LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

BASIC ASSESSMENT REPORT - EIA REGULATIONS, 2010

Basic Assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

File Reference Number:	
	(For official use only)
NEAS Reference Number:	
Date Received:	
Due date for acknowledgement:	
Due date for acceptance:	
Due date for decision	

Kindly note that:

1. The report must be compiled by an independent Environmental Assessment Practitioner.

2. 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.

3. Where applicable **tick** the boxes that are applicable in the report.

4. 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 Department of Economic Development, Environment and Tourism as the competent authority (Department) for assessing the application, it may result in the rejection of the application as provided for in the regulations.

5. An incomplete report may be returned to the applicant for revision.

6. Unless protected by law, all information in the report will become public information on receipt by the department. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

7. The Act means the National Environmental Management Act (No. 107 of 1998) as amended.

8. Regulations refer to Environmental Impact Assessment (EIA) Regulations of 2010.

9. The Department may require that for specified types of activities in defined situations only parts of this report need to be completed. No faxed or e-mailed reports will be accepted.

10. This application form must be handed in at the offices of the Department of Economic Development, Environment and Tourism:-

Postal Address:	**Physical Address**:
Central Administration Office Environmental Impact Management P. O. Box 55464 **POLOKWANE** 0700	Central Administration Office Environmental Affairs Building Cnr Suid and Dorp Streets **POLOKWANE** 0699
Queries should be directed to the Central Administration Office: Environmental Impact Management:- **For attention:** Mr E. V. Maluleke **Tel:** (015) 290 7138/ (015) 290 7167 **Fax:** (015) 295 5015 **Email:** malulekeev@ledet.gov.za	

View the Department's website at http://www.ledet.gov.za/ for the latest version of the documents.

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" or appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in Appendix D. **The Ecological and Heritage Report is attached to Appendix D.**

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail[1]:

The activity will entail the proposed Mooihoek /Tubatse Phase 4C Bulk Water Supply. The bulk water supply pipeline will have a diameter of 750 for a distance of 2.7 kilometres, a 450 diameter steel pipe for a distance of 2.8 kilometres and a 300 diameter steel pipe for a distance of 2.3 kilometres.

The following listed activities are being applied for:

R 544, 18 June 2010	9	○ The activity will entail the provision of a bulk water supply pipeline covering an area of approximately 7.8 kilometers in length for the bulk transportation of water. The bulk water supply pipeline will have a diameter of 750 for a distance of 2.7 kilometers, a 450 diameter steel pipe for a distance of 2.8 kilometers and a 300 diameter steel pipe for a distance of 2.3 kilometers.
R 544, 18 June 2010	18	○ The bulk water supply pipeline will cross drainages along the pipeline route. During the crossing of drainages, infilling or depositing of soil, pebbles or rock of more than 5 cubic meters will take place. Dredging, excavation, removal or moving of soil, pebbles or rock from the drainages will also take place during the placement of the pipelines within the drainage sections.

[1] Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

For Notice 3 (R.546, 18 June 2010)

Activity No (s) (in the notice) :	No. of Geographical Area and Description as per project	Describe each listed activity as per project description[2]:
13	13 (c) iii (dd) – Limpopo Province	○ Clearance of indigenous vegetation will take place along the pipeline route which will cover an area of more than 1 hectare. The clearance of the vegetation at some sections of the pipeline route will occur within 100 meters from a water course.

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—

- **the property on which or location where it is proposed to undertake the activity;**

  The proposed pipeline routing will follow along different properties. Different alternatives had been investigated. The current routing/layout is the most acceptable.

- **the type of activity to be undertaken;**

  The type of activity to be undertaken will be provision of the Mooihoek/Tubatse Phase 4c bulk water supply. There are no alternatives for the activity to be undertaken.

- **the design or layout of the activity;**

  The design and layout of the proposed steel piping as well as the routing thereof is the most acceptable.

- **the technology to be used in the activity;**

  Most recent technology will be used for the activity

- **the operational aspects of the activity; and**

  The proposed pipeline will provide much needed water for future developments and recent shortages. No alternatives are applicable

- **the option of not implementing the activity.**

  The proposed pipeline will provide much needed water for future developments and recent shortages.

[2] Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

No alternatives are applicable.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished 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 Department 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.

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

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

Alternative:	**Latitude (S):**			**Longitude (E):**		
Alternative S1[3] (preferred or only site alternative)	°	'	"	°	'	"
Alternative S2 (if any)	°	'	"	°	'	"
Alternative S3 (if any)	°	'	"	°	'	"

In the case of linear activities:

Alternative:	**Latitude (S):**			**Longitude (E):**		
Alternative S1 (preferred or only route alternative)						
• Starting point of the activity	24˚	39'	50.2"	30˚	18'	48.3"
• Middle/Additional point of the activity	24˚	39'	55"	30˚	20'	00"
• End point of the activity	24˚	38'	27.5"	30˚	21'	35"
Alternative S2 (if any)						
• Starting point of the activity	°	'	"	°	'	"
• Middle/Additional point of the activity	°	'	"	°	'	"

[3] "Alternative S..." refer to site alternatives.

• End point of the activity	°	'	"	°	'	"

Alternative S3 (if any)

• Starting point of the activity	°	'	"	°	'	"
• Middle/Additional point of the activity	°	'	"	°	'	"
• End point of the activity	°	'	"	°	'	"

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

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	**Size of the activity:**
Alternative A1[4] (preferred activity alternative)	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

or,

<u>for linear activities:</u>

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	Approximately 7 800 m
Alternative A2 (if any)	m
Alternative A3 (if any)	m

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

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	Approximately 234 000m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

[4] "Alternative A..." refer to activity, process, technology or other alternatives.

5. 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:

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.

6. SITE OR 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:

6.1 the scale of the plan which must be at least a scale of 1:500;
6.2 the property boundaries and numbers of all the properties within 50 meters of the site;
6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 the exact position of each element of the application as well as any other structures on the site;
6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 all trees and shrubs taller than 1.8 meters; - old field
6.7 walls and fencing including details of the height and construction material;
6.8 servitudes indicating the purpose of the servitude;
6.9 sensitive environmental elements within 100 meters of the site or sites including (but not limited thereto):
- rivers;
- the 1:100 year flood line (where available or where it is required by Department of Water Affairs);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species); - site

6.10 for gentle slopes the 1 meter contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
6.11 the positions from where photographs of the site were taken.

7. 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 form**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 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.

11. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 90 000 000	
What is the expected yearly income that will be generated by or as a result of the activity?	None	
Will the activity contribute to service infrastructure?	YES	[redacted]
Is the activity a public amenity?	[redacted]	NO
How many new employment opportunities will be created in the development phase of the activity?	50	
What is the expected value of the employment opportunities during the development phase?	R 1 200 000	
What percentage of this will accrue to previously disadvantaged individuals?	100%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	None	
What is the expected current value of the employment opportunities during the first 10 years?	None	
What percentage of this will accrue to previously disadvantaged individuals?	N/A	

9(b) Need and desirability of the activity

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

NEED:			
I.	Was the relevant municipality involved in the application?	YES	[redacted]
ii.	Does the proposed land use fall within the municipal Integrated Development Plan?	YES	[redacted]
iii.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		

DESIRABILITY:			
I.	Do the proposed land use / development fit the surrounding area?	YES	[redacted]
ii.	Does the proposed land use / development conform to the relevant structure plans, Spatial development Framework, Land Use Management Scheme, and planning visions for the area?	YES	[redacted]

iii.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	■
iv.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
v.	Will the proposed land use / development impact on the sense of place?	■	NO
vi.	Will the proposed land use / development set a precedent?	■	NO
vii.	Will any person's rights be affected by the proposed land use / development?	■	NO
viii.	Will the proposed land use / development compromise the "urban edge"?	■	NO
ix.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		

BENEFITS:			
i.	Will the land use / development have any benefits for society in general?	YES	■
ii.	**Explain:** Bulk water will be supplied for future developments and current shortages		
	The local and regional economy will be boosted because of the availability of water in the area		
iii.	Will the land use / development have any benefits for the local communities where it will be located?	YES	■
iv.	**Explain:** The activity will provide limited job opportunities for local people but also provide water for existing shortages		
	Increased growth of villages and communities – therefore greater social economic development for the area.		

