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Final Basic Assessment Report

PROPOSED ESTABLISHMENT OF THE STERKSPRUIT
REGIONAL WASTE WATER TREATMENT WORKS
(WWTW) AND ASSOCIATED BULK INFRASTRUCTURE IN
SENQU LOCAL MUNICIPALITY, EASTERN CAPE
PROVINCE.

February 2015

Applicant:

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Reference No.: EC/142/JG/LN1/M/03/14



**PROVINCE OF THE EASTERN CAPE
DEPARTMENT OF ECONOMIC DEVELOPMENT
ENVIRONMENTAL AFFAIRS AND TOURISM**

BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:

Application Number:

Date Received:

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.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. 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 or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.

9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

SECTION A: ACTIVITY INFORMATION

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

	NO
--	----

If YES, please complete form XX for each specialist thus appointed:
Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

Description of the project

The project entails the replacement of the Sterkspruit Regional Waste Water Treatment Works (WWTW) and associated bulk infrastructure. Dibanani Consulting has been appointed to apply for Environmental Authorisation and thereafter to construct a WWTW as well as lift pump stations and bulk connector services. The bulk connector sewer system will service Sterkspruit, Eslindini, Mogesi and Tapoleng townships.

The proposed WWTW site falls within the D12A quaternary drainage area within the Upper Orange Water Management Area. The Kromspruit is a tributary of the Orange River with its confluence approximately 60 km (linear distance) upstream of Aliwal North. The Sterkspruit sewage treatment plant is located approximately 6 km (linear distance) south-east of the Kromspruit-Orange River confluence.

Groundwater occurs as inter-granular and/or fractured zone aquifers. There are no high yield aquifers in a 1 km radius of the site that are developed. Groundwater is mainly used for livestock watering and domestic use where no surface water resources are available and that is not serviced by means of the local water reticulation network. The average yield of boreholes in the area is between 0.1 and 0.5 l/s.

The average rainfall in the area is between 600-700 mm per annum which occurs largely as thunderstorms between November and April. The surface water runoff in the area is typically restricted to very high rainfall events with an estimate mean annual runoff of between 100 – 200 mm per annum (Water Resources of South Africa, 2005 Study, WR2005)

The replacement of the sewage bulk connector systems entail division of the systems into three major drainage zones, one for each community. The replacement will aim to maximise the delivery of sewer services to the communities. The communities of Sterkspruit, Esilindini, Tapoleng and Mokhesi will all be serviced and connected to the WWTW by these bulk connector systems.

The sewer connector services will consist out of the following infrastructure:

- The construction of 1200 m of 160 mm diameter sewer pump lines.
- The construction of 6000 m of 200 mm diameter sewer pipes.
- The construction of 12000 m of 250 mm diameter sewer pipes.
- The construction of 5000 m of 355 mm diameter sewer pipes.
- The construction of 2000 m of 400 mm diameter sewer pipes.
- The construction of 350 manholes.

The WWTW will be replaced and will have an initial capacity of 2MI per day. The final effluent will be irrigated onto sports fields and other designated irrigation areas. This 2MI capacity will be sufficient for 5 years and will accommodate all excess sewage that the current WWTW cannot handle. After the 5 year period the WWTW will be upgraded to handle 6MI per day. During this upgrade the re-use of the final effluent will be investigated or the installation of an outfall sewer to evaporation dams will be investigated.

The WWTW will consist of amongst others:

- Inlet works with screening and de-gritting
- Flow measurements
- Biological reactor
- Secondary sedimentation tanks
- Maturation rivers

The process that will be used for the WWTW will be the well known and proven "three-stage Phoredox" activated sludge treatment process.

The main objective will be to re-use as much of the water for irrigation of fodder, town gardens and sport fields.

The eventual 6 MI per day WWTW will be constructed over three phases:

Flow description	Phase 1	Phase 2	Phase 3
Description of work	2.5MI/d inlet works, 3460m ³ reactor, 22 m diameter Secondary Sedimentation Tanks (SST) with chlorination channels, chlorination building, control building	Petro division box, facultative pond 2500 m ³ , Petro recycle pump station and pipe work	Mirror of phase 1 and 2. Construct 5 MI/d inlet works, additional 3460 m ³ reactor, additional 22 m diameter SST with chlorination channels (30 min contact time)
Structures shared from previous phases		Share 2.5 MI/d inlet works, chlorination channels, chlorination building and control building	Share chlorination building and control building
ADWF capacity	1712 m ³ /d	2440 m ³ /d	4880 m ³ /d
PDWF	4491 m ³ /d	6037 m ³ /d	12 635 m ³ /d
Number of stands	3058 stands	4366 stands	8732 stands

The different components and stages within the WWTW will consist of:

- Inlet works where raw sewage will enter the plant from the bulk connector system.
- Reactors which will facilitate aeration by means of six vertical shaft aerators.
- Secondary Settling Tanks (SST) which will enable settling of solids and separation of water.

