. • Employees should make use of the ablution facilities provided.
	Indirect impacts: • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste on site • Various health and safety aspects • Fire outbreaks	High Negative	
	Cumulative impacts: • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	on site • Various health and safety aspects • Fire outbreaks		
Soil, erosion and vegetation management	**Direct impacts:** • Destruction of vegetation • Loss of topsoil • Loss of vegetative species of conservational concern • Noise elevation due to construction activities • Nuisance dust generation • Visual impact of rock and spoil material dumps	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. • Access roads or temporary crossings must be non-erosive, structurally stable and not induce flooding / safety hazard. • If any access road or temporary crossing is impaired, it will be repaired immediately to prevent any future / further damage. • All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat. • Erosion management is important. Rehabilitation measures must be monitored to ensure that no erosion has occurred and the disturbed areas
	Indirect impacts: • Erosion • Establishment of alien / invader vegetation	Medium Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	species • Possible impact on heritage artefacts • Loss of fauna on site.		have been adequately re-vegetated. • Concurrent rehabilitation of disturbed areas will be undertaken to help the recovery of the vegetation. • Stockpiled soil will be stockpiled in an area where it will not be disturbed by vehicles. • Stockpiled soil will be protected from washing away during rainstorms. For example: - Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events. - Stockpiles should not be higher than 1.5 m. - The gradient of stockpiles should not be greater than 1:1.5. • Stockpiles should be located away from drainage lines, watercourses and areas of temporary flood. • All soil excavated is to be separated into top- and subsoil. Subsoil must be used for backfilling and topsoil for landscaping and rehabilitation of disturbed areas. • 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, or as indicated by the
	Cumulative impacts: • Erosion • Establishment of alien vegetation species	Medium Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			ecological specialist. • Fertilisers should be used where topsoil and subsoil was mixed or not up to original standard. • 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. • A permit for the removal of protected plant species will be obtained before the removal of these species (if any). • An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase. • Any proclaimed weed or alien species that germinates during the contract period will be cleared by hand / approved chemicals before flowering thereof. • Imported fill material will be monitored during and after construction for the presence of any alien species. Any such species will be removed

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			immediately. • Fire fighting equipment will be available on site. • Species, especially grasses, trees and shrubs occurring in the region will be used to rehabilitate disturbed areas. • 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. • Concurrent rehabilitation should be undertaken, where possible. • Vegetation clearance will be limited to the required area. • Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways. • Dust control measures will be implemented if nuisance dust generation occurs during the construction period. • 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. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis. • No animals may be captured / harmed / killed on site. • Any occurrences of harmed animals should be reported to the ECO and recorded as such.
Minimise contamination and sterilisation of soil	**Direct impacts:** • Slow regrowth of natural occurring vegetation during the rehabilitation phase • Loss of vegetation	Medium Negative	• Use of potentially polluting and hazardous substances should be strictly controlled. • If soil is significantly contaminated by hazardous substances, then this soil is considered as hazardous and should be disposed of according to best practices. • 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. • 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: • Loss of vegetation • Loss of animal life • Establishment of alien vegetation • Erosion	High Negative	
	Cumulative impacts: • Loss of vegetation	High Negative	