10. 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:	**Administering authority:**	**Date:**
Constitution of South Africa	Minister	1996
Constitution of South Africa	Minister	1996
National Environmental Management Act	Environmental Affairs	1998
Environmental Impact Assessment Regulations	Environmental Affairs	2006
National Heritage Resources Act	SAHRA	1999

Occupational Health and Safety Act	Department of Labour	1993
National Veld and Forest Fires Act	DWAF	1998
National Water Act	DWA	1998
Conservation of Agricultural Resources Act	Department of Agriculture	1983
Health Act	Department of Health	1977
National Forest Act	Department of Forestry	1998
National Environmental Management: Biodiversity Act	Environmental Affairs	2004

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management – bitumen, vegetation material, plastics, concrete

Will the activity produce solid construction waste during the construction/initiation phase?	YES	■
If yes, what estimated quantity will be produced per month?	Approximately 30 m^3	

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

Solid waste will be taken by the contractor to the Greater Tubatse Landfill Site

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

Solid waste will be taken to the Greater Tubatse Landfill site – **Letter from the municipality will be provided with the final BA report**

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)?

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

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 department to determine whether it is necessary to change to an application for scoping and EIA.

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

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

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

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

11(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 Department to determine whether it is necessary to change to an application for scoping and EIA.

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

If yes, provide the particulars of the facility:

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

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

None

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	■	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

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

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

Low to moderate levels of dust can be generated during earthworks (vegetation clearance, digging of pipeline trenches), while **low to moderate levels of emissions** can be generated during the movement of construction vehicles and during the usage of applicable machinery. High levels of dust can be generated should any blasting activities be necessary**.**

11(d) Generation of noise

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

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

If no, describe the noise in terms of type and level:

Low to moderate levels of noise can be generated from earthworks (vegetation clearance, digging of pipeline trenches), while **low to medium levels can be generated during the use of machinery and the movement of construction vehicles. High noise levels will be generated should any blasting activities be necessary.**

12. WATER USE

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

municipal					

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:

	Liters

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

	NO

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

13. ENERGY EFFICIENCY

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

None

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

No alternative energy resources have been taken into account

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 C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C 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:

All specialist reports must be contained in Appendix D. Ecological and Heritage Reports have been attached to Appendix D

Property description/physical address:	**See attached list of properties**

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:	**See attached list of land use zonings**

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

Is a change of land-use or a consent use application required?	[redacted]	NO
Must a building plan be submitted to the local authority?	[redacted]	NO

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 indication of the project site position as well as the positions of the alternative sites, if any;
- 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, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)

1. GRADIENT OF THE SITE -

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	[redacted]	[redacted]	[redacted]

Alternative S2 (if any):

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 S3 (if any):

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

2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline		2.6 Plain	X
2.2 Plateau		2.7 Undulating plain	X
2.3 Side slope of hill	X	2.8 Dune	
2.4 Closed valley		2.9 Seafront	
2.5 Open valley			

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE (<u>THE GEO-TECHNICAL ASPECTS WILL BE MANAGED BY THE ENGINEERS)</u>

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

	Alternative S1:		**Alternative S2 (if any):**		**Alternative S3 (if any):**	
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature (soils highly compressible)	YES	NO	YES	NO	YES	NO

An area sensitive to erosion	YES	NO	YES	NO	YES	NO

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).

[redacted]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	[redacted]
[redacted]	**Secondary old field**	Paved surface	Building or other structure	Bare soil

Ecology: Refer to the Ecological Report attached as Appendix D

Summary of findings within the Ecological Report:

- The site forms part of the Sekhukhune land Centre of Endemism (SCOE).The importance to evaluate the vegetation on the site as part of the Sekhukhune land Centre of Endemism cannot be underestimated.
- The site lies inside the Sekhukhune land Centre of Endemism and the shallow, rocky areas of the development site can be considered especially sensitive as part of the centre of endemism.
- The red data species ***Adenia fruticosa s. fruticosa*** was confirmed in the outcrop areas and mixed microphyllous woodland of the study area (See photograph attached to the Empr report).
- **Ecological monitoring should be implemented during construction of the pipeline** to ensure that any potential red data species potentially missed during the field surveys are preserved by relocation in an "ex situ" nursery or incorporated as part of the landscaping in the Public Open Spaces.
- Permits must be obtained for the removal of the **protected Marula and Tambotie** tree species (**Photographs attached to the Empr).**

The following Sekhukhune land and South African Endemic species was confirmed on site

Species	Habitat
Aloe burgerfortensis	Slightly undulating plains and foot slopes/rocky outcrops
Aloe castanea	Rocky outcrops and ridges
Diospyros lycioides	Riparian woodland
Ehretia rigida	Woodland
Grewia vernicosa	Slightly undulating plains and foot slopes/rocky outcrops
Kleinia stapelliformes	Slightly undulating plains and foot slopes/rocky outcrops
Triaspis glaucophylla	Rocky outcrops/Ridges

Management of red data / endemic taxa

The following specific management measures and guidelines should however be implemented for red data / endemic species found on the proposed construction site as well as protected trees and related areas according to LEMA (2003) and TOPS (2007). This specifically applicable should any development or rehabilitation procedures impede on species or their habitats:

- The pipeline route should be amended to avoid these plant species
- **Should impact be unavoidable the following principles would apply:**
  a. A detailed species rescue, relocation and re-introduction plan should be developed and implemented by a qualified person before any excavations or disturbance commence.
- **The detailed species rescue, relocation and re-introduction plan should at the least address the following:**
  b. Harvesting of seeds from herbaceous and woody vegetation to be used in the ex situ nursery and future rehabilitation.
  c. Intact removal of protected / endemic / red data plant species under permit Permits should be obtained from the Limpopo Department of Economic Development, Environment & Tourism where red data flora is to be disturbed or relocated.

Encroacher and alien invasive plant species

List of encroacher plant species for the proposed development site

Species	Habitat
Acacia nigrescens	Low altitude woodland
Acacia karroo	Riparian woodland / floodplains / old fields on fertile soils
Acacia tortillis	Woodlands on loamy to clayey soils including floodplains / old fields on fertile soils
Combretum apiculatum	Gravelly, shallow soils associated with plains and outcrops / ridges
Commiphora pyracanthoides	Low altitude Bushveld on sandy soils and termitaria
Dichrostachys cinerea	Degraded woodland / natural woodland areas on sandy Soils
Grewia bicolor	All habitats of area
Grewia flavescens	All habitats of area

List of exotic plant species occurring on the proposed development site:

Species
Agave sessilana
Cereus jamacaru
Datura stramonium
Flaveria bidentis
Ipomoea purpurea
Melia azedarach
Morus alba
Opuntia ficus-indica
Ricinus communis
Tecoma stans
Agave sessilana
Xanthium strumarium 1

Management measures for alien invasive species:

- Institute strict control over materials brought onto site
- Control involves killing the plants present, killing the seedlings which emerge, and establishing and managing an alternative plant cover to limit re-growth and re-invasion.
- Rehabilitate disturbed areas as quickly as possible to reduce the area where invasive species would be at a strong advantage and most easily able to establish.

Red data fauna

Some red data fauna do potentially occur in the vicinity of the proposed pipeline, especially in the natural riparian woodland areas, perennial drainage channels, natural woodland and outcrops.

The table below provides a list of red data fauna species which could occur in the proposed development area:

AVIFAUNA

English Name	Conservation status	Probability of occurrence
African Finfoot	Vulnerable	Medium
African Marsh Harrier	Vulnerable	Medium
Ayres' Eagle	Near Threatened	Medium
Bald Ibis	Vulnerable	Very low
Black Stork	Near Threatened	Medium
Blackbellied Korhaan	Near Threatened	Medium
Blackwinged Lapwing	Near Threatened	Low
Blue Crane	Vulnerable	Very low
Broadtailed Warbler	Near Threatened	Medium
Cape Vulture	Vulnerable	Medium
Corncrake	Vulnerable	Medium
Crowned Eagle	Near Threatened	Very low
Eurasian Bittern	Critically endangered	Low
Grass Owl	Vulnerable	Low
Greater Flamingo	Near Threatened	Very low
Halfcollared Kingfisher	Near Threatened	Medium
Hooded Vulture	Vulnerable	Medium
Lanner Falcon	Near Threatened	Medium
Lesser Flamingo	Near Threatened	Very low
Lesser Kestrel	Vulnerable	High
Marabou Stork	Near Threatened	Medium
Martial Eagle	Vulnerable	Medium
Melodious Lark	Near Threatened	Medium
Old World Painted Snipe	Near Threatened	Medium
Orange Thrush	Near Threatened	Medium
Pallid Harrier	Near Threatened	Medium
Peregrine Falcon	Near Threatened	Low
Pygmy Goose	Near Threatened	Medium
Redbilled Oxpecker	Near Threatened	High
Saddlebilled Stork	Endangered	Low
Secretarybird	Near Threatened	Medium
Stanley's Bustard	Vulnerable	Low
Tawny Eagle	Vulnerable	Medium
Whitebacked Vulture	Vulnerable	Medium
Whitebellied Korhaan	Vulnerable	Medium
Yellowbilled Stork	Near Threatened	Medium