- Petro system oxidation secondary ponds which will enable aerobic sludge digestion which will further aid in an increase in sludge storage capacity.
- Effluent from the chlorination basin will be discharged through a series of maturation channels. The channels will be shaped according to the natural contours on the site. The channels are approximately three meters wide with a maximum depth of 300 mm. These channels will be planted with reed.
- Gas chlorination will be done with auto-change over and in accordance with SANS requirements.

A series of lift pump stations will also be constructed to accommodate the bulk connector services where gravitational feeds cannot carry any raw sewage to the WWTW. A total of 7 sewer lift pump stations will be constructed along bulk connector systems.

The following specifications will be applicable to the pump stations:

- 20 hour pumping per day.
- Sized for the summer peak demand
- Sized for a minimum of 33% standby capacity.

Due to the fact that the existing WWTW is overloaded at present it is of critical importance that the construction of the new WWTW commence.

From the once-off water quality date and a visual assessment of the river status it is clear that the spruit are affected by sub-standard water from sewage origin enter the system. This is mainly overflows as a result of overflow from sewage blockages, runoff from poorly reticulated areas and the seepage from the existing maturation ponds.

The upgrade of the Sterkfontein STP will have a significant positive impact on the general river health in the Kromspruit.

For detailed specifications and description of the WWTW and associated pipelines please refer to Appendix G and the technical feasibility report and technical write-up.

Description of the environment

Joe Gqabi District Municipality is mainly a rural community with a large proportion of people residing in traditional villages surrounding the CBD. Sterkspruit is the business hub that is serving the surrounding areas.

The project area comprises of four settlements in the Joe Gqabi District Municipality i.e. Sterkspruit, Esilindini, Tapoleng and Mokhesi.

Currently about 113 households in Sterkspruit are serviced with a full waterborne sewage system. Government institutions such as the prison, municipal offices, police station and a few businesses in the CBD are also connected to the current sewer reticulation system.

The areas of Esilindini, Tapoleng and Mokhesi does not currently have any access to any formal sewer systems. Currently all of the sewers are buckets and or dry systems.

The existing WWTW and oxidation ponds at the northern side of Sterkspruit are filled to capacity and effluent is overflowing into the river.

The existing bulk sewage supply pipeline connecting Sterkspruit with the oxidation ponds is partially constructed on the banks of the Kromspruit River. At some places where the banks of the river has eroded away by flood waters, it exposed the sewer pipeline and caused it to break at critical places. Temporary repairs to the pipeline do not seem to be sufficient.

The new WWTW will be situated on the Remainder of Erf 1. This area also contains the existing WWTW that is currently being operated. This area is highly degraded and transformed. The WWTW is situated within a bend in the Kromspruit and is situated between 20 and 30 meters from the river. The existing maturation ponds are not lined with clear evidence on the banks of the stream that water is seeping into the spruit. There are no evidence of a constant overflow into the spruit, but it is very likely that discharge to the spruit occurred in the past especially during high rainfall events. The existing WWTW consists of a small inlet and a large oxidation pond where the sewage matures before flowing into the Kromspruit. A large portion of the site has also been converted to irrigated grazing but is not operational at present.

The following is a description of the pipeline routes:

Phase 1

The pipeline will run from the WWTW through the CBD along the existing road reserve and to the east of the WWTW where it will service the area of Wittenberg.

A portion of the pipeline will also run along the R392 tarred road to the west of the WWTW and will then turn south to the area of Tapoleng, Masekeleng and Tienbank.

Phase 2

The pipeline will run west from the WWTW along the R392 tarred road. The pipeline will split off and turn south to the area of Mfirikini, Zwelitsha and Etshantolo. The remainder of this pipeline will continue along the tarred road and will terminate near the areas of Kwantoyi and Emadlangeni.

Phase 3

The pipeline will run south of the WWTW and will cross the Kromspruit from where it will run along the R392 tarred road north to the area of Mareteng. The pipeline will also split off to the area of Sekotong.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

Describe alternatives that are considered in this application. 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 competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

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

Note: The WWTW will be constructed at the existing oxidation ponds near the northern boundary of Sterkspruit near the banks of the Kromspruit River where the existing WWTW is situated. The WWTW will utilise the existing oxidation ponds which will be upgraded. Due to this the existing site will have to be utilised for the WWTW and no site alternatives were assessed.

A technological alternative which has been considered is retaining the oxidation ponds and not upgrade the WWTW to an activated sludge system. This has several implications which renders this alternative unfeasible. Firstly the current oxidation ponds are too small and the volume required to accommodate the population of Sterkspruit will be large. The current site location will also not be possible to accommodate the oxidation ponds required to handle the volumes. Oxidation pond treatment systems also do not treat the water to such a good quality. The treated water will also have to be irrigated in some area. The current site also does not have the available land where the treated water can be irrigated.

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 and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites if applicable.