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

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	Cumulative impacts: • Erosion • Establishment of alien vegetation species	Medium – High Negative	PPE. • Establishment of alien / invader vegetation will be monitored and these species will be removed by hand or by an approved chemical before gestation thereof. • 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. • Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis. • No animals may be captured / harmed / killed on site. • Any occurrences of harmed animals should be reported to the ECO and recorded as such.
Ablution Facilities	**Direct impacts:** • Pollution of surface water runoff • Pollution of soil	Negative	• No open areas or the surrounding vegetation may be used as 'toilet facilities'. • Toilets should be available for all employees. Where waterborne sewerage is not available, the ECO must designate an area within the boundaries
	Indirect impacts:	Medium	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Pollution of surface water runoff • Pollution of soil • Pollution of groundwater • Odour • Unnatural enrichment of soil	Negative	of the site for the erection of portable chemical toilets. • Toilet facilities shall occur at a minimum ration of 1 toilet per 15 employees. • Toilets shall be maintained in a hygienic state and serviced when required. • Temporary toilets should be serviced regularly and the contents be removed to a licensed disposal facility.
	Cumulative impacts: • Pollution of surface water runoff • Pollution of soil • Pollution of groundwater • Odour • Unnatural enrichment of soil	High Negative	
Safeguard water resources	**Direct impacts:** • 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 DESTEA and DWS). • Caution will be taken to ensure that construction materials are not dumped or stored within storm
	Indirect impacts: • Erosion	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Change in flow of water course • Pollution (surface water, groundwater and soil)		water management systems. • Construction activities in the storm water infrastructure will be limited through proper demarcation and appropriate environmental awareness training. • The Contractor is responsible to inform all staff of the need to be vigilant against any practice that will have a harmful effect on waterways. • Infilling, excavation, drainage and hardening of surfaces will not occur unnecessarily in storm water infrastructure. • Emergency plans will be in place in case of fuel spillages (to limit the occurrence of soil as well as groundwater pollution). • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction or operational phase. • The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected. • Weather forecasts from the South African Weather Bureau of up to three days in advance will be
	Cumulative impacts: • Erosion • Change in flow of water course • Pollution (surface water, groundwater and soil)	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			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. • All no-go areas will be demarcated under guidance of the Environmental Control Officer (ECO). • The design of drainage systems will ensure there is 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). • It will be ensured that the construction activities have minimal effects on the flow of water through the storm water infrastructure. • No erosion or siltation may occur due to any construction or operational activities. • Construction and operational activities should take the water course's boundaries and associated buffer zones that should be avoided, into consideration. • Occurrence of erosion will be monitored.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			Reparations will be undertaken as soon as possible.
Workings within / near to watercourses	**Direct impacts:** • Temporary blockage of water • Loss of vegetation • Loss of aquatic animal life • Erosion • Scouring	Medium – High Negative	• Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • 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. • The necessary authorisations should be obtained from DWS, should the containment of water be required. • All scour outlets will be provided with stone pitched and /or gabion mattresses lined channels. • Water course beds will be covered with gabion mattress including embankment stabilization above the excavation area (where required) • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis.
	Indirect impacts: • Ponding of water during construction at waterways (due to blockage of waterways). • Surface and groundwater pollution due to spillage of potential hazardous substances such as hydraulic material and untreated sewage	Medium – High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	explained above. • Impact on waterways (including the natural habitat of the area), soil disturbances and including pollution. • Possible change of flow of water in waterways during the construction activities near / through the waterways. • Erosion • Scouring • Loss of biodiversity		
	Cumulative impacts: • Erosion • Loss of vegetation • Scouring • Possible change of flow of water in waterways • Loss of biodiversity	High Negative	

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

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	habitat of the area), including pollution. • Pollution of soil		• Waybills providing evidence of correct disposal procedure must be provided for the ECO's inspection. • Waste classification should be undertaken. • Visual inspections for the occurrence of pollution should be undertaken daily. • Spills should be cleaned up immediately according to best practices. • DWS should be notified of any spillage / pollution of water sources (groundwater and / or surface water) within 24 hours of occurrence • Record should be kept on site to indicate date of visual inspection, any spillages observed, and manner in which spill was treated.
	Cumulative impacts: • Pollution of downstream watercourses • Pollution of soil • Pollution of groundwater • Air pollution	Medium – High Negative	
Health, safety and security	**Direct impacts:** • Road safety at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry	Medium Negative	• Site should be fenced / marked with danger tape, where possible. • 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. • Construction contracts will include safety and security measures for staff. • Precautions to ensure that construction staff and

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	Indirect impacts: • Loss of vegetation and animal life due to possible fire outbreaks • Road safety issues at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry	Medium Negative	sites are visible and proper PPE will be provided to all employees. • 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 • 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. • Employees should receive relevant safety training in handling of hazardous substances / dangerous goods associated with the proposed project. • Construction work within road reserves will accommodate road users as far as possible. This includes the following: - Roads will be crossed in half widths at a time to minimise the impact on vehicular traffic, where possible. - Construction along and across existing roads will be executed in such a manner that both
	Cumulative impacts: • Loss of vegetation and animal life due to possible fire outbreaks • Road safety issues at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry	Low Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			pedestrian and vehicular traffic is accommodated at all times. - The contractor will be required to maintain adequate access to all public and private property at all times. - 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. • Fire extinguishers will be available on site and in the construction camp (if any). • The contractor will be required to maintain adequate access to all public and private property at all times. • Speed limits of 20km/h will be enforced. • All relevant IAPs will be notified prior to any blasting activities • 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. • The necessary precautions with regard to road safety will be implemented for construction work