MAMMALS

African weasel	Data Deficient	Medium
Brown Hyaena	Near threatened	Low
Dark-footed forest shrew	Data Deficient	High
Honey Badger	Near threatened	Medium
Hottentot's golden mole	Data Deficient	Medium

Lesser grey-brown musk shrew	Data Deficient	High
Lesser red musk shrew	Data Deficient	High
Meller's mongoose	Data Deficient	Medium
Least dwarf shrew	Data Deficient	Medium
Greater dwarf shrew	Data Deficient	Medium
Lesser dwarf shrew	Data Deficient	Medium
Bushveld gerbil	Data Deficient	High
Pangolin	Vulnerable	Low
Reddish-grey musk shrew	Data Deficient	High
Rock dormouse	Data Deficient	High
Rusty Bat	Near threatened	Medium
Schreibers' long-fingered bat	Near threatened	Medium
Serval	Near threatened	Low
Short-snouted elephant shrew	Data Deficient	High
Single-striped mouse	Data Deficient	High
South African Hedgehog	Near threatened	Medium
Spotted necked otter	Near threatened	High
Sundevall leaf-nosed bat	Data Deficient	High
Swamp musk shrew	Data Deficient	High
Temmink's hairy bat	Near threatened	Medium
Tiny musk shrew	Data Deficient	High
Water Rat	Near threatened	High
Welwitsch's Hairy Bat	Near threatened	Medium
HERPETOFAUNA		
South African Python	Vulnerable	Medium

The following management measures are proposed regarding the conservation of red data fauna species

- The removal of vegetation should be confined to the footprints of the pipeline
- Sufficient natural corridor sections should be protected around the proposed development footprints to allow fauna to move freely between the different vegetation units on the property.
- The drainage channels still represent highly sensitive areas in the area and mitigation measures should be implemented to ensure that the habitats are protected.
- The few taller (>3m) indigenous trees within this area also provide resting/perching sites for larger birds like vultures, birds of prey, arboreal reptiles and mammals that might occur/pass through the area and should preferably be preserved. These larger trees should be protected as far as possible and be incorporated into the proposed pipeline development. The removal of large dead trees is also not advised as these trees also provide smaller habitats for the mentioned bat species as well as rodents.
- The grass layer on the other hand also provides a valuable food source (insects, reptiles, small mammals that occur in/on the grass layer) for fauna.
- A monitoring program needs to be implemented by a specialist if any rare species are confirmed on the property.

The following practical recommendations with regards to the fauna of the area apply with regards to the construction of the pipeline:

- Where trenches pose a risk to animal safety, they should be adequately cordoned off to prevent animals falling in and getting trapped and/or injured. This could be prevented by the constant excavating and backfilling of trenches during pipeline construction.
- No animals may be poached.
- Do not feed any wild animals on site.
- Poisons for the control of problem animals should rather be avoided since the wrong use thereof can have disastrous consequences for the raptors occurring in the area.
- Waste bins and foodstuffs should be made scavenger proof.
- Monitoring of the environmental aspects is recommended for the future phases of the proposed development should the authorities approve the application.

Pipeline construction – Impact on drainage regimes:

The following mitigation measures and management actions should be taken to minimize potential impacts of drainage crossings:

- **Minimize changes to natural drainage patterns** and crossings to drainages. Drainage crossings are potentially problematic, so they must be well designed. Changes to natural drainage patterns or channels often result in either environmental damage or failures.
- Perform scheduled maintenance to be prepared for storms. **Insure that culverts have their maximum capacity,** ditches are cleaned, and that channels are free of debris and brush than can plug structures.
- **Locate pipeline on narrow sections** of the drainages and in areas of bedrock where possible. Avoid fine, deep alluvial deposits (of fine sand and silt) that are scour susceptible and problematic, or which otherwise require costly foundations.
- Ensure that structural designs for the pipeline crossing the drainage channels include appropriate design criteria and have good foundations to prevent failures during floods.
- During construction through a crossing, **the majority of the flow of the stream must be allowed to pass down the stream (i.e. no damming must be allowed to take place). In-stream diversions must allow for continuous water flow. The construction of new channels shall not be allowed.**
- Identify areas of historic or potential vulnerability, such as geologically unstable materials or areas subject to flooding.
- Avoid problematic areas and avoid pipeline locations in areas of high natural hazard risk, such as landslides, rock-fall areas, steep slopes (over 60-70%), wet areas, saturated soils, etc.
- Avoid or minimize construction in narrow canyon bottoms or on flood plains of rivers that will inevitably be inundated during major storm events.
- Ensure that structural designs for the pipeline crossing the drainage channels include appropriate design criteria and have good foundations to prevent failures during floods.
- Place retaining structures, foundations, and slope stabilization measures into bedrock or firm, in-place material with good bearing capacity to minimize undermining, rather than placing these structures on shallow colluvial soil or on loose fill material.
- Appropriate measures must be taken to manage storm water run-off and potential flooding.
- During construction through a crossing, the majority of the flow of the stream / river must be allowed to pass down the stream (i.e. no damming must be allowed to take place). In-stream diversions must allow for continuous water flow. The construction of new channels shall not be allowed.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does 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:

5.1 Natural area	x	5.22 School	x
5.2 Low density residential	x	5.23 Tertiary education facility	
5.3 Medium density residential	x	5.24 Church	
5.4 High density residential		5.25 Old age home	
5.5 Medium industrial [AN]		5.26 Museum	
5.6 Office/consulting room		5.27 Historical building	
5.7 Military or police base/station/compound		5.28 Protected Area	

5.8 Spoil heap or slimes dam [A]		5.29 Sewage treatment plant [A]	x
5.9 Light industrial	x	5.30 Train station or shunting yard [N]	
5.10 Heavy industrial [AN]		5.31 Railway line [N]	x
5.11 Power station	x	5.32 Major road (4 lanes or more)	
5.12 Sport facilities		5.33 Airport [N]	
5.13 Golf course		5.34 Harbour	
5.14 Polo fields		5.35 Quarry, sand or borrow pit	
5.15 Filling station [H]		5.36 Hospital/medical centre	
5.16 Landfill or waste treatment site		5.37 River	x
5.17 Plantation		5.38 Nature conservation area	
5.18 Agriculture		5.39 Mountain, koppie or ridge	x
5.19 Archaeological site		5.40 Grave	
5.20 Quarry, sand or borrow pit		5.41 River	x
5.21 Dam or Reservoir		5.42 Other land uses (describe)	

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

The proposed phase 4c pipeline will need to be jacked underneath the railway line which is situated close to the power station. The mentioned railway line will therefore be impacted on by the proposed phase 4c pipeline. **The necessary discussions and permissions must be obtained from Transnet in this regard.**

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

If YES, specify and explain:	
If NO, specify:	

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

If YES, specify and explain:	
If NO, specify:	

6. 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	[redacted]	NO
Archaeological or paleontological sites, on or close (within 20m) to the site?	[redacted]	

If YES, explain:	

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

Briefly explain the findings of the specialist:	**No remains from the Stone Age, Iron Age or Historical Period were recorded on site.** **No places designated to spiritual or social gatherings or graves were recorded**.

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 submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the department) at a place conspicuous to the public at the boundary or on the fence of—

  (i) the site where the activity to which the application relates is or is to be undertaken; and

  (ii) any alternative site mentioned in the application;

(b) giving written notice to—

  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;

  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

  (iv) the municipal councilor of the ward in which the site or alternative site is situated and any organization of ratepayers that represent the community in the area;

  (v) the municipality which has jurisdiction in the area;

  (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and

  (vii) any other party as required by the department;

(c) placing an advertisement in—

(i) one local newspaper; or

(ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in sub regulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the department, in those instances where a person is desiring of but unable to participate in the process due to—

(i) illiteracy;

(ii) disability; or

(iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and

(b) state—

(i) that the application has been submitted to the department in terms of these Regulations, as the case may be;

(ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorization;

(iii) the nature and location of the activity to which the application relates;

(iv) where further information on the application or activity can be obtained; and

(v) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the department in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of these Regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

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

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in these Regulations and be attached to this application. **The comments and response report must be attached under Appendix E.**

6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

Name of Authority informed:	**Comments received (Yes or No)**
Department of Agriculture - National	No comments on bid document
Department of Water Affairs- Lydenburg Office	No comments on bid document
Greater Tubatse Local Municipality	No comments on bid document
Sekhukhune District Municipality	No comments on bid document
Department of Land Affairs	No comments on bid document

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or 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 department.

Proof of any such agreement must be provided, where applicable.