	Latitude (S):		Longitude (E):	
Alternative:				
Alternative S1 ¹ (preferred or only site alternative)	30°	31.311'	27°	21.847'
Alternative S2 (oxidation ponds)	30°	31.311'	27°	21.847'
Alternative S3 (if any)	0	'	0	'

In the case of linear activities:

	Latitude (S):		Longitude (E):	
Alternative:				
Alternative S1 (preferred or only route alternative)				
• Starting point of the activity	0	'	0	'
• Middle point of the activity	0	'	0	'
• End point of the activity	0	'	0	'
Alternative S2 (if any)				
• Starting point of the activity	0	'	0	'
• Middle point of the activity	0	'	0	'
• End point of the activity	0	'	0	'
Alternative S3 (if any)				
• Starting point of the activity	0	'	0	'
• Middle point of the activity	0	'	0	'
• End point of the activity	0	'	0	'

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.

Note: Please refer to Appendix G for a list of coordinates for the bulk connector systems.

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 ² (preferred activity alternative)	35 995 m ²
Alternative A2 (if any)	150 000 m ²
Alternative A3 (if any)	m ²
or, for linear activities:	
Alternative:	Length of the

¹ "Alternative S.." refer to site alternatives.

² "Alternative A.." refer to activity, process, technology or other alternatives.

Alternative A1 (preferred activity alternative)
 Alternative A2 (if any)
 Alternative A3 (if any)

activity:
26 200 m
m
m

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

Alternative:

Size of the site/servitude:
m ²
m ²
m ²

Alternative A1 (preferred activity alternative)
 Alternative A2 (if any)
 Alternative A3 (if any)

5. SITE ACCESS

Does ready access to the site exist?

YES	
m	

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

Describe the type of access road planned:

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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 metres 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 metres;
- 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 metres 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 DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.9 for gentle slopes the 1 metre 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

6.10 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.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

R	109
Million	

What is the expected yearly income that will be generated by or as a result of the activity?

R	
---	--

Will the activity contribute to service infrastructure?

YES	
-----	--

Is the activity a public amenity?

	NO
--	----

How many new employment opportunities will be created in the development phase of the activity?

N/A	
-----	--

What is the expected value of the employment opportunities during the development phase?

N/A	
-----	--

What percentage of this will accrue to previously disadvantaged individuals?

N/A	
-----	--

How many permanent new employment opportunities will be created during the operational phase of the activity?

N/A	
-----	--

What is the expected current value of the employment opportunities during the first 10 years?

N/A	
-----	--

What percentage of this will accrue to previously disadvantaged individuals?

N/A	
-----	--

Note: The project will form part of the municipal infrastructure. The project therefore forms part of basic services and will not generate any annual income. The contractor responsible for construction of the WWTW and bulk connector systems will be employed through a tender process which will determine the employment during the construction phase. Employment during construction will be done according to the conditions as set out by the municipality within the contract. Employment at the WWTW during operation will be determined by the municipality.

9(b) Need and desirability of the activity

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

The existing oxidation ponds at the northern side of the Kromspruit alongside the Kromspruit River are filled to capacity and effluent is overflowing into the river.

The existing bulk sewage supply pipeline connecting Sterkspruit with the oxidation ponds are partially constructed on the banks of the Kromspruit. At some places where the banks of the river have been eroded by floods it has exposed the sewer pipeline and caused it to break at critical places. Temporary repairs to the pipeline is inadequate.

Currently about 113 households in Sterkspruit are serviced with a full waterborne sewage system. Government institutions such as the prison, municipal offices, police station and a few businesses in the CBD are also connected to the current sewer reticulation system.

The areas of Esilindini, Tapoleng and Mokhesi does not currently have any access to any formal sewer systems. Currently all of the sewers are buckets and or dry systems.

Due to the fact that the existing WWTW is overloaded at present, it is of critical importance that the first phase of the WWTW and bulk connector services be implemented.

Indicate any benefits that the activity will have for society in general:

The project will entail huge benefits to society.

Firstly the WWTW and bulk connector systems will alleviate large scale pollution of the Sterkspruit, Kromspruit and groundwater by raw sewage. This will increase the health of the river system. The Kromspruit flows into the Orange River not far from the site and therefore the WWTW will also increase the health of the Orange River. This will have a national positive impact. The health hazard for people utilising the Kromspruit and Orange River will decrease.

The WWTW and bulk connector system will lay the foundations for the installation of waterborne flush systems throughout the township of Sterkspruit, Esilindini, Tapoleng and Mokhesi. This will entail a major positive benefit for the area.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The project will largely benefit the local community.

The WWTW and bulk connector system will lay the foundations for the installation of waterborne flush systems throughout the township of Sterkspruit, Esilindini, Tapoleng and Mokhesi. This will entail a major positive benefit 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:
National Environmental Management Act (Act No 107 of 1999)	Department of Environmental Affairs and Tourism	1998
National Water Act (Act 36 of 1998)	Department of Water Affairs	1998
National Heritage Resources Act (No 25 of 1999)	Department of Arts and Culture	1999

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

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

YES	
-----	--

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

20 m ³

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

Construction solid waste will be stockpiled on the site and removed on a weekly basis to be disposed of at the local landfill site (Sterkspruit Landfill Site).