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			within road crossings. • All injuries should be recorded.
Heritage	**Direct impacts:** • Harm to unknown heritage resources	Negative	• Approval is required from SAHRA and the relevant road authorities if any attachment will be made to bridges. • 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. • Known heritage resources (if any) must be avoided as far as possible. • Employees should be encouraged and informed of the need to be on the look-out for potential fossils / buried archaeological material. • In the case of the discovery of any stone tools or other archaeological or palaeontological 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
	Indirect impacts: • Loss of heritage resources	High Negative	
	Cumulative impacts: • Loss of heritage resources	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			the local SAPS should be notified. • 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 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. • Appropriate measures should be undertaken by the ECO until the archaeologist / SAPS visits the site. This should include the following: - Site should be fenced with 'danger tape'

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			- Position of finding should be recorded - Depth of finding should be recorded - Digital image of the finding should be taken - No information on the findings may be made public without the consent of the archaeologist / SAPS. - Construction activities in the area may only continue after approval from the archaeologist and SAHRA.
Noise and dust control	**Direct impacts:** • Elevation of noise levels • Generation of nuisance dust	Negative	• Construction activities will be limited to normal daytime hours, where possible. • Noise levels will be kept as low as possible during the construction phase in order not to disturb adjacent landowners. • Proper mitigation measures will be implemented to limit noise (e.g. the installation of silencers, where required). • Proper mitigation measures will be implemented to limit the formation of dust (e.g. wetting of construction area, when required). • The speed of the construction vehicles will be limited to avoid dangerous conditions, the formation of dust and the excessive deterioration
	Indirect impacts: • Air pollution • Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding	Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	landowners / occupants		of roads being used.
	Cumulative impacts: • Air pollution • Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding landowners / occupants	Negative	
Handling and Storage of materials	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • 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. • Vehicles will be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere. • 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
	Indirect impacts: • Loss of vegetation and	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues		substances and materials are adhered to, where necessary. • Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground. • 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. • Spill response equipment must be available during the handling and loading of hazardous waste (if any) • Hazardous substances such as above ground fuel tanks are to be stored in bunded areas. • Bund walls will have a capacity of at least 110% of the total capacity of the stored volume. • No oil, diesel or other chemicals may be spilled or discharged anywhere and contact with bare soil should be avoided at all cost. • Drip trays will be used during the servicing of vehicles as well as the transfer of chemicals / substances from transportation vehicles.
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• 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. • The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected. • Material stockpiles, such as bricks and pipes, must be stable and well secured to avoid collapse and possible injury. • 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. • Storage areas should be kept clean and free from any accumulation of combustible matter (such as paper) and any possible source of ignition should be removed.
Hazardous waste management	**Direct impacts:** • Soil pollution • Air pollution	High Negative	• Hazardous wastes must be separated from general wastes, stored within secondary containment in appropriate containers.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Fire outbreaks • Surface water pollution • Injuries • Health issues		• 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. • 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. • 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. • Areas used for the storage of hazardous materials are to be clearly indicated as such.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution	High Negative	