Has any comment been received from stakeholders?	■	**NO**

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

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

No issues were raised by interested and affected parties

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report as Annexure E):

No issues were raised by interested and affected parties

2. 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

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) 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.

IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

Alternative (preferred alternative)

Direct impacts:

No direct impacts are foreseen during the planning and design phase for the proposed project

Indirect impacts:

No direct impacts are foreseen during the planning and design phase for the proposed project

Cumulative impacts:

No cumulative impacts are expected for the planning and design phase of the proposed project

IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

Direct impacts:

Air Pollution and Noise:

- Removal of vegetation and digging of trenches (excessive dust formation)
- Movement of construction vehicles on site and construction activities (digging of trenches) – excessive emissions
- Burning of domestic waste and cleared vegetation as well as fires for cooking purposes (excessive smoke)
- Noise caused by construction activities (movement of construction vehicles on site and use of machinery – removal of vegetation and digging of trenches) – noise pollution
- Drilling and blasting activities (if applicable) – Excessive noise

Ground and Surface Water Pollution:

- Seepage/spillages from temporary sanitation facilities (chemical toilets)
- Spillage of fuel, oils and other lubricants from construction vehicles, machinery and from temporary fuel tanks or storage containers (surface and groundwater pollution)
- Location of the site camp (placed near drainages and not properly planned)
- Inappropriate use of hazardous chemicals
- Inappropriate management of waste (bitumen layers, bricks, concrete)
- Storm water run-off over cleared areas, and pipeline trenches (increased sediment load to drainages, especially against steeper slopes)
- Transportation of stockpiled material by means of rain (Increase in turbidity and sedimentation of drainages)
- Trenching across and within drainage sections – Disturbances of banks and beds of drainages (Increase in sediment load affecting water quality downstream

Water Use:

- Water use for human consumption, construction purposes and dust suppression (Reduction of available water resources

Archaeology/Heritage Findings:

- Earth works (removal of vegetation and digging of trenches) – destruction of archaeological evidence and heritage remains.

Ecology:

- Vegetation removal (habitat destruction and loss of floral diversity)
- Removal of Red Data and Endemic plant species (loss of floral diversity)
- Construction activities – (loss of important vegetation types and habitat fragmentation)
- Construction activities – (increase in alien invasive plant species)
- Removal of vegetation and loss of fauna due to accidental fires – (loss of biodiversity)
- Killing of fauna (snaring/hunting or poisoning) – loss of fauna
- Excavation activities (trenches) and movement of heavy vehicles – habitat destruction and loss of fauna
- Littering (e.g. cans and plastics) – danger to indigenous fauna
- Construction activities (Loss of protected and general fauna occurring in the area)
- Indiscriminate wood collection (Loss of indigenous flora)
- Construction activities(Impact on drainage channels and drainage regimes)

Soil Pollution and Degradation:

- Spillage of fuel and lubricants from vehicles and temporary fuel tanks or storage containers
- Spillage from temporary chemical toilets
- Inappropriate management and storage of waste
- Transportation of stockpiled material by rain (Loss of top soil and erosion – increase in sediment load to drainage sections.
- Drainage crossings – trenching activities(Increase in sediment load to drainages

Visual/Aesthetic:

- Construction (presence of heavy vehicles and equipment, temporary structures at the site camp, material and spoil stockpiles)
- Loss of trees and other vegetative cover
- Litter and other waste generated at the site camp, and along the pipeline construction route.

Socio Economic:

- Temporary job creation (pipeline construction) - Reduce unemployment – skills development

Health and Safety:

- Construction work (Accidents and injuries to construction workers and public)
- Open trenches (Safety risk to people and vehicles)
- Trenching across public roads (Disruptions to traffic and safety risk)

- Trespassing and illegal access onto properties by construction workers (Theft, robbery and Assaults)
- Accidental fires(Destruction of property and danger to human life)
- Site camp – poor waste management and unhygienic conditions (diseases contracted by construction workers – spread to local people).
- The occurrence of fires at the site camp (fuel storage areas) – Injuries or loss of human life
- Blasting activities (Safety risk)

Indirect impacts:

- Pipeline construction - reduction in unemployment and contribution to skills development
- Provision of much needed water
- High risk of erosion during earth moving activities with loose soil from trenches being stockpiled.
- Ecological habitats might be temporarily separated due to digging of trenches over long distances.
- Increased traffic of roads to access the project site

Cumulative impacts:

- The possible increase in soil degradation (erosion) from construction activities close to the existing drainage channels can increase the sediment load that could be transported to larger connecting drainage systems.

MITIGATION MEASURES THAT MAY ELIMINATE OR REDUCE THE POTENTIAL IMPACTS LISTED ABOVE

Direct impacts:

<u>Air Pollution and Noise</u>

- Construction areas must be dampened to prevent excessive dust formation, especially during the winter months (dry and windy conditions)
- The cleared topsoil must be stockpiled in such a way that transportation by wind is limited. This can be done by restricting the height of stockpiles to 1.2m.
- Removal of vegetation must be done in phases as the construction progresses and must only take place within the specific footprint sections for the pipeline.
- Construction vehicles and machinery must be well maintained (serviced) to reduce excessive emissions during operation.
- No domestic waste or cleared vegetation may be burned at the site camp or at the pipeline construction sites.
- Removed vegetation must not be stockpiled for extensive periods and must be removed to the licensed dumping/landfill site from which permission had been obtained from or alternatively be used as backfilling for existing eroded sections near the pipeline construction sites.
- A sufficient number of wind and animal proof waste bins must be placed at strategic points along active construction sections as well as at the site camp. The contractor must ensure that these waste bins are emptied at the Greater Tubatse landfill site on a weekly basis.

- Open fires (cooking purposes and heat) must only be made at designated places as indicated by the contractor at the site camp.
- Contractors must comply with Provincial noise regulations.
- The contractor must ensure that construction activities are limited to hours of daylight (06H00 – 18H00), Mondays to Saturdays. No work must be undertaken on Sundays unless an agreement has been reached with nearby residents, businesses, or applicable landowners.
- Proper equipment and vehicle maintenance must be implemented on a regular basis to keep noise levels to acceptable levels.
- Public to be notified in advance of any blasting activities that will be undertaken.
- Calculating the charge size and blast regime to optimize required excavation and fragmentation and thus keep air blast and ground vibration levels below pre-determined acceptable values.
- Monitoring blast, ground vibration and human response to ensure that accepted levels are in fact acceptable and are being adhered to, and to modify the blasting design as required.
- Correct stemming of blast holes.

Ground and Surface Water Pollution:

- Chemical toilets must be provided for construction workers at the site camp and along the pipeline constructions sites.
- A minimum of 1 chemical toilet for every 15 construction workers must be provided. The chemical toilets must be placed on level ground and placed no closer than 50 metres from any drainage lines. Toilets must be emptied on a weekly basis at a licensed sewerage works by a registered service provider. The contractor must provide proof of the weekly removal of sewage by the service provider.
- The chemical toilets must also be inspected and serviced by an appropriate contractor on an on-going basis to prevent any leaks or spillages to surface and groundwater sources.
- Construction vehicles and machinery must be well maintained to prevent oil and fuel leaks. Spill trays must be used during repairs of construction vehicles or machines. Parking areas for refuelling or oil replacement must be prepared with a plastic liner that is covered with soil or gravel. Servicing of construction vehicles or other machinery should however where practical only be done at the site camp or at designated and approved servicing station/s in Burgersfort
- Oil and fuel storage areas must be identified and designated separately within the site camp. Adequate and leak proof drums which are used to temporarily store oil, fuel or other lubricants must be leak proof and inspected on a regular basis for any possible leaks. These storage drums must be placed on an impermeable plastic liner which is covered with soil.
- Hazardous waste (e.g. fuel, oils etc.) must be taken to the nearest approved oil refiner or fuel recycling point for recycling and must not be stored for extended periods within the site camp.
- An area for fuel storage should be identified and sited at the site camp. The storage of fuel at the site camp must be done in accordance with the following recommendations:
  - Fuel must be stored in tanks with lids, which must be kept firmly shut and under lock and key at all times
  - **Fuel storage areas are required to be bunded (in accordance with SABS 089: Part I, 1999: Petrol and Products in the Bulk Petrol Industry – Storage and Distribution of Petroleum Products in above ground Bulk Installations).**
    - The volume of the bunded areas must at least be 110% of the volume of the largest tank.
    - The floor of the bunded area must be smooth and impermeable, constructed of concrete or plastic sheeting, with a layer of sand to prevent perishing.
    - Bund walls must be formed of well-packed earth with the impermeable lining extended to the crest. The floor of the bunded area is to be sloped towards an oil trap or sump from where the run-off can be easily removed

and disposed of at the nearest approved fuel recycling collection point.
- Storage tanks must be at least 3.5 m from any buildings, boundaries or combustible/ flammable material(s).
- Suitable clean-up materials must be available on site at all times e.g. absorbent cloths and sand/straw.
- All fuel supplies to be stored outside the 1:50 year flood line.