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

All construction solid waste will be disposed of at the Sterkspruit Landfill Site.

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

YES	NO
-----	----

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

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
-----	----

If yes, then the applicant should consult with the competent authority 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?

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

	NO
--	----

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?

	NO
--	----

If yes, provide the particulars of the facility:

Facility name:

--

Contact

person:

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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:

Treated water will be utilised for irrigation of sports fields and other designated irrigation areas. Treated water will also be released into the Kromspruit to rejoin the water cycle and be available for downstream water use.

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?		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:

--

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:

During construction of the WWTW and bulk connector systems, earth moving equipment will be involved which will produce a level of noise. However, construction will only occur during daylight hours and are unlikely to have a high impact on the residential area. The site is also located within an urban area where noise pollution is already prominent and will therefore not cause noise pollution within a quiet area.

During operation the WWTW will produce a certain amount of noise although this is not anticipated to be high. The pumps, reactors and secondary sedimentation tanks will produce a low amount of noise due to mechanical working.

12. WATER USE

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

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	the activity will not use water
municipal	water board	groundwater	river, stream, dam or lake	other	

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

the volume that will be extracted per month:

litres	
YES	

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

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.

Note: Once the WWTW is expanded to a 6 Ml capacity the oxidation ponds will not be sufficient to handle the anticipated treated discharge and as a result a portion of the treated discharge will be discharged via river outfall. A water use license will be required for this. Proof of the Water Use License Application (WULA) to DWS is included in Appendix G.

13. ENERGY EFFICIENCY

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

The infrastructure and technology to be used at the WWTW is state of the art and will be much more energy efficient than older technologies.

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

At this time no alternative energy sources have been incorporated into the WWTW.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

- 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):

Note: The site, WWTW and bulk connector systems, are all situated within and Sterkspruit. The pipelines are all situated within the same area and the environment does not vary greatly over this area. As a result it will not be necessary to discuss any significantly different environments.

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

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

YES	<input type="text"/>
-----	----------------------

If YES, please complete form XX for each specialist thus appointed:
All specialist reports must be contained in Appendix D.

1. GRADIENT OF THE SITE

Note: The Sterkspruit region is highly mountainous and therefore the gradient differ over the area where the WWTW and associated bulk connector pipelines is situated.

Indicate the general gradient of the site.

Alternative S1:

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

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
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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
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2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline

2.2 Plateau

2.3 Side slope of hill/mountain

2.4 Closed valley

2.5 Open valley

2.6 Plain

2.7 Undulating plain / low hills

2.8 Dune

2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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		YES		YES	NO
Dolomite, sinkhole or doline areas		NO		NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES		YES		YES	NO
Unstable rocky slopes or steep slopes with loose soil		NO		NO	YES	NO
Dispersive soils (soils that dissolve in water)		NO		NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES		YES		YES	NO
Any other unstable soil or geological feature		NO		NO	YES	NO
An area sensitive to erosion	YES		YES		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:

- 4.1 Natural veld – good condition ^E
- 4.2 Natural veld – scattered aliens ^E
- 4.3 Natural veld with heavy alien infestation ^E
- 4.4 Veld dominated by alien species ^E
- 4.5 Gardens
- 4.6 Sport field
- 4.7 Cultivated land
- 4.8 Paved surface
- 4.9 Building or other structure
- 4.10 Bare soil

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

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

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

- 5.1 Natural area
- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential
- 5.6 Retail commercial & warehousing
- 5.7 Light industrial
- 5.8 Medium industrial ^{AN}
- 5.9 Heavy industrial ^{AN}
- 5.10 Power station
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam^A
- 5.14 Quarry, sand or borrow pit
- 5.15 Dam or reservoir
- 5.16 Hospital/medical centre
- 5.17 School

- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard ^N
- 5.23 Railway line ^N
- 5.24 Major road (4 lanes or more) ^N
- 5.25 Airport ^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station ^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation
- 5.33 Agriculture
- 5.34 River, stream or wetland
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 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.

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 YES, 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 YES, 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		NO
Archaeological or palaeontological sites, on or close (within 20m) to the site?	NO	
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:	<p>No evidence of <i>in situ</i> Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art, prehistoric structures or historical buildings older than 60 years within the vicinity of the study area. It is unlikely that the proposed development will result in any significant archaeological impact along the demarcated footprints. The proposed pipeline routes are regarded as of low archaeological significance.</p> <p>The palaeontological significance of the sedimentary bedrock at Sterkspruit is considered high and the nature of the proposed development suggests possible impact on potentially fossil-bearing Stormberg Group strata. An investigation of alluvial deposits of the Kromspruit and associated tributaries indicates that impact on potential palaeontological heritage resources within the overlying Quaternary soils is unlikely. The palaeontological significance of the unconsolidated Quaternary soils is therefore considered as low.</p>	
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 competent authority) 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 councillor of the ward in which the site or alternative site is situated and any organisation 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 competent authority;
- (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 metropolitan or 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 subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, 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 competent authority 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 authorisation;
- (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
- (iv) 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 competent authority 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 the EIA 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 competent authority 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 the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