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

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues		
Hazardous and Flammable materials: Cement and / or concrete mixing	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Limit cement and concrete mixing to single sites, where possible. • No mixing allowed directly onto the ground. • All visible remains of excess material will be treated as hazardous waste. • 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: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Injuries • Health issues		
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
Hazardous and Flammable materials: Gas Storage	**Direct impacts:** • Air pollution • Fire outbreaks • Injuries • 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. • No gas will be delivered until the site is registered with local Fire Safety. • Cylinders should always be stored in a well-ventilated area away from spark, flames or any source of heat or ignition. • Cylinders should always be handled, stored, used
	Indirect impacts: • Air pollution • Fire outbreaks • Injuries • Health issues	High Negative	
	Cumulative impacts:	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Air pollution • Fire outbreaks • Injuries • Health issues		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. • Valves should be kept properly closed.
Hazardous and Flammable materials: Chemicals, Grease and Oil Storage	**Direct impacts:** • Soil pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Storage areas must be bunded and hard surfaced in order to protect groundwater quality. • Compliance with SANS codes and hazardous substances bylaws should be adhered to. • All lids must be properly sealed / closed to prevent Volatile Organic Compounds (VOCs) and other potentially harmful gaseous compounds from escaping.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
	Cumulative impacts:	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues		
Hazardous and Flammable materials: Hydrocarbon spillages	**Direct impacts:** • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Spill kits are to be made permanently available at areas which have the potential to be subjected to spillage of hazardous substances and dangerous goods. • Remediation of spillages must be conducted immediately and closed out within 24 hours. • 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. • Machinery will be kept maintained in line with manufactures specifications to minimise the risk of hydrocarbon spillages. • An incident reporting system will be implemented in order to ensure incidents, where spillages has
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	occurred, are closed out and appropriate measures are taken to prevent further incidents. • Incidents must be reported to DWS within 24 hours. • Contaminated soil must be disposed of in a hazardous materials skip and removed to a licensed hazardous landfill facility by a licensed contractor. • Contaminated water must be decanted into drums and stored until disposal by a registered waste transported is undertaken.

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

Operational phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	previous disturbance will also be associated with this phase. • Erosion • 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. Activities associated with the decommissioning phase will be limited to the rehabilitation of areas disturbed	**Direct impacts:** • Rehabilitation of disturbed area • Re-vegetation • Limit occurrence of erosion • Proper stormwater control • No ponding on site • 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. • 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. • An alien plant control and monitoring programme will be implemented. • 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. • After completion of the construction phase, a waterway monitoring program will be initiated that ensure that all are adequately rehabilitated. • Temporary concrete surfaces (if any) will be removed and compacted areas ripped. • The establishment of natural occurring vegetation will be encouraged at disturbed areas. Hydro-seeding will be undertaken if natural regrowth is insufficient.
	Indirect impacts: • Rehabilitation of disturbed area	Medium Positive	
	Cumulative impacts: • Rehabilitation of disturbed area	Medium Positive	

Decommissioning phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
during the construction phase. All disturbed areas will be rehabilitated according to best practices. 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. The rehabilitation plan will include management and mitigation measures to be implemented during the			• Establishment of extensive alien species will be monitored.

Decommissioning phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
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:** • 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: • 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: • As the project is described as a basic service, the lack thereof will lead to major social and	High Negative	

No-go Option			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	economic impacts that will indirectly cause severe environmental concerns.		

A complete impact assessment in terms of Regulation 19(3) of GN 326 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:
By implementing the recommendations of the ecological report, heritage report, this document and the EMPr, the impact of the pipeline's construction phase will be kept to a minimum.

Preferred Alternative 1, 2 and 3

The same as above, including:
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.

No-go alternative (compulsory)

The no-go alternative is not seen as a reasonable / feasible alternative as this will place the Mangaung Metropolitan Municipality in such a position that it will not be able to provide Bloemfontein with recycled 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 Mangaung Metropolitan Municipality to provide the Bloemfontein area with adequate basic services, as the proposed project entails the transportation of treated waste water, to be recycled at the Maselspoort WTW.

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 G for recommended mitigation measures.

Is an EMPr attached?	YES	

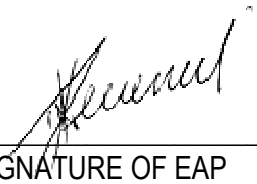
The EMPr must be attached as Appendix G.

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
Appendix D_1: Heritage
Appendix D_2: Ecological
Appendix D_3: Preliminary Design Report

Appendix E: Public Participation
Appendix E_1: List of identified possible IAPs
Appendix E_2: Proof of notification
Appendix E_3: List of registered parties
Appendix E_4: List of comments received
Appendix E_5: Response to comments received
Appendix E_6: Proof of dBAR to registered parties

Appendix F: Impact Assessment

Appendix G: Management Plans
Appendix G_1: Environmental Management Programme
Appendix G_2: Pipeline Maintenance Plan
Appendix G_3: Water Resource Monitoring Plan/Guideline
Appendix G_4: Stormwater Management Plan

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest
NOTE: Declaration by EAP is attached to Appendix H.
Heritage
Ecological

Appendix J: Additional Information
Appendix J_1: Confirmation from MMM
Appendix J_2: Title Deed Document