- The location for the site camp with its associated fuel, chemical storage areas and ablution facilities must be carefully selected.
- The location for the site camp with its associated fuel, chemical storage areas and ablution facilities must be carefully selected.
- Containment areas must be provided for runoff from the site camp and ditches or other drainage structures must be provided to divert runoff around exceptionally sensitive receptors.
- Hazardous chemicals must be stored within separate storage rooms at the site camp of which the floors of such rooms must be lined/ bunded. It must be ensured that containers are properly closed, clearly marked and not leaking.
- Waste must be collected on a daily basis from the sites Building rubble (bricks, concrete) and bitumen layers can be placed within waste skips for removal.
- Waste that has been collected during the week must be taken to the licensed and approved landfill site from which permission had been obtained from.
- Removal of vegetation must be limited to the construction areas (footprint sections for the pipeline).
- Slopes produced by the removal of soil must be kept to a minimum to reduce the chances of erosion damage to the area.
- Trenches for the water pipes must be filled up and compacted well and slightly higher than the areas around it. This would allow for settling of the soil without trenches or erosion gullies forming again.
- Cleared areas must be rehabilitated by compacting and reintroducing indigenous vegetation.
- Existing road infrastructure must be used as far as possible, especially where the pipeline routing is planned against steeper sections to limit the unnecessary loss of topsoil through the clearance of vegetation.
- An efficient erosion control and slope-stabilizing program should be designed and implemented along the steep slopes of the pipeline routing to prevent the transportation of topsoil towards drainage sections. An engineer should be consulted in this regard.
- Material may not be stockpiled close to drainage areas.
- Material should be stockpiled at a sufficient distance (approximately 25 meters) away from drainage sections.
- Silt fences or barriers should be installed alongside the edge of the drainages to prevent erosion of disturbed soil and sedimentation of the water body.
- Where necessary, the embankments upstream and downstream of the pipe centre line should be protected from erosion by gabions and gabion mattresses. A permit must be obtained from DWA before pipeline crossings can be made.

Water Use:

- Water (for drinking, cooking, dust suppression and construction purposes) should not be wasted and construction workers must be educated on the value and importance of available water sources.

Archaeology/Heritage Findings:

- In the event of a heritage object being unearthed, work that could impact on the object must be stopped and the discovery must be reported to the Limpopo Heritage Authority or the appropriate archaeologist/s and may require

further mitigation measures.

- Heritage objects are not to be moved or destroyed without the necessary permits in place.

Ecology:

- The unnecessary removal of vegetation should be avoided and should not extend beyond the perimeters of the construction footprints.
- Protected and other indigenous trees of significance should wherever possible not be affected by the pipeline activity. Construction should divert around these trees if possible from an engineering point of view. A permit from DAFF must firstly be obtained should the removal, cutting or disturbance of protected trees **(Marula and Tambotie)** be necessary.
- The removal of grassland, indigenous trees and shrubs should be kept to a minimum Trim, rather than fell of woody species along the pipeline route where possible.
- Unnecessary driving around in the veld or bulldozing natural habitat must not take place.
- No firewood is allowed to be collected (tree branches broken or trees intentionally felled). Vegetation that had to be removed can be used but only after the necessary discussions with the applicable landowners for the use thereof.
- **During pipeline construction, sensitive habitats must be avoided by:**

  - Construction vehicles and equipment, wherever possible, in order to reduce potential impacts.

  - Unnecessary driving around in the veld or bulldozing natural habitat must not take place.
- All development activities should be restricted to specific recommended areas. The Environment Site Officer (ESO) should demarcate and control these areas.
- Storage of road-building equipment, fuel and other materials should be limited to demarcated areas.
- Layouts should be adapted to fit natural patterns rather than imposing rigid geometries.
- The entire development footprint should be **clearly demarcated prior to initial site clearance** and prevent construction personnel from leaving the demarcated area. The area could be fenced off and strict access control could be instituted to the portions of the owner-controlled property that are to remain undisturbed as soon as possible after initial site clearance This would only be applicable to the construction phase of the proposed development and the barrier should be removed after the construction phase to allow normal movement of fauna through the area.
- The Environment Control Officer (ECO) should advise the construction team in all relevant matters to ensure minimum destruction and damage to the environment.
- The ECO should enforce any measures provided to construction workers to ensure the protection of the habitat, fauna and flora and their sensitivity to conservation.
- The red data species Adenia fruticosa was observed at 2 localities along the pipeline route. (Refer to photographic guide – attached to the EMPR).
- **Ecological monitoring should be implemented** during construction of the pipeline to ensure that any potential red data species potentially missed during the field surveys are preserved by relocation in an “ex situ” nursery or incorporated as part of the landscaping in the Public Open Spaces.

- **The pipeline route should be amended to avoid these plant species if possible.** Should impact be unavoidable the following principles would apply. A detailed species rescue, relocation and re-introduction plan should be developed and implemented by a qualified person before any excavations or disturbance commence
- An important aspect of the proposed development will be **to manage and protect biodiversity** (structure and composition) of the **Sekhukhune Plains Bushveld.**
- Vegetation removal should be **restricted to the actual construction footprint sections** and the unnecessary removal of tall (> 3m) indigenous trees should be avoided wherever possible.

- **Peripheral impacts around the excavation area on the surrounding vegetation of the area should be avoided** and a monitoring programme should be implemented to ensure the impacts are kept to a minimum, while the rehabilitation of the site should be prioritised after the pipeline has been completed.
- Use **existing accesses as far as possible** to reduce any new disturbances
- All possible efforts must be made to ensure as **little as possible disturbance to drainages**
- Ensure protection of important resources by **establishing protective buffers to exclude unintentional disturbance.**
- Institute strict control over materials brought onto site, which should be inspected for potential invasive invertebrate species and steps taken to eradicate these before transport to the site.
- Rehabilitate disturbed areas as quickly as possible to reduce the area where invasive species would be at a strong advantage and most easily be established.
- The spread of invasive non-native plants should be avoided by keeping vehicles and equipment clean.
- Open fires must only be made at designated areas. **Warning signs or notices** must be displayed at the entrances to the construction/site camp (e.g. no smoking), in accordance with the requirements of SABS 1186. Fire service and other emergency numbers must also be displayed at the site camp.
- **No smoking must be allowed during the use of hazardous and flammable products**; while construction workers must be educated on the dangers of smoking close to these dangerous products.
- General fire fighting equipment (e.g. portable fire extinguishers or fire hoses) must be made available at the site camp. Personnel must be given the appropriate training in the use of the fire fighting equipment and other emergency procedures.
- Where trenches pose a risk to animal safety, they should be **adequately cordoned off** to prevent animals falling in and getting trapped and/or injured. This could be prevented by the constant excavating and backfilling of trenches during pipeline construction.
- Litter and other waste must not be allowed to lie around at the site camp or at the construction sites.
- **Regular clean-up programs must be put into effect** and a sufficient number of wind and animal proof waste containers must be provided for this purpose. These containers must also be removed on a regular basis to the approved and licensed landfill site from which permission had been obtained.

Drainage crossings:

- Rehabilitation measures should be implemented for existing eroded sections at the drainage channels as part of the construction program.
- Work should preferably be done during the low flow season.
- The location where the pipelines will cross drainage channels should be **at the least sensitive sections**. The sites for crossing should be indicated by an ecologist **after consultation by the engineers**.
- Ensure the **amount of bare soil exposed is minimized by staging earthworks in phases** and leaving as much ground cover intact as possible during construction.
- Cut slope gradients must not **exceed the natural angle of repose** for the particular soil type wherever possible.
- In general, slopes should not be steeper than 1(V):3(H). Where steeper slopes are necessary, they **must be stabilized** using the most appropriate approved method and technology as specified by the engineer.
- Finish cut and fill slopes as **roughened surfaces** which emulate the natural surroundings and accumulate soil.
- Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the site camp and work areas.
- Repair all erosion damage as soon as possible and in any case not later than six months before the termination of the maintenance period to allow for sufficient rehabilitation growth.