6. AUTHORITY PARTICIPATION

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

List of authorities informed:

Municipal Manager: Senqu Local Municipality Municipal Ward Councillor (Ward 8): Senqu Local Municipality Municipal Ward Councillor (Ward 10): Senqu Local Municipality Municipal Ward Councillor (Ward 11): Senqu Local Municipality Department of Water Affairs and Sanitation (DWS) Eastern Cape Provincial Heritage Resources Authority (ECPHRA)
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List of authorities from whom comments have been received:

DWS has commented that the project and relevant information has been forwarded to the applicable sections. (Refer to Appendix E for public consultation)

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 subregulation to the extent and in the manner as may be agreed to by the competent authority.

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

Has any comment been received from stakeholders?

	NO
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If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

N/A

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.

Mr. Chris Oosthuisen of the Sterkspruit Christian School enquired about the location of the WWTW as he is concerned about it being situated adjacent to the school.

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):

We assured him that the WWTW will be situated at the existing WWTW and will not be located near the school. He informed us that in this regard he does not have any concerns regarding the project.

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.

Alternative (preferred alternative)	Recommended mitigation measures:
<p><u>Potential Impacts:</u></p> <p><i>Planning and Design Phase</i></p> <p><i>Direct impacts:</i> None</p> <p><i>Indirect impacts:</i> None</p> <p><i>Cumulative impacts:</i> None</p> <p><i>Construction Phase</i></p> <p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> • Removal of topsoil and potential loss thereof. • Destruction of habitat for small animals. • Removal of the vegetation layer on the site. • Noise elevation due to construction 	<p><u>Recommended mitigation measures:</u></p> <p><i>Planning and Design Phase</i></p> <p>No impacts expected</p> <p><i>Construction Phase</i></p> <p><i>Mitigation Measures:</i></p> <ul style="list-style-type: none"> • The surface of the site will be levelled to ensure a free-draining surface to prevent ponding of surface water as well as to limit erosion. • During construction, storm water measures such as channels, diversion berms, etc. will be constructed around the construction site in order to limit and/or prevent erosion and separate clean

activities.

- Nuisance dust generation.
- Possible damage to palaeontological heritage during excavation activities.
- Injuries to humans entering the site unnoticed.

Indirect impacts:

- Potential erosion of the exposed soil.
- Possible dumping of construction rubble and general waste on the site.
- Possible spillage of products like paint, oil, cleaning agents, etc. which may lead to water and/or soil contamination.
- Possible spillage of untreated sewage to the surrounding environment.

Cumulative impacts:

None

and dirty runoff.

- Topsoil removed will be kept separate and re-used.
- As stated in this report the condition of the site is highly degraded and transformed and the impact on the vegetation would therefore be minimal.
- The site is highly disturbed and transformed and it is therefore anticipated that the impact on small mammals on the site will be minimal.
- No harming, hunting, capturing or trapping of animals on the site may occur.
- A speed limit will be enforced on the construction vehicles.
- Construction activities will be limited to daytime to limit any disturbance to neighbouring landowners.
- The nearest residences are located 500 meters from the site and is therefore unlikely to be affected by noise caused by construction
- Dust control measurements will be investigated if nuisance dust generation during construction proofs to be problematic.
- SAHRA will be notified should traces of any palaeontological heritage be found during construction.
- Adequate fencing must be erected around the site.
- Warning signs must be attached to fencing and at the entrance of the construction site.
- The pipeline construction areas must be clearly marked off.
- Excavations for the pipelines must be closed as quickly as possible to decrease the likelihood of accidents.
- Measures must be implemented to ensure that pipeline excavations are safe to the general public. This is especially relevant to night times when excavations are not easily visible.
- No construction and / or any other waste may be dumped in the veld.
- All spills should be cleaned immediately
- All building rubble will be removed by the contractor on a regular basis and disposed of at an authorised landfill site in Sterkspruit or used as filling material during construction.
- Receptacles should be placed on site for the collection of general waste. These receptacles should be emptied on a regular basis and waste be disposed of at the authorised landfill site in the region.
- Temporary toilets should be placed on site for use by construction workers. Sewage from these toilets should be managed appropriately and not be disposed of on site or the surrounding environment.

Operational Phase

Direct impacts:

- Littering on the WWTW site during operation.
- Increased odour levels at the new WWTW.
- Chlorine storage on the site may be dangerous.
- Discharged treated water may not meet DWA minimum standards.

Indirect impacts:

- Pollution due to spillage or seepage of sewage and sludge from the lagoons into groundwater and the surrounding Kromspruit.
- Increased flows in the Kromspruit due to discharge from the works can cause erosion of the bed and banks and an increase in sediment to the downstream reaches.

Cumulative impacts:

None

Operational Phase

Mitigation Measures:

- Ample refuse bins must be placed on the site. These will be emptied regularly and disposed of at the local landfill site.
- The current WWTW is not functional and as a consequence odour levels are high and the new WWTW is anticipated to alleviate this problem.
- Odour control must be adequately provided for in the design and specification of the new WWTW.
- Maintenance of the WWTW should be continued to ensure an optimal working area.
- The design of the WWTW reticulation system should be such to ensure competent operation and separated from the consumable water system.
- Conduct regular inspections of infrastructure at intervals so as to identify any potential failure of infrastructure and repair immediately.
- Develop a contingency plan for periods of load shedding that will prevent the release of raw sewage into the Kromspruit.
- Adopt proper engineering codes and implement a storm water management plan.
- The design of oxidation ponds should incorporate free-board volumes which should compensate for most storm events.
- Ensure that adequately lined drainage is in place around the outside of the ponds to ensure that any overflow is diverted back to the head of the WWTW.
- Stormwater diversion berms should be incorporated into the site design.
- Regular site inspection and critical observation of the ponds is recommended to ensure that possible leaks are identified and that environmental conditions have not impacted on the operation of the WWTW.
- On-site operating staff MUST be trained and certified by the relevant authorities.
- The sewage pipes must be tested for defects and leaks before the trenches are closed.
- Technically appropriate and SABS approved sewer material must be used.

<p>Decommissioning and Closure Phase</p> <p>Direct impacts:</p> <ul style="list-style-type: none"> No Decommissioning Phase is foreseen for the proposed project which will have a lifetime of 30 - 40 years. <p>Indirect impacts: None</p> <p>Cumulative impacts: None</p>	<ul style="list-style-type: none"> In order to limit erosion measures such as gabions and velocity dissipaters must be established at the outflow point. Construction of the chlorine handling facilities must comply with the latest legal, environmental and health bylaws. Activated sludge treatment systems produce a highly treated and well-nitrified effluent that typically meets the required effluent quality standards. However, to ensure that acceptable standards are kept the effluent being discharged will be tested at regular intervals. <p>Decommissioning and Closure Phase</p> <p>Direct impacts:</p> <ul style="list-style-type: none"> Should the WWTW be decommissioned in future a Rehabilitation Plan dependant on the end land use will be developed and be submitted to the Department for approval. It is important to note that the decommissioning of a WWTW is currently a listed activity in terms of NEMA (Act 107 of 1998). If the facility is therefore decommissioned in future the applicant would have to apply for Environmental Authorisation. This must be verified at the time of decommissioning. <p>Indirect impacts: None</p> <p>Cumulative impacts: None</p>
<p>Alternative 2 (Oxidation ponds)</p>	
<p>Potential Impacts:</p> <p>Planning and Design Phase</p> <p>Direct impacts: None</p> <p>Indirect impacts: None</p> <p>Cumulative impacts: None</p> <p>Construction Phase</p>	<p>Recommended mitigation measures:</p> <p>Planning and Design Phase</p> <p>No impacts expected</p> <p>Construction Phase</p>

Direct impacts:

- Removal of topsoil and potential loss thereof.
- Destruction of habitat for small animals.
- Removal of the vegetation layer on the site.
- Noise elevation due to construction activities.
- Nuisance dust generation.
- Possible damage to palaeontological heritage during excavation activities.
- Injuries to humans entering the site unnoticed.

Indirect impacts:

- Potential erosion of the exposed soil.
- Possible dumping of construction rubble and general waste on the site.
- Possible spillage of products like paint, oil, cleaning agents, etc. which may lead to water and/or soil contamination.
- Possible spillage of untreated sewage to the surrounding environment.

Cumulative impacts:

None

Mitigation Measures:

- The surface of the site will be levelled to ensure a free-draining surface to prevent ponding of surface water as well as to limit erosion.
- During construction, storm water measures such as channels, diversion berms, etc. will be constructed around the construction site in order to limit and/or prevent erosion and separate clean and dirty runoff.
- Topsoil removed will be kept separate and re-used.
- The oxidation pond system will require a very large area to be transformed and it is therefore anticipated that the impact on the vegetation will be exceedingly higher.
- Due to the large area required for the oxidation ponds it is anticipated that there will be an impact on the animals in the area.
- No harming, hunting, capturing or trapping of animals on the site may occur.
- A speed limit will be enforced on the construction vehicles.
- Construction activities will be limited to daytime to limit any disturbance to neighbouring landowners.
- The nearest residences are located 500 meters from the site and is therefore unlikely to be affected by noise caused by construction
- Dust control measurements will be investigated if nuisance dust generation during construction proves to be problematic.
- SAHRA will be notified should traces of any palaeontological heritage be found during construction.
- Adequate fencing must be erected around the site.
- Warning signs must be attached to fencing and at the entrance of the construction site.
- The pipeline construction areas must be clearly marked off.
- Excavations for the pipelines must be closed as quickly as possible to decrease the likelihood of accidents.
- Measures must be implemented to ensure that pipeline excavations are safe to the general public. This is especially relevant to night times when excavations are not easily

Operational Phase

Direct impacts:

- Littering on the WWTW site during operation.
- Increased odour levels at the new WWTW.
- Discharged treated water may not meet DWA minimum standards.