- Do not allow surface water or **storm water to be concentrated**, or to flow down cut or fill slopes or along pipeline routes without erosion protection measures being in place.
- Line overflow and scour channels with stone pitching along their length and at their points of discharge to prevent soil erosion. The point of discharge must be at a point where there is dense natural grass cover.
- Ensure that channels do not discharge straight down the contours. These must be aligned at such an angle to the contours that they have the least possible gradient.
- Minimize changes to natural drainage patterns and crossings to drainages.
- Ensure that structural designs for the pipeline crossing the drainage channels include appropriate design criteria and have good foundations to prevent failures during floods.
- During construction through a crossing, the majority of the flow of the stream must be allowed to pass down the stream (i.e. no damming must be allowed to take place). In-stream diversions must allow for continuous water flow. The construction of new channels shall not be allowed.
- Appropriate measures must be taken to manage storm water run-off and potential flooding.
- The minimum staff should be accommodated on the site. If practical. Staff to be transported to the construction site on a daily basis.
- Construction activities must be restricted to working hours Monday to Saturday, unless otherwise approved by the appropriate competent person in consultation with the affected residents.
- Educate workers regarding the occurrence of important resources in the area and the importance of protection.
- Camp fires at construction sites must be strictly controlled to ensure that no veld fires are caused.

Soil Pollution and Degradation:

- The in situ material used for backfilling material must be removed and used as the construction progresses to ensure that the area exposed to natural element is kept to the minimum.
- Slopes produced by the removal of soil must be kept to a minimum to reduce the chances of erosion damage at construction sites.
- An efficient slope-stabilizing program must be implemented along the steeper slopes of the construction sites to manage the unnecessary loss of soil.
- Topsoil should be handled twice only - once to strip and stockpile, and secondly to replace, level, shape and scarify.
- Stockpile topsoil separately from subsoil.
- Topsoil should not be compacted in any way, nor should any object be placed or stockpiled upon it.
- Stockpile in an area that is protected from storm water runoff and wind.
- Topsoil stockpiles should not exceed 2.0 m in height and should be protected by a mulch cover where possible.
- Stockpile topsoil for the minimum time period possible i.e. strip just before the relevant activity commences and replace as soon as it is completed.
- Silt fences or barriers should be installed alongside the edge of the drainages to prevent erosion of disturbed soil and sedimentation of the water body.
- Where necessary, the embankments upstream and downstream of the pipe centre line should be protected from erosion by gabions and gabion mattresses.

Visual/Aesthetic and Landscape Character

- Material and stockpiles must not be higher than 1,2m.

- Vehicles and construction machinery should if possible be parked at the site camp after hours, while the site camp must be screened off by textile meshing.
- Large trees (> 3m) contributing to the aesthetic value of the area must be preserved as far as possible. Removal of vegetation must be limited to the actual construction footprints.
- Litter and solid construction waste must not be allowed to generate for extensive periods and must be removed and disposed of on a weekly basis at the licensed landfill or waste disposal facility for which permission had been obtained for.

Socio Economic:

- Local people must be used wherever possible for jobs created.

Health and Safety:

Safety of staff and public:

- The contractor shall conform to all the stipulations of the Occupational Health and Safety act and the Regulations applicable at the time of the tender.
- The Act requires the designation of a Health and Safety representative when more than 20 people are employed. Safety measures must be implemented during the construction phase for local people as well as construction workers. Barrier tape should be provided along exiting trenches or signboards must be provided as a general warning to local people. A half-width road crossing with a stop-go traffic signs must be instituted during construction at road crossings.
- Necessary signboards (information) must be placed close to and in the direction of the pipeline construction site.
- Safety measures like barrier tape and safety signs at trenches or diggings must be provided.
- Speed reduction measures (signboards) must be provided close to the pipeline construction sites
- Applicable landowners and businesses must be notified of the project in advance as well as when and how construction will take place. The necessary safety measures must be in place.
- Trenches should be filled immediately and compacted after pipes are placed. If not possible trenches to be cordoned off with shevron tape or snow netting.
- Public/local residents must be notified through discussions and with signage of pipe works and danger of open trenches.
- Traffic disruptions must be managed with appropriate signage and diversions. Approaching traffic must be regulated with stop and go measures. A half-width road crossing with a stop-go traffic signs must be instituted during construction at road crossings.
- Roads must be repaired to the satisfaction of the roads department. One half of the road crossing (trenching) must firstly be repaired up to standard before trenching on the other road half can commence.
- Trenching should wherever possible only commence during times of low traffic volume.
- The necessary authorizations must be obtained from the roads authority, municipality and Traffic Department before trenching across public roads can commence.
- No construction workers are allowed to enter private property. Strict control measures must be implemented in this regard.
- No smoking should be allowed at the pipeline construction sites.
- Fire fighting equipment must be available on site.

Health at Site Camp:

- Provide information and awareness to construction workers at the site camp regarding health and hygiene.
- Provide safe and hygienic ablution and cooking facilities for the construction workers at the site camp.
- Implement the correct waste management practises at the site camp at all times.
- Fires for cooking must be restricted to designated areas and extra care should be taken to ensure to prevent veldt fires from occurring.
- Warning signs or notices must be displayed at the entrances to the site camp (e.g. no smoking), in accordance with the requirements of SABS 1186. Fire service and other emergency numbers must also be displayed at the site camp.
- General fire fighting equipment (e.g. portable fire extinguishers or fire hoses) must be made available at the site camp. Personnel must be given the appropriate training in the use of the fire fighting equipment and other emergency procedures.

Blasting:

- Calculating the charge size and blast regime to optimize required excavation and fragmentation and thus keep air blast and ground vibration levels below pre-determined acceptable values.
- Monitoring blast, ground vibration and human response to ensure that accepted levels are in fact acceptable and are being adhered to, and to modify the blasting design as required.
- Pre-notification of public of the intention to blast and the time of blast, preferably at the same time of day to remove the element of surprise.
- Correct stemming of blast holes to be implemented.

IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

Direct impacts:

Water Use

- Leakages at pipeline section (Loss of water)
- Vandalism of valve chambers or scour valves – Damage to and increased cost to repair pipeline sections
- Illegal connections from the main pipeline sections (Damage to and increased cost to repair pipeline sections).

Socio Economic:

- Supply of much needed water

Indirect impacts:

- Population growth and development by the availability of bulk water

Cumulative impacts:

- Increase in total pipeline construction and operational costs due to mentioned impacts
- Socio-economic growth due to increased movement of people

MITIGATION MEASURES THAT MAY ELIMINATE OR REDUCE THE POTENTIAL IMPACTS

LISTED ABOVE (OPERATIONAL PHASE):

Water Use

- Pipeline sections must be inspected on a regular basis and repaired by maintenance personal

Socio Economic:

- Local people must be used wherever possible for jobs created

IMPACTS THAT MAY RESULT FROM THE DECOMMISIONING AND CLOSURE PHASE

Direct impacts:

The decommissioning and closure phase is not likely to occur since the proposed pipeline will provide much needed water for future developments and recent shortages.

Indirect impacts:

The decommissioning and closure phase is not likely to occur since the proposed pipeline will provide much needed water for future developments and recent shortages.

Cumulative impacts:

The decommissioning and closure phase is not likely to occur since the proposed pipeline will provide much needed water for future developments and recent shortages.

3. ENVIRONMENTAL IMPACT DETERMINATION AND EVALUATION

An environmental impact is defined as a change in the environment, be it the physical/chemical, biological, cultural and or socio-economic environment. Any impact can be related to certain aspects of human activities in this environment and this impact can be either positive or negative. It could also affect the environment directly or indirectly and the effect of it can be cumulative.

METHODOLOGY TO ASSESS THE IMPACTS

To assess the impacts on the environment, the process will be divided into two main phases namely the Construction phase and the Operational phase. The activities, products and services present in these two phases will be studied to identify and predict all possible impacts.

In any process of identifying and recognising impacts, one must recognise that the determination of impact significance is inherently an anthropocentric concept. Duinker and Beanlands, (1986) in DEAT 2002. Thompson (1988), (1990) in DEAT 2002 stated that the significance of an impact is an expression of the cost or value of an impact to society.

However, the tendency is always towards a system of quantifying the significance of the impacts so that it is a true representation of the existing situation on site. This will be done by using where ever possible, legal and scientific standards which are applicable.

The significance of the aspects/impacts of the process will be rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The *consequence matrix* use parameters like *severity, duration and extent* of impact as well as *compliance* to standards. Values of 1-5 are assigned to the parameters that are added and averaged to determine the overall consequence. The same process is followed with the *likelihood* that consists of two parameters namely *frequency* and *probability*. The overall consequence and the overall likelihood are then multiplied to give values ranging from 1 to 25.These values as shown in the following table are then used to rank the significance. It must be said however that in the end, a subjective judging of an impact can still be done, but the reasons for doing so must be qualified.

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.

The *consequence matrix* use parameters like *severity, duration and extent* of impact as well as *compliance* to standards. Values of 1-5 are assigned to the parameters that are added and averaged to determine the overall consequence. The same process is followed with the *likelihood* that consists of two parameters namely *frequency* and *probability*. The overall consequence and the overall likelihood are then multiplied to give values ranging from 1 to 25.These values as shown in the following table are then used to rank the significance. It must be said however that in the end, a subjective judging of an impact can still be done, but the reasons for doing so must be qualified.