Indirect impacts:

- Pollution due to spillage or seepage of sewage and sludge from the lagoons into groundwater and the surrounding Kromspruit.

Cumulative impacts:

None

visible.

- No construction and / or any other waste may be dumped in the veld.
- All spills should be cleaned immediately
- All building rubble will be removed by the contractor on a regular basis and disposed of at an authorised landfill site in Sterkspruit or used as filling material during construction.
- Receptacles should be placed on site for the collection of general waste. These receptacles should be emptied on a regular basis and waste be disposed of at the authorised landfill site in the region.
- Temporary toilets should be placed on site for use by construction workers. Sewage from these toilets should be managed appropriately and not be disposed of on site or the surrounding environment.

Operational Phase

Mitigation Measures:

- Ample refuse bins must be placed on the site. These will be emptied regularly and disposed of at the local landfill site.
- Due to the large area required for the oxidation ponds it is anticipated that the odour impact will be considerably higher.
- Odour control must be adequately provided for in the design and specification of the new WWTW.
- Maintenance of the WWTW should be continued to ensure an optimal working area.
- The design of the WWTW reticulation system should be such to ensure competent operation and separated from the consumable water system.
- Conduct regular inspections of infrastructure at intervals so as to identify any potential failure of infrastructure and repair immediately.
- Develop a contingency plan for periods of load shedding that will prevent the release of raw sewage into the Kromspruit.
- Adopt proper engineering codes and implement a storm water management plan.
- The design of oxidation ponds should incorporate free-board volumes which should compensate for most storm events.

<p>Decommissioning and Closure Phase</p> <p>Direct impacts:</p> <ul style="list-style-type: none"> • No Decommissioning Phase is foreseen for the proposed project which will have a lifetime of 30 - 40 years. <p>Indirect impacts: None</p> <p>Cumulative impacts: None</p>	<ul style="list-style-type: none"> • Ensure that adequately lined drainage is in place around the outside of the ponds to ensure that any overflow is diverted back to the head of the WWTW. • Stormwater diversion berms should be incorporated into the site design. • Regular site inspection and critical observation of the ponds is recommended to ensure that possible leaks are identified and that environmental conditions have not impacted on the operation of the WWTW. • On-site operating staff MUST be trained and certified by the relevant authorities. • The sewage pipes must be tested for defects and leaks before the trenches are closed. • Technically appropriate and SABS approved sewer material must be used. • The oxidation pond system cannot be discharged into the Kromspruit due to unacceptable water quality standards and treated water will have to irrigated. <p>Decommissioning and Closure Phase</p> <p>Direct impacts:</p> <ul style="list-style-type: none"> • Should the WWTW be decommissioned in future a Rehabilitation Plan dependant on the end land use will be developed and be submitted to the Department for approval. • It is important to note that the decommissioning of a WWTW is currently a listed activity in terms of NEMA (Act 107 of 1998). If the facility is therefore decommissioned in future the applicant would have to apply for Environmental Authorisation. This must be verified at the time of decommissioning. <p>Indirect impacts: None</p> <p>Cumulative impacts: None</p>

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.

The likelihood of significant expected impacts actually occurring is highly unlikely and limited if recommended mitigation measures are implemented throughout the phases of the project.

The proposed site is already transformed, highly degraded and cannot be considered to be of significant conservation value. The site which will be affected by the WWTW is already highly disturbed and the anticipated impacts caused by the construction will not cause a high disturbance of the site since it is already highly disturbed.

The site is subjected to numerous impacts which include the following. The area is subjected to heavy and sustained overgrazing which has led to significantly low vegetation cover which in turn leads to greater runoff, increased erosion and high sediment loads. The area contains a moderate density but expansive area of residential and light industrial development. This area is also highly affected by insufficient sewage systems and is highly affected by rubbish dumping and littering. As a result the runoff from these residential areas is highly polluted and has a high impact on the Kromspruit. These areas also lack surface cover in the form of vegetation or paving. As a result the area is subjected to high erosion, increased sediment loads and increased runoff which further negatively impacts on the Kromspruit. The existing WWTW has oxidation ponds where sewage is being pumped into. These ponds are inadequate and leaking and as a result highly polluted water enters the Kromspruit and causes high levels of pollution, algal blooms and consequently eutrofication of the river. The Kromspruit is also subjected to several other impacts including bridge crossing of roads, abstraction for irrigation, polluted runoff from irrigated and dryland crop cultivation, rubbish dumping and excavation of material from the river.

It is anticipated that the establishment of the new WWTW will alleviate and improve the current conditions as the treated water will be of better quality and the oxidation ponds will be upgrading and re-constructed so that leakages into the Kromspruit no longer take place.

Impacts that will be associated with the Construction Phase will be temporary in nature. Although the activities that will be associated with the Operational Phase will be permanent it should be clear from the above as well as the nature of the development that the potential impacts associated with this phase will be minimal and local in nature. The likelihood of potential impacts occurring during the operational phase is highly unlikely.

Alternative A (preferred alternative)

As above

Alternative 2 (oxidation ponds)

This alternative will entail the use of oxidation ponds exclusively for treatment of sewage and the WWTW will not be upgraded to an activated sludge system. The alternative will entail

several other impacts which renders it unfeasible.

Firstly an oxidation pond WWTW will require a large surface area (Apprx. 15 ha) which is not present on the site and there is therefore not enough surface area to construct such a WWTW. The large surface area to be transformed will also have a much higher impact on the vegetation and fauna of the area.

This alternative will also entail oxidation pond treatment which has been proven to be much less effective than activated sludge treatment. The treated water will therefore have much higher levels of pollution after treatment. It will then not be possible to release the treated water back into the Kromspruit. The treated water will have to irrigated on cropfields or grazing. The area has been urbanised and does not contain any such areas in close proximity. It will therefore not be possible to irrigate the treated water.

Due to the above constraints it will not be possible to implement this alternative.

No-go alternative (compulsory)

The current WWTW has reached capacity and the infrastructure is no longer able to service the Sterkspruit area. The area does not contain any pipeline infrastructure and the small portion of existing pipeline is exceedingly dilapidated and is causing leakage of sewage into groundwater and surface water resources. The population of Stetrkspruit require adequate Waste Water Treatment Works and the capacity of the current WWTW must be enlarged. The no-go alternative would entail a higher environmental impact than the construction of the new WWTW. The current oxidation ponds and pipeline infrastructure is causing raw sewage to leak into the groundwater and surface water resources. The construction of the new WWTW and pipeline infrastructure will improve these impacts.

SECTION E. RECOMMENDATIONS OF PRACTITIONER

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

YES	
YES	

Is an EMPr attached?

The EMPr must be attached as Appendix F.

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

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

In addition to the recommended mitigation and management measures the following conditions are recommended:

- Compliance with mitigation measures within the BAR, EMPr and all specialist reports.
- Strict monitoring must be maintained which must include:
 - It is recommended that regular monitoring of all the environmental management measures and components should be undertaken during the construction phase to verify compliance to the EMPr.
 - Ongoing and regular reporting of the progress of implementation of this EMPr will be done.
 - Visual inspections on physical pollution shall be carried out on a regular basis.
 - To ensure that acceptable standards are kept the effluent being discharged will be tested at regular intervals.
 - Monitoring must include points upstream and downstream within the Kromspruit from the WWTW to ascertain the impact and quality of discharge.
- Odour control must be adequately provided for in the design and specification of the new WWTW.
- Impacts on the Kromspruit must be kept to a minimum during construction and operation.
- The design of the facility and operational procedures should be done in manner to ensure compliance to the general wastewater limits as defined in the revision of the General Authorisations In Terms Of Section 39 of The National Water Act, 1998 (Act No. 36 Of 1998) of 6 September 2013.
- The irrigation of the final effluent can be considered an existing lawful use as this was practiced before the promulgation of the National Water Act'1998.
- The re-use of final effluent should also be maximized to support the national objectives to conserve natural resources.
- The storage and disposal of grid from the inlet works should be done according to best practices to prevent contamination of runoff and soil.
- The disposal of sludge should be done according to The Guideline for Permissible Utilisation and Disposal of Wastewater Sludge Volume 3: Requirements for the on-site and off-site disposal of sludge (2009).
- Public safety must take priority especially concerning the bulk pipelines and their installation within the residential areas.
- Topsoil removed will be kept separate and re-used.
- A speed limit will be enforced on the construction vehicles.
- Construction activities will be limited to daytime to limit any disturbance to neighbouring land owners.
- Dust control measures will be investigated if nuisance dust generation during construction

proofs to be problematic.

- SAHRA will be notified should traces of any palaeontological heritage be found during construction.
- No construction and/or any other waste may be dumped in the veld.
- All spills will be cleaned immediately.
- All building rubble will be removed by the contractor on a regular basis and disposed of at an authorised landfill site in Sterkspruit or used as filling material during construction.
- Receptacles should be placed on the site for the collection of general waste. These receptacles should be emptied on a regular basis and waste disposed of at the authorised landfill site in the region.
- Temporary toilets should be placed on the site for use by construction workers. Sewage from these toilets should be managed appropriately and not disposed of on site or the surrounding environment.

It is anticipated that the development will entail a low impact significance as long as mitigation measures as listed within the BAR and EMPr are successfully implemented. No unacceptably high impacts are foreseen.

All recommendations and mitigation measures as stipulated by the specialist reports as well as the EMPr must be adhered to.

SECTION F: APPENDICES

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

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information