Significance ratings (Plomp 2004)

Significance	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X Overall Likelihood	1-4.9	5-9.9	10-14.9	15-19.9	20-25

Description of the parameters used in the matrixes

Severity

Low	Low cost/high potential to mitigate. Impacts easily reversible, non-harmful insignificant change/deterioration or disturbance to natural environments
Low-medium	Low cost to mitigate Small/ potentially harmful Moderate change/deterioration or disturbance to natural environment.
Medium	Substantial cost to mitigate. Potential to mitigate and potential to reverse impact. Harmful Significant change/ deterioration or disturbance to natural environment
Medium-high	High cost to mitigate. Possible to mitigate Great/Very Harmful Very significant change/deterioration or disturbance to natural environment
High	Prohibitive cost to mitigate. Little or no mechanism to mitigate. Irreversible. Extremely Harmful Disastrous change/deterioration or disturbance to natural environment

Duration

Low	Up to one month
Low-medium	One month to three months
Medium	Three months to one year
Medium-high	One to ten years
High	Beyond ten years

Extent

Low	Footprint area
Low-medium	Pipeline route
Medium	Adjacent properties
Medium-high	Burgersfort area
High	Sekhukhune District

Frequency

Low	Once/more a year or once/more during operation
Low-medium	Once/more in 6 months
Medium	Once/more a month
Medium-high	Once/more a week
High	Daily

Probability

Low	Almost never/almost impossible
Low-medium	Very seldom/highly unlikely
Medium	Infrequent/unlikely/seldom
Medium-high	Often/Regularly/Likely/Possible
High	Daily/Highly likely/definitely

Compliance

The following criteria are used during the rating of possible impacts.

Low	Best Practise
Low-medium	Compliance
Medium	Non-compliance/conformance to Policies etc-Internal
Medium-high	Non-compliance/conformance to Legislation etc-External
High	Directive, prosecution of closure or potential for non-renewal of licences or rights

The tables below provides and indication of the severity, duration, extent, frequency and probability of impacts. The information provided in the table below is based on an average period of one month for the removal of vegetation

Project Phase	Environmental aspect :Air Pollution and noise								
	Activity that causes impact	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
Construction	Earthworks (removal of vegetation and digging of trenches)	Excessive dust formation	Low-medium	Low	Low-medium	Medium	High	Low	Low-medium
	Movement of construction vehicles	Excessive emissions	Low	Low	Low-medium	Medium	High	Low	Low-medium
	Burning of domestic waste and cleared vegetation	Excessive emissions	Low-medium	Low	Medium	Low-medium	Medium	Low-medium	Medium
	Noise caused by construction activities	Noise pollution	Low	Low	Low-medium	Medium	Medium	Low-medium	Low-medium
	Drilling and blasting activities	Excessive noise	Medium	Low	Medium	Medium	High	Low-medium	Medium

Project Phase	Environmental aspect: Groundwater and Surface water Pollution								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
Construction	Sanitation seepage from temporary chemical toilets	Water Pollution	Low	Low	Low-medium	Low	Low	Low	Low-medium
	Spillages of fuel/oils and other lubricants	Water Pollution	Low	Low	Low	Medium	Medium	Low	Low-medium
	Location of site camp – inadequate runoff and containment areas	Surface and groundwater pollution	Low	Low	Low	Low	Low-medium	Low	Low-medium

Project Phase	Environmental aspect: Groundwater and Surface water Pollution								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
	Use of hazardous chemicals	Surface and groundwater pollution	Low - medium	Low	Low	Low	Low-medium	Low	Low-medium
	Collection of waste (bitumen layers, concrete)	Surface and groundwater pollution	Low	Low-medium	Low-medium	Low	Low-medium	Low	Low-medium
	Storm water run-off over cleared areas and pipeline trenches	Increase in sediment load to drainage sections, especially against steep sloping areas	Low-medium	Low	Low-medium	Medium	Medium-high	Low-medium	Medium
	Trenching across and within drainage sections – Disturbances of banks and beds of drainages	Increase in sediment load – affecting water quality downstream	Low-medium	Medium	Low	Low	High	Low-medium	Medium

Project Phase	Environmental aspect: Water use								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
Construction	Water use for human consumption, construction purposes and dust suppression	Reduction of available water resources	Low	Low	Low-medium	Low	Low	Low	Low-medium
Operation	Leaks at water pipelines Vandalism of valve chambers or scour valves Illegal connections from the main pipeline sections	Loss of valuable water Increase in costs to repair or maintain damaged pipeline sections	Medium	Low	Medium	Low	Low	Low	Low-medium

Project Phase	Environmental aspect : Loss of Archaeological, Cultural and social features								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
Construction	Earthworks (Removal of vegetation and digging of trenches)	Destruction of archaeological evidence and heritage findings	Low-medium	Medium	Low	Low	Low	Low	Low-medium

Project Phase	Environmental aspect : Ecology (Fauna and Flora)								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
Construction	Vegetation removal	Habitat destruction – loss of floral diversity	Low	Medium	Low-medium	Low	High	Low-medium	Medium
	Removal of Red Data and Endemic plant species	Loss of floral diversity	Low-medium	High	Low-medium	Low	High	Low-medium	Medium
	Construction activities	Loss of important vegetation types	Low	Low-medium	Low	Low	High	Low-medium	Low-medium
	Construction activities	Habitat fragmentation – disruption of natural movement patterns of fauna	Low	Low	Low	Low-Medium	High	Low-medium	Low-medium
	Removal of vegetation and loss of fauna **due to accidental fires**	Loss of biodiversity	Medium	Low-medium	Medium	Low	Low	Low	Low-medium
	Killing of fauna(Snaring/hunting or poisoning) Excavation activities (trenches) and movement of heavy vehicles	Loss of faunal diversity	Low	Low	Low-medium	Low-medium	Low-medium	Low	Low-medium

Project Phase	Environmental aspect : Ecology (Fauna and Flora)								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
	Littering (e.g. cans and plastics)	Danger to indigenous fauna	Low	Low	Low-medium	Low	Low-medium	Low	Low-medium
	Indiscriminate wood collection	Loss of indigenous flora	Low	Low	Low-medium	Medium	Medium	Low	Low-medium

Project Phase	Environmental aspect: Soil degradation								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
Construction	Spillages of fuel and lubricants from vehicles and temporary fuel tanks or storage containers	Soil pollution	Low	Low	Low-medium	Medium	Medium	Low	Low-medium
	Temporary sanitation facilities (chemical toilets) - spillages	Soil pollution	Low	Low	Low-medium	Low	Low	Low	Low-medium
	Collection of waste	Soil pollution and public nuisance	Low-	Low	Low-medium	Low	Low-medium	Low	Medium
	Transportation of stockpiled material (soil) by rain	Loss of topsoil-increase in sediment load to drainage sections	Low	Low	Low-medium	Low-medium	Medium	Low	Medium

Project Phase	Environmental aspect: Visual disturbance								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
Construction	Construction (presence of heavy vehicles and equipment, temporary structures at the site camp, material and spoil stockpiles	Visual/Aesthetical	Low	Low	Low	Low-medium	Low-medium	Low	Low-medium
	Loss of trees and other vegetative cover	Visual/Aesthetical	Low-medium	Medium-high	Low-medium	Medium	High	Low	Medium
	Litter and other waste generated at the site camp, and along the pipeline construction route	Visual/Aesthetical	Low	Low	Low-medium	Medium	Medium	Low	Medium

Project phase	Environmental aspect: Health and Safety								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
Construction	Construction activities	Accidents and injuries to construction workers and public	High	Medium	Low	Low	Medium	Low	Low-medium
	Open trenches	Safety risk to people and vehicles	Low-medium	Medium	Low-medium	Low-medium	Low	Low	Low-medium
	Trenching across public roads	Disruption to traffic and safety risk	Low-	Low	Low	Low-medium	High	Low	Low-medium
	Crime – trespassing onto private land	Theft, robbery and assaults	Low-medium	Medium	Low-medium	Low	Low	Low	Low-medium
	Accidental fires	Destruction of property and danger to human life	Low-High	Medium	Low-medium	Low	Low	Low	Low-medium
	Construction camp – poor waste management and unhygienic conditions	Diseases contracted by construction workers-spread to local people	Low	Low	Low	Medium	Medium	Low	Low-medium
	The occurrence of fires at the site camp (fuel storage areas)	Damage to structures and/or infrastructure Injuries or loss of life	Low-medium	Low	Low	Low	Low	Low	Medium
	Blasting activities	Safety risk	Low-medium	Low	Low-medium	Low	Low-medium	Low	Medium

Project phase	Environmental aspect: Socio - Economic								
	Activity/Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	Significance	
								With Mitigation	Without Mitigation
Construction	Pipeline construction	Temporary job creation	Medium Pos	Low-medium Pos	Low-medium	Low	High-pos		Low-medium Pos
Operation	Operational phase – maintenance of pipeline	Supply of water	High Pos	High Pos	Medium Pos	High Pos	High Pos		High Pos

PROPOSED MANAGEMENT OF IMPACTS AND MITIGATION

Indicate how identified impacts and mitigation will be monitored and/or audited.

- Appointment of an Environmental Monitoring Officer to conduct visual inspections to ensure implementation of preventative and mitigation measures during the construction and operational phases of the proposed activity
- Compulsory monitoring reports during the construction/site preparation period.
- The necessary amendments to the EMPR through monitoring and also advice obtained from the environmental monitoring officer

3. 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.

ENVIRONMENTAL IMPACT STATEMENT

- The impact of the proposed project will be significant only within the footprint sections of the pipeline route where vegetation removal will occur. **The following aspects will be important to take into consideration for the proposed project:**

- The unnecessary removal of vegetation should be avoided. **Should any protected species (Marula and Tambotie) need to be removed then a permit must be obtained from DAFF to do so.**

- Strict measures must be implemented to avoid the introduction of alien invasive species during the construction process

- Sensitive habitats (drainage areas) must be protected and all possible efforts must be made to reduce disturbances of these areas**. (Also see mitigation measures within the ecological report for the crossing of drainage channels – appendix D).**

- No animals are allowed to be trapped, hunted or intentionally killed during the construction phase.

- The necessary soil stabilization and erosion control measures must be implemented to manage soil loss, especially so against steeper and exposed sections as well as sensitive receptors (drainage sections).

- Cleared sections must be rehabilitated as soon as possible as should take place in a progressive manner. **(See proposed rehabilitation measures within EMPR).**

- No open fires must be made for cooking or heat along the proposed pipeline route and must only be made as **designated places as indicated by the contractor at the site camp.**

- No chemical toilets may be placed with 50 metres from any drainage channels. These toilets must be placed on level ground and be emptied on a weekly basis by an approved contractor to a licensed sewage works.

- All the necessary precautions must be taken to reduce the possibility of spillages of fuel, oils chemicals and other hazardous substances. **(See mitigation measures as pertained within the Environmental Management Program)**. Any spillages that do occur must be removed immediately in the appropriate manner. Large scale spillages must be reported to the spills response team as well as to the applicable authorities.

- Any waste (concrete, bitumen layers) must be removed from the construction sites and taken to the approved and licensed landfill site from which permission had been obtained on a weekly basis. No waste must be allowed to be stored on site for extended periods.

- No firewood is allowed to be collected (breaking of tree branches or felling of trees intentionally) along the proposed pipeline route. The necessary discussions must be had with the landowners for the use of any vegetation that had to be removed within the footprint sections of the proposed project.

- In the event of a heritage object being unearthed, any work that could impact on the object must be stopped and the discovery must be reported to the Limpopo Heritage Authority.

- The necessary discussions must be held with affected landowners prior to any construction activities taking place.

- The necessary safety measures must be in place during trenching (open trenches) and during the crossing of public roads.

- The remaining potentially significant impacts that have been identified during the construction and operational phases should be mitigated through the proper implementation of the Empr.

No –go alternative (Planning and design Phase)

- The benefits of the proposed pipeline project (job creation and much needed water for future developments) will be lost.

No –go alternative (Construction Phase)

- The possible spillage of fuels, oils and lubricants during construction activities will be excluded
- The possible transportation of stockpiled material that has been generated during construction activities towards drainage sections will be reduced.
- The total removal of vegetation within the footprint sections of the pipeline route will be excluded
- The possible impact on drainage sections during the construction of the pipeline will be reduced
- The benefits of job creation and the provision of much needed water for future developments will be lost.

No –go alternative (Operational Phase)

- Development will be limited and the growth rate of the region will become stagnant
- Municipal infrastructure will not be expanded – meaning no upgrades of water sources
- As populations grow there will be an increase in the pressure on the natural water supply
- Lack of socio-economic growth (future developments)

No –go alternative (Decommissioning and Closure Phase)

- The decommissioning and closure phase is not likely to occur since the proposed pipeline will provide much needed water for future developments and recent shortages.

For more alternatives please continue as alternative D, E, etc.

SECTION E. RECOMMENDATION OF PRACTITIONER

Are 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):

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 department in respect of the application:

- The unnecessary removal of vegetation should be avoided. Should any protected species (Marula, Tambotie) have to be removed then a permit must be obtained from DAFF. (Department of Agriculture, Forestry and Fisheries).

- The entire development footprint **should be clearly demarcated prior to initial site clearance** and prevent construction personnel from leaving the demarcated area.

- The red data species *Adenia fruticosa* was observed at 2 localities along the pipeline route **(Refer to photographic guide of the EMPr)**. The pipeline route should be amended to avoid these plant species if possible. **Should impact be unavoidable a detailed species rescue, relocation and re-introduction plan should be developed and implemented by a qualified person before any excavations or disturbance commence.**

- **Ecological monitoring should be implemented during construction of the pipeline to ensure that any potential red data species potentially missed during the field surveys are preserved by relocation in an "ex situ" nursery or incorporated as part of the landscaping in the Public Open Spaces.**

- The ECO should enforce any measures provided to construction workers to ensure the protection of the habitat, fauna and flora and their sensitivity to conservation

- Strict measures must be implemented to avoid the introduction of alien invasive species during the construction process.

- Sensitive habitats (drainages) must be protected and all possible efforts must be made to reduce disturbances of these areas **(Refer to the ecological section within the EMPr report).**

- No animals are allowed to be trapped, hunted or intentionally killed during the construction phase. Where trenches pose a risk to animal safety, they should be adequately cordoned off to prevent animals falling in and getting trapped and/or injured. This could be prevented by the constant excavating and backfilling of trenches during pipeline construction

- The necessary soil stabilization and erosion control measures must be implemented to manage soil loss, especially so against steeper and exposed sections as well as sensitive receptors (drainage sections).

- Cleared sections must be rehabilitated as soon as possible as should take place in a **progressive manner (See proposed rehabilitation measures within EMPr).**

- No open fires must be made for cooking or heat along the proposed pipeline route and must only be made as designated places as indicated by the contractor at the site camp.

- No chemical toilets may be placed with 50 metres from any drainage channels. These toilets must be placed on level ground and be emptied on a weekly basis by an approved contractor to a licensed sewage works.

- All the necessary precautions must be taken to reduce the possibility of spillages of fuel, oils chemicals and other hazardous substances. **(See mitigation measures as pertained within the Environmental** Management Program). Any spillages that do occur must be removed immediately in the appropriate manner. Large scale spillages must be reported to the spills response team as well as to the applicable authorities.

- Any waste (concrete, bitumen layers) must be removed from the construction sites and taken to the approved and

licensed landfill site from which permission had been obtained on a weekly basis. No waste must be allowed to be stored on site for extended periods.

- No firewood is allowed to be collected (breaking of tree branches or felling of trees intentionally) along the proposed pipeline route. The necessary discussions must be had with the landowners for the use of any vegetation that had to be removed within the footprint sections of the proposed project.
- In the event of a heritage object being unearthed, any work that could impact on the object must be stopped and the discovery must be reported to the Limpopo Heritage Authority.
- The necessary discussions must be held with affected landowners and or communities prior to any construction activities taking place.
- Local people must be used wherever possible for jobs created
- The contractor must conform to all the stipulations of the Occupational Health and Safety act and the Regulations applicable at the time of the tender. Safety awareness workshops to be held for the construction phase.
- Pipeline sections must be inspected on a regular basis and repaired by maintenance personal
- The necessary safety measures must be implemented during the trenching of public roads. All related authorizations must be obtained before trenching can commence.

Is an EMPr attached? The EMPr must be attached as Appendix F.	YES	■

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports – Ecological and Heritage Reports)

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information

SECTION G: DECLARATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, _____

(a) act as the independent environmental practitioner in this application;
(b) do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010;
(c) do not have and will not have a vested interest in the proposed activity proceeding;
(d) have no, and will not engage in, conflicting interests in the undertaking of the activity;
(e) undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2006;
(f) will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
(g) will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the Department in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the Department may be attached to the report without further amendment to the report;
(h) will keep a register of all interested and affected parties that participated in a public participation process; and
(i) will provide the Department with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Name of company:

Date: