

# Basic Assessment Report



## agriculture & environmental affairs

Department:  
Agriculture  
& Environmental Affairs  
**PROVINCE OF KWAZULU-NATAL**

(For official use only)

EIA File Reference Number:  
NEAS Reference Number:  
Waste Management Licence Number:  
(if applicable)  
Date Received:

DM/0007/2014

KZN/EIA/

### BASIC ASSESSMENT REPORT

**Submitted in terms of the Environmental Impact Assessment Regulations, 2010 promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998)**

**This template may be used for the following applications:**

- **Environmental Authorization** subject to basic assessment for an activity that is listed in Listing Notices 1 or 3, 2010 (Government Notices No. R 544 or No. R 546 dated 18 June 2010); or
- **Waste Management Licence** for an activity that is listed in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) for which a basic assessment process as stipulated in the EIA Regulations must be conducted as part of the application (refer to the schedule of waste management activities in Category A of Government Notice No. 718 dated 03 July 2009).

#### Kindly note that:

1. This **basic assessment report** meets the requirements of the EIA Regulations, 2010 and is meant to streamline applications. This report is the format prescribed by the KZN Department of Agriculture & Environmental Affairs. Please make sure that this is the latest version.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not 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 text.
3. Where required, place a cross in the box you select.
4. An incomplete report will 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 will result in the rejection of the application as provided for in the regulations.
6. No faxed or e-mailed reports will be accepted.
7. The report must be compiled by an independent environmental assessment practitioner ("EAP").
8. 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.

**GIBELA UMKHUMBI OLWA NOBUBHA**

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9. The KZN Department of Agriculture & Environmental Affairs may require that for specified types of activities in defined situations only parts of this report need to be completed.
10. The EAP must submit this basic assessment report for comment to all relevant State departments that administer a law relating to a matter affecting the environment. This provision is in accordance with Section 24 O (2) of the National Environmental Management Act 1998 (Act 107 of 1998) and such comments must be submitted within 40 days of such a request.
11. **Please note that this report must be handed in or posted to the District Office of the KZN Department of Agriculture & Environmental Affairs to which the application has been allocated (please refer to the details provided in the letter of acknowledgement for this application).**

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### DEPARTMENTAL REFERENCE NUMBER(S)

File reference number (EIA):	
File reference number (Waste Management Licence):	

### SECTION A: DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS

#### 1. NAME AND CONTACT DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Name and contact details of the EAP who prepared this report:

Business name of EAP:	Kerry Seppings Environmental Management Specialists cc (KSEMS)		
Physical address:	4 Woodville Lane, Off Hawkstone Avenue, Summerveld, Assagay		
Postal address:	P. O. Box 396, Gillitts		
Postal code:	3603	Cell:	079 520 1583
Telephone:	031 769 1578	Fax:	086 535 5281
E-mail:	<a href="mailto:kerry.seppings@telkomsa.net">kerry.seppings@telkomsa.net</a>		

#### 2. NAMES AND EXPERTISE OF REPRESENTATIVES OF THE EAP

Names and details of the expertise of each representative of the EAP involved in the preparation of this report:

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
Kerry Stanton	MSc Cum laude BSc (Hons) MSc	- EAPSA Certified, - Certified Professional Natural Scientist (400167/12), - Certified GCX Carbon Footprint Analyst (Level 1)	18
Stephanie Williams	MPhil Marine & Environmental Law		2

#### 3. NAMES AND EXPERTISE OF SPECIALISTS

Names and details of the expertise of each specialist that has contributed to this report:

Name of specialist	Education qualifications	Field of expertise	Section/ s contributed to in this basic assessment report	Title of specialist report/ s as attached in Appendix D
Ryan Edwards	Detailed CV available on request.	Wetlands	Section 4	Proposed Mlazi WP 89 V5-7 Sanitation Project: Watercourse Impact Assessment Report.

SECTION B: ACTIVITY INFORMATION

**1. PROJECT TITLE**

Describe the project title as provided on the application form for environmental authorization:

Construction of a Pump Station, Bulk Sewage Pipeline with Associated Toilets and Pipework at WP 84 V5-6-7 in Umlazi.

**2. PROJECT DESCRIPTION**

Provide a detailed description of the project:

As part of the “Provision of Water and Sanitation to Informal Settlements within eThekweni Municipality”, certain priority informal settlements were identified within the eThekweni Municipality that urgently need ablution blocks, as well as water and sewer connections to serve the communities immediate needs. The proposed laid pipes (water and sewer) will tie-into existing reticulation and will provide future reticulation when the area is developed.

The ablution facility chosen by Council to be installed is a temporary modified container (see Figure 1 below). This arrangement allows for future removal and re-placement to other informal settlements, as the settlements are upgraded and individual water and sewer connections are provided to each new formalised dwelling. Each “Ablution” blocks should service approximately 50-75 households and be a maximum distance of 250m from any point. Further detail of the programme scope is attached in Appendix G.

eThekweni Water and Sanitation (EWS) therefore propose to construct a number of Communal Ablution Blocks (CAB's), associated pipework and pump station in uMlazi V and E to provide formal sanitation facilities to the informal settlement in the area. The proposed pipelines and the majority of the toilet sites fall within 32 meters of the uMlazi River and/or associated drainage lines. Cumulatively, infrastructure which is more than 50 square meters will be constructed within 32 meters of a watercourse.

Twenty two pre-fabricated toilet platforms (8 x 9.5m) will be erected with half located within 32m of various delineated watercourses. 160mm CAB connector pipelines will connect the CAB's with a proposed bulk sewer line. The bulk sewer line will be 160-250mm in diameter. The application includes the construction of a pump station, which will be constructed in the east of the study site. The proposed bulk sewer line will terminate at the pump station which will transfer the sewage to the existing Southern Waste Water Treatment Facility.

The proposed sanitation infrastructure will be located within the uMlazi Informal Settlement (uMlazi V and E) north of Thabo Morena Road. Proposed infrastructure lies south of the uMlazi River, which was classified as “Largely Modified” in 1999<sup>1</sup>. A further six (6) distinct watercourse units were identified within the study area. All watercourses flow down the steep banks into the uMlazi River.

<sup>1</sup> GCS Environment and Water Consultants “Proposed Mlazi WP 89 V5-7 Sanitation Project” (March 2014), page 18.

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Figure 1: An example of the prefabricated toilets to be constructed within the uMlazi E and V settlement.

### 3. ACTIVITY DESCRIPTION

Describe each listed activity in Listing Notice 1 (GNR 544, 18 June 2010), Listing Notice 3 (GNR 546, 18 June 2010) or Category A of GN 718, 3 July 2009 (Waste Management Activities) which is being applied for as per the project description:

<p>As per LN 1_ GNR 544_ 18<sup>th</sup> June 2010 promulgated from the 2<sup>nd</sup> of August 2010:</p>	<p>No. 11  <i>The construction of:</i>  <i>i) Canals;</i>  <i>ii) Channels;</i>  <i>iii) Bridges</i>  <i>iv) Dams;</i>  <i>v) Wiers;</i>  <i>vi) Bulk stormwater outlet structures;</i>  <i>vii) Marinas;</i>  <i>viii) Jetties exceeding 50 square metres in size;</i>  <i>ix) Slipways exceeding 50 square metres in size;</i>  <i>x) Buildings exceeding 50 square metres in size; or</i>  <b>xi) <i>Infrastructure covering 50 square metres or more</i></b>  <b><i>Where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse.</i></b></p>	<p>The applicant proposes to construct ablution facilities and associated pipework within the Bottlebrush Informal Settlement, eThekweni Municipality triggering activity 11 of GNR 544, infrastructure covering an area greater than 50m<sup>2</sup> within 32 meters of a watercourse.</p>
<p>As per LN 1_ GNR 544_ 18<sup>th</sup> June 2010 promulgated from the 2<sup>nd</sup> of August 2010:</p>	<p>No. 18  The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from:  <b>(i) a watercourse;</b></p>	<p>The construction of the pipelines across the watercourses, may potential require the infilling and/or excavation of more than 5m<sup>3</sup> of soil from/in a watercourse.</p>

	(ii) the sea; (iii) the seashore; (iv) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever disturbance is the greater – But excluding where such infilling, depositing, dredging, excavation, removal or moving; (a) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or (b) occurs behind the development setback line	
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#### 4. 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 report. 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

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The purpose and need of the project proposal is for the formalisation of ablution facilities within specific areas of the uMlazi Informal Settlement which currently do not have access to formalised toilets. There are therefore no feasible site alternatives for this application however a number of layouts were initially considered as part of the proposal for the toilet and pipeline sites and are described below.

The number of ablution blocks and associated pipelines as well as the requirement for a pump station remained the same throughout the assessment however, on submission of the Watercourse Impact Assessment Report, it was recommended that “a small buffer zone” should be retained between structures and the watercourse edges where possible (see page 43 of the Watercourse Impact Assessment Report). The EAP therefore recommended minor amendments to the original layout (A2 and S1) which resulted in the “preferred” layout (A1 and S1). Both layouts are shown in Appendix C.

### **Alternative A1 and S1 (preferred):**

Prefabricated toilets approximately 8 x 9.5m in area will be erected within uMlazi E and V. Sewage from the CAB's will flow through 160mm diameter CAB connector pipelines to a proposed 160-250mm diameter bulk gravity sewer pipeline. The bulk sewer line will tie into a proposed pump station in the east of the study site. Cumulatively, the pipelines will measure a total of approximately 2km in length. Please refer to Appendix C for the layout of the proposed CAB's, pipelines and pump station. All pipelines will be made from unplasticized poly(vinyl chloride) or uPVC. uPVC is widely used in building materials as it is known as having a strong resistance against chemicals, sunlight, and oxidation from water.

The pump station will be designed according to the layout attached in Appendix C and this will include the construction of the main sump, pump well and electrical rooms. The pump station will be designed with the following safeguards against electrical failure:

- Emergency storage in the main sump with sufficient capacity to handle additional 2 hours storage until normal operation is resumed;
- Connection via telemetry to the operational control room to give early warning of a power failure;
- Odour and noise control considerations will be included in the safety considerations and will include positioning of vents, windows and doors away from any housing or dwellings.

The applicant proposes to establish approximately 22 CAB's throughout the study site with 13 of the toilet sites being situated within 32m of either the uMlazi River or associated streams / drainage lines as delineated by the wetland specialist (see Figure 2 of the Watercourse Impact Assessment). Obtaining environmental authorisation prior to construction is therefore required. After reviewing the Watercourse Impact Assessment Report, the location of **three CABs** and associated **CAB connectors** were adjusted to prevent constructing across a watercourse and/or increase the buffer area between the infrastructure and a nearby watercourse.

The bulk sewer line crosses Drainage Line Two (29°57'11.33"S; 30°55'39.96"E), Stream Unit Two (29°57'15.54"S; 30°55'39.49"E) and Stream Unit Three (29°57'14.34"S; 30°55'47.05"E). Pipe bridge crossings will be used where the pipe crosses the streams as opposed to trenching within the streams. These are indicated in the layout in Appendix C.

### **Alternative A2 and S1:**

The layout of alternative A2 was proposed prior to receipt of the Watercourse Impact Assessment Report (Appendix D) and involved the construction of the same infrastructure however three CAB sites were relocated during the design of the preferred alternative described above. For example CAB 18 (as shown in the Google Earth Image in Appendix B) was initially placed further south-east and required the CAB connector to cross the upper section of Stream Unit Three. The CAB location was therefore revised in the preferred alternative to prevent this impact from occurring. The CAB Connector pipeline associated with CAB12 has also been relocated further away from Stream Unit 2. Finally CAB 1 was relocated east to increase the buffer between the infrastructure and Stream Unit 1.

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Alternative A2 and S1 toilet sites includes the construction of two CABs and a CAB connector within the delineated riparian zone and potentially five watercourse crossing as opposed to three in the preferred alternative. Alternative A2 and S1 was therefore dismissed as the number of watercourse crossing have been reduced in the preferred layout (Alternative A1 and S1). Alternative A2 and S1 has therefore not been assessed in this BAR.

**No Go Alternative** i.e. not constructing the ablution facilities in uMlazi V and E. The no go alternative would result in the local communities continued use of other forms of ablution and their continued exposure to unsanitary conditions. The construction of formalised sanitation facilities in the area is aimed at improving hygienic conditions within this area of the eThekweni Municipality, which would not result if the project did not go ahead.

Sections B 5 – 15 below should be completed for each alternative.

### 5. 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. List alternative sites were applicable.

Alternative: N/A	Latitude (S):			Longitude (E):		
Alternative S1 <sup>2</sup> (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 bulk sewer line	29°	57'	09.49"	30°	55'	28.87"
• Middle point of the bulk sewer line	29°	57'	38.99"	30°	55'	13.63"
• End point of the bulk sewer line (i.e. location of pump station)	29°	57'	12.48"	30°	55'	48.94"

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

### 6. PHYSICAL SIZE OF THE ACTIVITY

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

**Alternative:**

Alternative A1<sup>3</sup> (preferred activity alternative)  
Alternative A2 (if any)  
Alternative A3 (if any)

**Size of the activity:**

N/A m <sup>2</sup>
N/A m <sup>2</sup>
N/A m <sup>2</sup>

**or, for linear activities:**

**Alternative:**

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

**Total length of the pipelines:**

Approximately 2 000 m
N/A m

<sup>2</sup> "Alternative S.." refer to site alternatives.

<sup>3</sup> "Alternative A.." refer to activity, process, technology or other alternatives.



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Alternative A3 (if any)

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

**Alternative:**

**Size of the servitude of the pipelines:**

Alternative A1 (preferred activity alternative)

Approximately 6 000 m <sup>2</sup>
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Alternative A2 (if any)

N/A m <sup>2</sup>
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Alternative A3 (if any)

N/A m <sup>2</sup>
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**Alternative:**

**Total size of the toilet platform area:**

Alternative A1 (preferred activity alternative)

Approximately 988 m <sup>2</sup>
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Alternative A2 (if any)

N/A m <sup>2</sup>
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Alternative A3 (if any)

N/A m <sup>2</sup>
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### 7. SITE ACCESS

Does ready access to the site exist?	YES	NO
	<b>X</b>	
<p>There are a network of roads on the northern sections of the site which will provide access such as Thabo Morena Road, Sibusiso Chamane Drive, Sandakahle Drive and Emakholweni Circle however the engineer has stated that due to the steep topography existing walkways may need to be concreted to gain access to the pump station and toilet platforms. See Figures 2 and 6 in Appendix B for an example of an existing footpath's. These are to be upgraded to allow access to the site during construction and operation, for maintenance purposes.</p>		
If NO, what is the distance over which a new access road will be built	N/A	
Describe the type of access road planned:		
N/A		

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.

### 8. 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 report.

The site or route plans must indicate the following:

- 8.1. the scale of the plan which must be at least a scale of 1:500;
- 8.2. the property boundaries and numbers/ erf/ farm numbers of all adjoining properties of the site;
- 8.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 8.4. the exact position of each element of the application as well as any other structures on the site;
- 8.5. 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;
- 8.6. walls and fencing including details of the height and construction material; **N/A**
- 8.7. servitudes indicating the purpose of the servitude;

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- 8.8. sensitive environmental elements within 100metres of the site or sites including (but not limited thereto):
- rivers, streams, drainage lines or wetlands;
  - the 1:100 year flood line (where available or where it is required by DWA);
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation including protected plant species (even if it is degraded or infested with alien species);
- 8.9. for gentle slopes the 1metre 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
- 8.10. the positions from where photographs of the site were taken.

### 9. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under **Appendix B** to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

### 10. FACILITY ILLUSTRATION

A detailed illustration of the facility must be provided at a scale of 1:200 and attached to this report as **Appendix C**. The illustrations must be to scale and must represent a realistic image of the planned activity/ies.

### 11. ACTIVITY MOTIVATION

#### 11.1. Socio-economic value of the activity

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

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

Will the activity contribute to service infrastructure?

Is the activity a public amenity?

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

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

What percentage of this will accrue to previously disadvantaged individuals?

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

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

What percentage of this will accrue to previously disadvantaged individuals?

R 6.5 million	
R0	
YES X	NO
YES X	NO
Approximately 6 local contract workers	
Approximately R400 000	
100%	
1	
R65 000	
100%	

#### 11.2. Need and desirability of the activity

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

The uMlazi area within the eThekweni Municipality consists largely of high/medium density informal settlements. Currently, many households in this area do not have access to waterborne sewerage connections and are exposed to unsanitary conditions and a high risk of infection with excreta-related diseases.

According to the Constitution of the Republic of South Africa Act 108 of 1996 and the Water Services Act 108 of

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1997, Local Government must ensure that all their residents have access to safe water and sanitation. This project forms part of eThekweni Municipality's Provision of Water and Sanitation to Informal Settlements programme. The proposed sanitation infrastructure is expected to improve hygienic conditions within Bottlebrush.

More details of the programme are provided in Appendix G.

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

To date, in terms of employment of local labour through the programme, 270 000 person days have been worked and 1176 FTE's created by this programme. In addition, local businesses (materials suppliers including stone, sand, cartage and security companies) and communities have gained employment and business from the project construction in their areas. This project is part of this programme and will further assist in improving the above outcomes. In addition, by formalising the ablution facilities the potential for sewage to contaminate the stream is also reduced. This is beneficial for communities as well as the environment downstream.

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

This project forms part of eThekweni Municipality's Provision of Water and Sanitation to Informal Settlements programme, whereby waterborne sanitation will have been provided to approximately 990 000 people within Informal Settlements within eThekweni (based on 522 facilities x 60 dwellings x 6 people) should the project be extended to end June 2016. The improvement of life quality and health environment has had a positive direct effect for the people having access to waterborne sanitation, water and washing facilities. More details of the programme are provided in Appendix G.

## 12. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are relevant to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act	All organs of State.	1998
Environment Conservation Act	DEA / DAEA	1989
National Heritage Resources Act	SAHRA/AMAFA	1999
National Water Act	DWA	1998
National Water Resources Strategy	DWA	2004
Occupational Health and Safety Act	DOL	1993
Hazardous Chemical Substance regulations	DOL	1995
Environmental Regulations for Workplaces	Department of Labour	1987
General Administrative Regulations	Department of Labour	2003
Construction Regulations	DOL	2003
eThekweni Municipality by-laws (General By-laws)	eThekweni Municipality	2008
Noise Induced Hearing Loss Regulations	Department of Labour	2003
National Environmental Management: Air Quality Act	DEA / DAEA	2004
National Environmental Management: Waste Act	DEA / DAEA	2008
National Standards (SANS)	SABS	2003

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

### 13.1. Solid waste management

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

YES	NO
X	
Approximately 5 m <sup>3</sup>	

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

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

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Solid waste is expected to be minimal as materials excavated for trenches as required by the pipelines will be used again as fill material. What solid waste is generated by the contractors must be removed from the site to a designated disposal area within the construction site camp and disposed of at the closest available registered landfill site.

Where will the construction solid waste be disposed of? (provide details of landfill site)

Any solid waste generated must be disposed of at the nearest available registered landfill site. The closest landfill site is the Mariannhill Landfill site approximately 15km from the site. The closest hazardous landfill site is the Umlazi IV H:h landfill situated in Isipingo Beach. Should alternative landfill sites be used, this disposal site must be fully licensed and registered and must be approved by the ECO prior to the disposal of waste at this facility.

Will the activity produce solid waste during its operational phase?	YES	NO X
If yes, what estimated quantity will be produced per month?	N/A m <sup>3</sup>	

How will the solid waste be disposed of? (provide details of landfill site)

**N/A**

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

**N/A**

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine the further requirements of the application.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	YES	NO X
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**If yes, contact the KZN Department of Agriculture & Environmental Affairs to obtain clarity regarding the process requirements for your application.**

Is the activity that is being applied for a solid waste handling or treatment facility?	YES	NO X
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**If yes, contact the KZN Department of Agriculture & Environmental Affairs to obtain clarity regarding the process requirements for your application.**

### 13.2. Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO X
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If yes, what estimated quantity will be produced per month?	N/A m <sup>3</sup>	
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Will the activity produce any effluent that will be treated and/or disposed of on site?	Yes	NO X
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**If yes, contact the KZN Department of Agriculture & Environmental Affairs to obtain clarity regarding the process requirements for your application.**

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	NO X
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If yes, provide the particulars of the facility:

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

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

The reuse or recycling of waste water will not be required as little to no wastewater is expected to be produced from the construction phase. During the operational phase, no wastewater will be produced.

**13.3. Emissions into the atmosphere**

Will the activity release emissions into the atmosphere?

YES	NO
X	

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

YES	NO
	X

**If yes, contact the KZN Department of Agriculture & Environmental Affairs to obtain clarity regarding the process requirements for your application.**

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

Dust will be produced during the construction phase as well as emissions from construction vehicles accessing the site. The vehicle emissions will be comprised primarily of Carbon Dioxide (CO<sub>2</sub>) and will be of a low concentration.

**13.4. Generation of noise**

Will the activity generate noise?

YES	NO
X	

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

YES	NO
	X

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:

The proposed activity will generate noise during the construction phase from construction vehicles and equipment. It is not expected that noise levels during construction and operation will exceed 85dBa.

Should activities that generate high levels of noise be required, nearby residents must be notified of the activities prior to the event. Workers will be trained regarding noise on site and construction hours will be kept to working hours (07h00 to 17h00). Work should not continue on weekends, after hours or public holidays, unless prior consent is obtained.

**14. WATER USE**

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

Municipal <b>X</b>	water board	groundwater	river, stream, dam or lake	other	the activity will not use water
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

<b>N/A</b>	
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Does the activity require a water use permit from the Department of Water Affairs?

YES	NO
X	

Please refer to the letter from Norman Ward which is attached under Appendix G. The letter states that proposed river crossings with pipe bridges have been pre-authorized by a general authorisation for water uses c & i. No license is therefore required provided that the pipe bridges have means to discourage pedestrian use or be strong and safe enough to such use. Naturally work within drainage lines should be done with care to avoid environmental damage. These conditions have been included in the recommended conditions for environmental authorisation in section F below.

If YES, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this report.

**15. ENERGY EFFICIENCY**

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

The proposal is for sewer reticulation and as such no design measures are available to ensure the activity is energy efficient.

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

It is recommended that energy saving light bulbs be used in the ablution facilities.

### SECTION C: 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):

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

#### 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	1:10 – 1:7,5 <b>X</b>	1:7,5 – 1:5 <b>X</b>	Steeper than 1:5
------	-------------	-------------	-------------	--------------------------	-------------------------	------------------



Figure 2: Elevation Profile across the centre of the study site as shown by the purple line (source: Google Earth, 2013).

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### Alternative S2 (if any): N/A

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): N/A

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 (Please cross the appropriate box).

### Alternative S1 (preferred site):

Ridgeline	Plateau	Side slope of hill/mountain X	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
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### Alternative S2 (if any): N/A

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
-----------	---------	-----------------------------	---------------	-------------	-------	----------------------------	------	-----------

### Alternative S3 (if any): N/A

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
-----------	---------	-----------------------------	---------------	-------------	-------	----------------------------	------	-----------

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

Has a specialist been consulted for the completion of this section?

<del>YES</del>	NO
----------------	----

If YES, please complete the following:

Name of the specialist:	Ryan Edwards from GCS Water and Environmental Consultants		
Qualification(s) of the specialist:	Available on request.		
Postal address:	4a Old Main Road, Judges Walk, Kloof		
Postal code:	3610		
Telephone:	031 764 7130	Cell:	-
E-mail:	ryane@gcs-sa.biz	Fax:	031 764 7140

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?

YES	<del>NO</del>
-----	---------------

If YES, specify and explain:

n/a – although the site is located within the KZN Coastal Belt vegetation unit, the natural vegetation on site has been cleared and totally transformed by the uMlazi informal settlement. The only vegetation that remains is secondary alien plants dominated by wetland and riparian vegetation. No intact primary KZN Coastal Belt vegetation is present (page 19 of the Watercourse Impact Assessment Report).

Are there any special or sensitive habitats or other natural features present on any of the alternative sites?

<del>YES</del>	NO
----------------	----

If YES, specify and explain:

The Mlazi River floodplain and associated wetlands have been designated as 'Freshwater Wetland' within the Durban Metropolitan Open Space System (D'MOSS). Small sections of the infrastructure in the eastern portion of the study site are located in the D'MOSS area (as delineated in Figure 1 of the Watercourse Impact Assessment in Appendix D).

A summary of the specialist findings is provided below.

Are any further specialist studies recommended by the specialist?

YES	<del>NO</del>
-----	---------------

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If YES, specify: n/a

If YES, is such a report(s) attached in Appendix D? ~~YES~~ NO

Signature of specialist: See signature on Wetland Report attached under Appendix D. Date: -

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

	Alternative S1:		Alternative S2 (if any): <b>N/A</b>		Alternative S3 (if any): <b>N/A</b>	
	YES	NO	YES	NO	YES	NO
Shallow water table (less than 1.5m deep)	X					
Dolomite, sinkhole or doline areas		X				
Seasonally wet soils (often close to water bodies)	X					
Unstable rocky slopes or steep slopes with loose soil	X					
Dispersive soils (soils that dissolve in water)		X				
Soils with high clay content (clay fraction more than 40%)	X					
Any other unstable soil or geological feature		X				
An area sensitive to erosion	X					

### 3.1 Desktop Wetland Assessment Report

GCS Water and Environmental Consultants were appointed to compile a watercourse impact assessment to delineate and describe the current state of the adjacent watercourses in the study area. Mitigation against potential impacts that may occur as a result of the proposed construction and operation of the abluent blocks and pump station were also prescribed.

#### 3.1.1. Summary of Findings of Wetland Assessment

The topography of the study area is very steep which abruptly flattens out to form the Mlazi River floodplain (as shown in Figure 1). The study area is located in the lower reaches of the Mlazi River primary catchment. Seven (7) distinct watercourse units were identified and classified onsite as follows:

- 3 x Stream Units (with riparian zones)
- 2 x Drainage Lines (with limited riparian zones)
- Wetland Unit 1 (Channelled valley bottom wetland)
- Wetland Unit 2 (Mlazi River floodplain wetland)



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The bulk sewerage pipeline (approximately 850m) is to be laid adjacent to the Mlazi River floodplain. The bulk sewerage pipeline crosses Drainage Line Two (DL2), Stream Unit Two (SU2) and Stream Unit Three (SU3) which all flow into the Mlazi River. Please see Figure 3 below indicating the location of the seven watercourses in relation to the project proposal.

All seven systems were found to be highly disturbed and modified and in a poor state as a result of the intense transformation of both the upstream catchment and the onsite system. It appears that flows within the watercourses were “artificially elevated” as a result of leaking water pipes and disposal of domestic grey water into the stream by local residents. All stream and drainage lines were assessed as having a low to moderately low value from an ecological area but were found to provide some surface water management and water quality enhancement services.

Impacts identified during construction and operation phases include:

- Direct disturbance where crossings are required
- Erosion and sedimentation
- Water quality impact
- Cumulative impacts

The wetland specialist concluded that “most of the potential impacts pre-mitigation are of low significance due to the highly degraded nature of the onsite and downstream watercourses”. The potential operational water quality impacts and the potential cumulative impacts of the proposed project were however assessed as being “acceptable but undesirable”. With adherence to the recommended mitigation measures, the magnitude and significance of **all** potential impacts can be reduced to acceptable levels.

The specialist notes that the Mlazi River is currently diverted into a concrete canal and doesn't flow into a natural estuary. This is to be taken into account when evaluating the importance of the surface management services.

Specialist recommendations have been prescribed to reduce the significance of the impact to more acceptable levels and it is therefore imperative that all the recommended mitigation measures are strictly adhered. The mitigation measures are listed on pages 34 - 43 of the Watercourse Impact Assessment Report in Appendix D. These measures have been incorporated into the Environmental Management Programme (EMPr, Appendix F).

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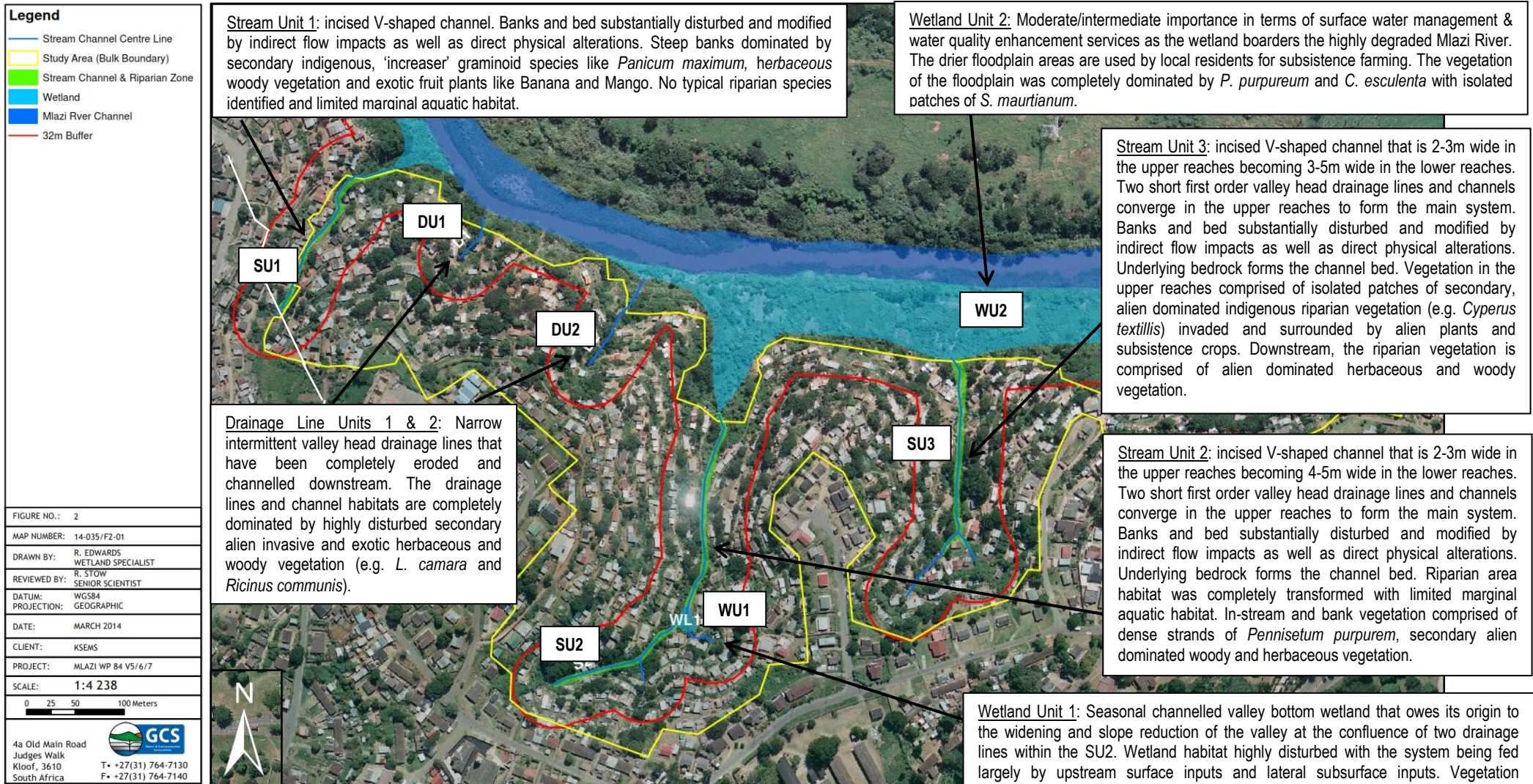


Figure 3: Watercourses identified by the wetland specialist with the red line indicating the 32m buffer zone (source: GCS Watercourse Impact Assessment Report, March 2014).

## Basic Assessment Report

### GROUND COVER

Has a specialist been consulted for the completion of this section?

YES	<del>NO</del>
-----	---------------

If YES, please complete the following:

Name of the specialist:			
Qualification(s) of the specialist:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?

YES	<del>NO</del>
-----	---------------

If YES, specify and explain:

N/A

Are there any special or sensitive habitats or other natural features present on any of the alternative sites?

YES	<del>NO</del>
-----	---------------

If YES, specify and explain:

N/A

Are any further specialist studies recommended by the specialist?

YES	<del>NO</del>
-----	---------------

If YES, specify:

N/A

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

YES	NO
-----	----

Signature of specialist: \_\_\_\_\_ Date: \_\_\_\_\_

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

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

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.

Section 4.4, 4.5 and 5.3 of the Watercourse Impact Assessment Report identified flora and fauna within the proposed study site. The specialist states that "the natural vegetation cover onsite has been cleared and totally transformed by the Umlazu WP 89 V5-7 informal settlement and the only vegetation that remains is secondary alien plant dominated wetland and riparian vegetation."

### 5. LAND USE CHARACTER OF SURROUNDING AREA

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

Land use character	YES	NO	Description
Natural area	<b>X</b>		The Mlazi River 1:100 year floodline and associated freshwater wetland system is located directly north of the proposed study site (see Figure 1 of the

## Basic Assessment Report

			Watercourse Impact Assessment in Appendix D). This system forms part of the D'MOSS area. No proposed CAB sites or CAB connector pipelines fall within this D'MOSS area however a small section of the bulk sewerage pipeline is located on the boundary of the delineated D'MOSS area in the east of the study site. The wetland specialist has also delineated a "woodland" area approximately 380m south and east of the study site.
Low density residential	YES	NO X	
Medium density residential	YES	NO X	
High density residential	YES	NO X	
Informal residential	YES X	NO	The site is situated within the uMlazi V and E township. Where possible, the pipeline will be constructed between the houses to avoid impacts on these houses.
Retail commercial & warehousing	YES X	NO	Warehousing is located approximately 200m east of the study site, on top of the plateau.
Light industrial	YES X	NO	A light industrial area is located south of the study site (approximately 100m from the closet CAB).
Medium industrial	YES	NO X	
Heavy industrial	YES	NO X	
Power station	YES	NO X	
Office/consulting room	YES	NO X	
Military or police base/station/compound	YES	NO X	
Spoil heap or slimes dam	YES	NO X	
Quarry, sand or borrow pit	YES	NO X	
Dam or reservoir	YES	NO X	
Hospital/medical centre	YES	NO X	
School/ creche	YES X	NO	Sanakahle Combined Primary is located off 107798 Street, west of the study site. It is approximately 35m west of CAB 2 (as labelled in the Google Earth Map in Appendix A).
Tertiary education facility	YES	NO X	
Church	YES	NO X	
Old age home	YES	NO X	
Sewage treatment plant	YES	NO X	

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Train station or shunting yard	YES	NO X	
Railway line	YES	NO X	
Major road (4 lanes or more)	YES	NO X	
Airport	YES	NO X	
Harbour	YES	NO X	
Sport facilities	YES X	NO	A large sports field is located approximately 400m north-east of the eastern CAB site.
Golf course	YES	NO X	
Polo fields	YES	NO X	
Filling station	YES	NO X	
Landfill or waste treatment site	YES	NO X	
Plantation	YES	NO X	
Agriculture	YES	NO X	
River, stream or wetland	YES X	NO	The proposed pipelines and CAB platforms fall within 32metres of the Mlazi River and associated drainage lines/stream units. The stream units and drainage line that the bulk sewer pipeline crosses forms part of the uMlazi River catchment.
Nature conservation area	YES	NO X	
Mountain, hill or ridge	YES X	NO	CAB platform sites and CAB connector pipelines fall on the side of a steep hill which is a north-facing slope of an outer bend of the Mlazi River Valley. The bulk sewer pipeline lies on a more gradual slope associated with the uMlazi River floodplain.
Museum	YES	NO X	
Historical building	YES	NO X	
Protected Area	YES	NO X	
Graveyard	YES	NO X	
Archaeological site	YES	NO X	
Other land uses (describe)	YES	NO X	

### 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),

YES	<del>NO</del>
-----	---------------

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including archaeological or palaeontological sites, on or within 20m of the site? X

If YES, contact a specialist recommended by AMAFA to conduct a heritage impact assessment. The heritage impact assessment must be attached as an appendix to this report.

Briefly explain the recommendations of the specialist: n/a

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

YES	NO
-----	----

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

YES	NO
-----	----

If YES, please submit the necessary application to AMAFA and attach proof thereof to this report.

### SECTION D: PUBLIC PARTICIPATION

Public Participation commenced on 06<sup>th</sup> of December 2013. All proof of public participation has been included in Appendix G. Signboards were placed around the site, along 1935 Road, as well as, along Emakholweni Circle and Sandakahle Drive.

The following authorities and interest groups were notified of the application: Department of Water Affairs (DWA), DAFF, KZN Wildlife, AMAFA and eThekweni Municipality. The Ward Councillors (Mthokozisi Nojijeza, Octavia Mthembu and Robert Mzobe) were also notified telephonically of the proposed project. The Background Information Document was distributed to all I & APs on 20 February 2014.

The notice of application was advertised in the Daily News (Regional Newspaper) on the 15<sup>th</sup> of January 2014 and in the Umlazi Eyethu (Local Newspaper) on the 24<sup>th</sup> of January 2014.

Should a meeting be requested, it may be held with registered interested and affected parties (I&APs).

#### 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 local and district municipality which has jurisdiction in the area;
  - (vi) any organ of state having jurisdiction in respect of any aspect of the activity (as identified in the application form for the environmental authorization of this project); and
  - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
  - (i) one local newspaper; or

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- (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 district 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 an application for environmental authorization has been submitted to the KZN Department of Agriculture & Environmental Affairs in terms of the EIA Regulations, 2010; (ii)
  - (iii) a brief project description that includes the nature and location of the activity to which the application relates;
  - (iv) where further information on the application 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 PROCESS

The EAP must ensure that the public participation process is according to that prescribed in regulation 54 of the EIA Regulations, 2010, but may deviate from the requirements of subregulation 54(2) in the manner agreed by the KZN Department of Agriculture & Environmental Affairs as appropriate for this application. 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 this application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations (regulation 57 in the EIA Regulations, 2010) and be attached as **Appendix E** to this report.

**6. PARTICIPATION BY DISTRICT, LOCAL AND TRADITIONAL AUTHORITIES**

District, local and traditional authorities (where applicable) are all 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 this application and provided with an opportunity to comment.

Has any comment been received from the district municipality?

YES	NO
X	

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

eThekwini Municipality provided comment of the Background Information Document (BID) attached in Appendix G. All Departments with eThekwini do not have any objections to the proposal however eThekwini Environmental Planning and Climate Protection Department stated that feasible and reasonable alternative crossings must be identified and presented for further assessment.

The potential impacts of the bulk sewer across the drainage lines must be assessed and presented on the Basic Assessment Report. Alternative mitigation measures including a reduction in pipe size, bridge crossing and manual trench digging should be considered for dealing with the above potentially sensitive areas. The EMP must also address the management of leaks, overflows and prevention of stream contamination during the construction and operation phase of the project.

A copy of these comments has been included in Appendix E.

Has any comment been received from the local municipality?

YES	NO
X	

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

As above.

Has any comment been received from a traditional authority?

YES	NO
	X

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

N/A

**7. CONSULTATION WITH OTHER STAKEHOLDERS**

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 and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

YES	NO
X	

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

The Department of Forestry and Fisheries have received the BID, included in Appendix G, and have stated that further comment will be submitted upon receipt of the Draft Basic Assessment Report.

A copy of these comments has been included in Appendix E



## SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the 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 comments have been received since this is the Draft BAR however the Comments and Response Table will be included in Appendix E of the Final BAR.

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 as Appendix E to this report):

No comments have been received since this is the Draft BAR however the Comments and Response Table will be included in Appendix E of the Final BAR.

### 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

#### 2.1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

During the initial design phase, the applicant considered two design alternatives for where the bulk sewer pipeline crossed the watercourse:

1. Trenching
2. Piped Bridge

Trenching involved the excavation of an approximate 1 meter wide trench through the watercourse, diverting the flow of the water prior to work commencing. Direct disturbances to the watercourse would include the clearing of wetland and riparian vegetation, excavation of the trench and compaction of the wetland and riparian soils. A leak in the sewer pipeline is also more difficult to detect once the pipeline is under the watercourse. Indirect disturbances include erosion, sedimentation and alien plant encroachment.

Alternatively, the construction of the pipe bridge piers on either side of the watercourse will result in direct disturbance to the soils and vegetation within this area however it is a less invasive approach as the pipeline is located approximately 1 meter above the water with no trenching required (see layout in Appendix C). The pipeline will be encased in a mild steel sleeve and gabion baskets are used to support the river bank where the pipeline crossing occurs. Secondary impacts are similar to the trenching alternative.

The wetland specialist has recommended a number of mitigation measures which will reduce the significance of the impact to **low**. The piped bridge crossings are the preferred design alternative to reduce the direct impacts on the watercourse.

**2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE**

**Description Of Environmental Issues Identified, Assessment Of The Significance Of Each Issue And An Indication Of The Extent To Which The Issue Could Be Addressed By The Adoption Of Mitigation Measures [Regulation 22 (2) (i-k)].**

**a. Site alternatives**

List the potential impacts associated with site alternatives that are likely to occur during the construction phase:

**Alternative A1 and S1 (preferred alternative)**

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
<b>SOIL</b>										
Collapse and / erosion of stockpiled material (stone, sand and gravel).	Direct	Local	Construction phase (short-term)	Yes – can be managed.	No	Medium	High	Material must be stockpiled in such a way that it cannot fall or cause injury or damage to properties or the natural environment. Stockpiles must not exceed 2m in height and must be covered if exposed to heavy wind or rain. Stockpiles must not be located in close proximity to any streams or drainage lines and must not be allowed to erode into these features. Alternatively, low walls or berms must be constructed around the stockpiles. A site-specific Environmental Management Programme (EMPr) has been designed to manage construction activities (Appendix F).	Low	Low
The onsite erosion of exposed soil before rehabilitation is completed.	Direct	Local	Construction phase (short-term)	Yes – can be managed	No	Medium	High	As a general principle, contractors must limit vegetation clearing to the workable corridor/site along the pipelines only. The contractor must stabilise cleared areas to prevent and control erosion and/or sedimentation of the watercourses. Only vegetation	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								that needs to be removed to accommodate the proposed sewer infrastructure and pipelines must be removed in a phased and controlled manner. A site specific EMPr has been designed to manage construction activities and is attached under Appendix F.		
Risk of contamination to soil during cement mixing during toilet structure, pump station and pipe bridge construction.	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	High	High	Only minor cement mixing activities will be required but cement mixing must take place on a hard surface or cement mixing trays need to be used. Cement mixing must not be permitted to occur where run-off can enter stormwater drainage lines, floodplains or streams. Construction must be monitored by an independent ECO who must monitor compliance with the construction EMPr.	Low	Low
Compaction of the wetland vegetation and soils by heavy machinery involved in the excavations (Watercourse Impact Assessment, GCS).	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	High	High	The wetland specialist recommends that the number of watercourse crossings be minimised and that sewer pipeline crossings must be aligned parallel or near parallel to flow. A number of additional mitigation measures are listed on page 35 & 36 of the Watercourse Impact Assessment Report and include the clear demarcation of riparian/wetland areas and rehabilitation measures to be carried out once construction is complete.	Low	Low
<b>STORMWATER</b>										

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
Poor stormwater management during construction can lead to erosion and loss of soil.	Direct	Local	Construction phase (short-term)	Yes – can be prevented	No	Medium	High	Temporary stormwater control structures i.e. the use of Hessian bags, silt curtains etc., must be utilised during construction. Construction must be monitored by an independent ECO who must monitor compliance with the construction EMPr (Appendix F).	Low	Low
Risk of contamination of Stream Units, wetlands and drainage lines during cement mixing.	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No, however there is a potential for resources to be lost if the River is contaminated with cement.	Medium	High	Cement mixing must take place on a hard surface or cement mixing trays must be used for this purpose. Cement mixing must not be permitted to occur where run-off can enter stormwater drainage lines or streams. This must be controlled through an EMPr (Appendix F).	Low	Low
Washing of construction vehicles on site resulting in contamination of stormwater drainage lines and/or streams	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Medium	High	No vehicle washing must occur on site unless in a designated wash bay which must then be constructed. Wash bays must be installed with sand and grease traps if required on site.	Low	Low
<b>FLORA</b>										
Soil disturbance due to construction activities resulting in a proliferation of weeds.	Direct	Local	Llong-term	Yes – can be prevented.	No	Medium	High	Following completion of construction, an alien removal programme must be implemented. The site must be re-vegetated with indigenous vegetation. The top soil must be used for rehabilitating the site and must be kept free of alien vegetation.	Low	Low
Damage and	Direct	Local	Construction	Yes – can be	No	Low	Medium	The specialist has stated that "the	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
removal of indigenous vegetation during the construction of the pipe bridges, CAB platforms and pipeline trenches.			phase (short-term)	managed.				vegetation and habitats of the three streams drainage lines and associated riparian zones, were highly modified and transformed" however vegetation should only be cleared from the disturbed area where trenching is to take place. It is unlikely that a significant amount of indigenous vegetation will be removed. The disturbed area is to be rehabilitated with indigenous grass species with species such as <i>Dietes Grandiflora</i> being incorporated directly adjacent to the stream/tributaries.		
<b>FAUNA</b>										
Potential loss or disturbance to fauna present within the proposed site	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Low	Low	The proposed construction of the pipelines is a linear activity, in the form of a comparatively narrow pathway extending across the landscape. At the landscape level, the disturbance is relatively small. Due to human presence and the disturbed landscape, it is unlikely that fauna species exist in large numbers at these sites, however, contractors and staff must be trained to avoid impacts on fauna. This must be monitored with an EMPr (Appendix F).	Low	Low
<b>SENSITIVE ENVIRONMENTAL AREAS (i.e. watercourses)</b>										
Potential pollution and contamination of the seven	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Low	High	Pollution and contamination of the watercourses is to be avoided at all times. It is noted that the stream and	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
watercourses with cement and other hazardous materials used during construction.								wetland units as well as the drainage lines are highly degraded with alien vegetation dominating the landscape. Designated concrete mixing areas and storage areas for any hazardous materials must be assigned. These areas must not lie directly adjacent to the watercourses. Cement mixing is also not permitted in any area where runoff can enter the watercourses. Construction must be managed through the site specific EMP (Appendix F) and compliance must be monitored by an independent ECO.		
Erosion from vegetation clearing and exposure of bare soil to the elements resulting in sediment deposition within the drainage lines, wetlands and stream units during construction. In addition, excavation of trenches aligned parallel to flow will allow the trenches to act as conduits	Direct	Local	Construction phase (short-term)	Yes – can be prevented and managed.	No	Medium	High	Construction servitudes will need to be cleared and excavated in close proximity to the watercourses. Further erosion and sedimentation impacts associated with the proposed development will not be significant however should be reduced to minimise cumulative impacts as best practise. Recommended mitigation measures are listed on page 38 of the Watercourse Impact Assessment Report and include the establishment of berms, silt fences and erosion monitoring requirements. These have been included in the EMP.	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
for water flow (Watercourse Impact Assessment Report, GCS).										
Littering in/ adjacent to the watercourses, contributing to the degradation of the watercourses within the study site.	Direct	Local with the potential to impact regionally should the pollution wash down-stream.	Construction phase (short-term)	Yes – can be prevented and managed.	No	Medium	High	Illegal dumping is not permitted within the site and site staff must remove any waste and litter from the construction site at the end of each day.	Low	Low
Clearing and disturbance to the watercourse during the establishment of sewer pipes in close proximity to and crossing the watercourses (Watercourse Impact Assessment Report, GCS).	Direct	Local	Construction phase (short-term)	Yes – can be prevented and managed.	No	Medium	High	A number of pipeline crossing design and alignment recommendations were provided by the specialist as well as construction and rehabilitation recommendations for the bridged crossings (see pages 34 & 35 of the Watercourse Impact Assessment Report). These mitigation measures include the establishment of a buffer zone between the edge of the watercourse and the pipeline and rehabilitation techniques. These recommendations have been included in the attached EMPr under section 3.11.	Low	Low
<b>WASTE</b>										
Improper storage of hazardous	Direct	Local (within)	Construction phase	Yes impact can be prevented.	No	Medium	High	The wetland specialist has stated that “poor management of hazardous	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
waste i.e. used oil from vehicles, old cement bags etc.		constructi on site)	(short-term)					materials and waste will likely result in the contamination of soil and runoff ultimately polluting the Mlazi River” (Watercourse Impact Assessment Report, page 40). Hazardous waste must be temporarily stored on a hard surface within a bunded area of the site camp and must not be allowed to enter stormwater drains and the surrounding environment. All hazardous waste must be disposed of at an appropriate landfill site and all safe disposal certificates must be obtained and kept on site at all times. This must be monitored through an EMPr (Appendix F).		
Improper storage and disposal of general waste resulting in possible contamination of the surrounding environment.	Direct	Local	Construction phase (short-term)	Yes impact can be prevented.	No	Medium	High	All solid waste generated during the construction process must be placed in a designated waste collection area within the construction camp and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent to the skips / bins. All solid waste must be disposed of at the nearest licensed landfill and safe disposal certificates must be obtained and kept on site at all times during construction. The waste containers must be appropriate to the waste type contained therein and where necessary should be lined and covered. This must be managed through the site specific EMPr	Low	Low



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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								(Appendix F) and monitored by the ECO.		
Littering around the site.	Direct	Local	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Littering on the site should be kept to a minimum and general housekeeping must be enforced. General waste bins must be readily available for litter disposal and general housekeeping. The EMPr must be followed during construction.	Low	Low
Improper disposal of rubble i.e.: burying or neglecting building rubble resulting in direct mechanical damage to surrounding vegetation and untidiness of the site.	Direct	Local (within construction site)	Construction phase (short-term)	Yes impact can be managed	No	Medium	High	Building rubble is anticipated to be minimal however rubble can be temporarily stored on site in designated skips until it is ready for disposal. All excess material and rubble must be removed from the site so not to restrict the rehabilitation process. Any construction rubble produced must be disposed of at a designated landfill site.	Low	Low
Use of the bush and/ residents properties as toilets by contractors.	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Medium	High	Staff must be provided with chemical toilets. The toilet waste must be disposed of at an appropriate disposal site and safe disposal certificates must be obtained. The staff may not use the bush or residents properties as toilets. Workers must be briefed by the person in charge of managing construction activities on the do's and don'ts on the property, when workers arrive at the site. This must be	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								repeated in weekly toolbox talks and monitored through a site specific EMP (Appendix F).		
Improper disposal of toilet waste from chemical toilets resulting in contamination of the surrounding environment.	Direct	Local	Construction phase (short-term)	Yes – can be managed	No	Medium	High	Chemical toilets must be placed within the construction camp and not in close proximity to the stream units. The chemical toilets must be provided by a registered company and all effluent must be regularly disposed of at a licensed facility. Safe disposal certificates must be kept on record.	Low	Low
Increase waste to landfill site.	Cumulative	Regional	Construction phase (short-term)	Yes – can be managed	No	Low	High	Due to the nature of the activity, waste is anticipated to be minimal. Where possible, recycling of waste will take place to limit the amount of waste being added to the landfill site.	Low	Low
<b>HAZARDOUS CHEMICALS / FUELS</b>										
Risk of spills from construction equipment (oils, fuels, cement etc) contaminating soil and stormwater.	Direct	Local	Construction phase (short-term)	Yes – can be managed	No	Medium	High	Any construction equipment that could leak oil must be placed on a suitably sized drip tray. Stationary construction vehicles must have a drip tray placed beneath them and any oil leaks must be controlled and attended to over a drip tray. All equipment must be in good working order to reduce the likelihood of oil leaks occurring. Any re-fuelling of equipment must occur on a hardened surface, within a designated re-fuelling area where any spills can be contained. Construction must be monitored by an independent ECO must monitor compliance with the	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								construction EMPr.		
<b>NOISE</b>										
Noise generated by construction workers, machinery and construction vehicles disturbing surrounding residents.	Direct	Local (within construction site)	Construction phase (short-term)	Yes – can be managed	No	Medium	High	Excessive noise must be controlled on site. Workers will be trained regarding noise generation on site and construction hours will be kept to working hours (07h00 to 17h00).The construction activities will be monitored by an ECO who will ensure compliance with the construction EMPr. All precautions must be taken to ensure that noise generation is kept to a minimum. If excessive noise is expected during certain stages of the construction, nearby residents must be notified prior to the event.	Low	Low
<b>AIR QUALITY</b>										
Emissions generated from construction vehicles	Direct	Local	Construction phase (short-term)	Yes – can be managed	No	Low	High	The only emissions that will be generated will be from construction vehicles which will be minimal and is not expected to significantly affect the surrounding communities or the environment. Regular maintenance of construction vehicles must be undertaken to ensure they are good working order and thereby reducing the amount of emissions generating from vehicles.	Low	Low
Generation of dust being a nuisance to surrounding	Direct	Local	Construction phase (short-term)	Yes – can be managed	No	Medium	High	Emissions will only be generated from construction vehicles. Emissions will be minimal and not expected to significantly affect surrounding	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
residents.								communities. Dust control measures must however be implemented to ensure that excessive dust levels are not experienced on site. Measures to control dust generated during construction must be put controlled through the EMPr i.e. cleared surfaces to be replanted as soon as possible behind the working front or dampening of dirt access roads, stockpiles and cleared areas. The dust levels must be kept below the required SANBS standard to ensure minimal impact on the surrounding community and the environment.		
<b>RESOURCE USE &amp; CONSERVATION</b>										
Sourcing of raw materials i.e.: (gravel, stone, sand, cement and water) from unsustainable sources resulting in illegal sand mining and mining operations causing significant environmental damage.	Direct	Local (potential to become regional)	Construction phase (short-term)	Yes – can be managed	No	Low	High	All materials must be obtained from a registered and sustainable source and all delivery notes and slips must be made available to the ECO, where applicable. Municipal water will most likely be used for dust suppression however should water be extracted from the watercourse, the amount must not exceed 50 000 litres per day. If this limit is exceeded, a permit is required from DWA.	Low	Low
<b>TRAFFIC</b>										
Increased use of roads by construction	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Medium	High	Clear signs, flagmen and/ signals must be set up where necessary. Access to residential properties shall	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
vehicles increasing the risk of an accident.								be maintained and speed limits established. Where roads are used by children to reach school, vehicle traffic must be minimized during hours that children are travelling to and from school.		
Construction vehicles transporting materials to the lower reaches of the slope damaging existing foot paths/walkways.	Direct	Local	Construction phase (short-term)	Yes – can be prevented and reversed.	No	High	High	The engineers have stated that the terrain is too steep in most sections to construct vehicle access and therefore the pump station and toilet facilities will have to be accessed via concrete footpaths. The Contractor and applicant are to ensure that all walkways disturbed by construction activities are restored back to the original state or improved for the local community to utilise.	Low	Low
<b>SOCIO-ECONOMIC</b>										
Interruption or damage to services (electricity, water etc.).	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Low	High	This impact can be fully mitigated against by identifying services prior to construction and avoiding damage to existing services. Alternatively, if service disruption is unavoidable, the parties affected must be notified in advance. A site-specific EMPr has been designed to manage construction activities (Appendix F).	Low	Low
Damage to surrounding neighbours' properties i.e. houses, fence lines, crops,	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Medium	High	Surrounding neighbours must be consulted prior to construction to discuss the construction process and potential impacts on nearby properties, as well as opportunities regarding employment. Should	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
gardens and accesses.								unplanned impacts occur, the contractor will be responsible for the necessary repairs.		
Safety of construction workers and local community members in close proximity to the trenches.	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Medium	High	Construction workers must be made aware of these areas where safety may be a concern (i.e. open trenches). Open trenches must be clearly demarcated during the day and night. Contractors must ensure that all workers are made aware of the associated dangers through an awareness / weekly toolbox training programme. This must be monitored through a site specific EMPr (Appendix F).	Low	Low
Positive impact. Potential temporary employment during construction.	Direct	Local	Construction phase (short-term)	Positive impact no mitigation required. Skilled local community members may be granted employment during the construction phase.						
<b>CULTURAL</b>										
Potential unearthing and damage to items of cultural or historical significance	Direct	Local	Construction phase (short-term)	Yes – can be managed.	No	Low	High	If any item of cultural or historical significance are discovered construction must cease immediately and AMAFA must be contacted. Construction should then cease until further notice. Staff must be made aware of what archaeological objects of significance may look like, e.g. pottery, etc.	Low	Low

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### No-Go Alternative:

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
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#### IMPACTS OF THE NO-GO OPTION

There will be no construction impacts. Residents and households in this area will continue to have limited access to waterborne sewerage connections and will be exposed to unsanitary conditions with a high risk of infection by excreta-related diseases.

**2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE**

**Alternative A1 and S1 (preferred alternative)**

List the potential impacts associated with site alternatives that are likely to occur during the operational phase:

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
Subsiding of the pipeline resulting in contamination of the drainage lines and stream units including the surrounding area.	Direct	Local with the potential for a regional impact should contamination occur.	Short – term	Yes – can be prevented and managed.	No	Medium	High	Pipelines have the potential to subside especially at the stream and drainage line edges. The pipeline must be regularly inspected as part of a maintenance/ inspection procedure to ensure 100% integrity of the structure. eThekweni Water and Sanitation (EWS) employ and train a local community member to be a “caretaker” for the toilet blocks. The caretaker is responsible for operation maintenance and general up keep. The caretaker is to inform EWS of any maintenance issues.	Low	Low
The potential for leakages at joints and manhole connections resulting in soil / groundwater contamination due to development of cracks in the pipelines.	Direct	Local with the potential for a regional impact should contamination occur.	Long – term	Yes – can be prevented and managed.	No	Medium	High	It is anticipated that pipelines will develop cracks over time and this will be accelerated if the pH is above 10 or less than 7. It is recommended that a maintenance procedure be implemented to ensure that the pipelines are checked on a regular basis. Should any cracks be identified, the portion of pipe must be immediately replaced to ensure that there is no surface or groundwater contamination. The pipeline must be designed as per engineering	Low	Low



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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								specifications. The pipeline must be constructed according to the relevant SABS standards. Should any cracks be identified, it is recommended that a groundwater study be conducted to determine if there has been any contamination.		
Potential blockage increasing the risk of spillages along the pipe as well as manhole overflow.	Direct	Local	Long - term	Yes – can be prevented.	No	High	High	The caretaker is to inform EWS of any operational maintenance. The area around any proposed manholes which are constructed within close proximity to the stream units should be shaped so as to produce a wise, saucer-shaped depression, up to 15m in diameter, in which sewage overflow might collect. The maintenance programme must specify the frequency and timing of manhole inspections, aimed at identifying and clearing up material deposited during overflow events. Ablution facilities must also be included in the maintenance programme and must be regularly inspected for blockages and leaks. An abluion maintenance team must be set-up using local labour.	Low	Low
Spill of raw sewage resulting in eutrophication of stagnant pools onsite or downstream,	Indirect	Local	Long - term	Yes – can be prevented.	No	High	High	Given the current state of the watercourse, the specialist rated this impact to have moderately-low significance. The specialist lists a number of mitigation measures to reduce the significance of the impact	Low	Low

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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
degradation of the local in-stream habitat, domination of particular floral species, dieback of floral and faunal species increase the competitive advantage of alien species (Watercourse Impact Assessment Report, GCS).								further (page 43 of the Watercourse Impact Assessment Report). For example, measures to reduce the risk of surcharging sewer manholes onsite and downstream and the employment of a caretaker to monitor the pipeline and report any leaks to EWS. These measures have been incorporated into the EMPr.		
Infrastructure failure associated with the pump station and emergency storage facilities (Watercourse Impact Assessment Report, GCS).	Indirect	Local	Long - term	Yes – can be prevented.	No	High	High	Recommended mitigation measures are provided on page 43 of the Watercourse Impact Assessment Report and have been included in the attached EMPr. Measures include a 24 hour emergency storage capacity for the proposed pump station and the construction of gully traps etc.	Low	Low
Cumulative degeneration in the integrity and ecosystem functioning of the local freshwater systems of the	Indirect	Regional	Long - term	Yes – can be prevented and managed.	No	High	High	The significance of this impact was assessed as being medium-low and acceptable but undesirable. Successful implementation of recommendations on page 43 of the Watercourse Impact Assessment Report, will reduce the potential	Low	Low

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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
Mlazi River over time (Watercourse Impact Assessment Report, GCS).								impact to acceptable levels. The recommendations have been included in the attached EMPr.		
Erosion of surrounding areas due to increase in stormwater from toilet platform sites. Runoff generated will likely follow existing erosion rills and gullies onsite or create new ones (Watercourse Impact Assessment Report, GCS).	Indirect	Local	Operational phase (long term)	Yes – can be managed.	No	High	Medium	The wetland specialist rates this impact as having a low significance, provided that the mitigation measures, listed on page 43 of the report, are adhered to. These have been included in the attached EMPr. Stormwater control measures will need to be implemented prior to the completion of the construction (stabilisation of Stream Unit banks, gabions etc.).	Low	Low
Potential increase in volume of waste (sludge) sent to the South Durban Waste Water Treatment Works (WWTW).	Direct (Cumulative)	Regional	Operational phase (long term)	Yes – can be provided for.	No	High	Medium	There will be an increase in the amount of sludge directed to the South Durban WWTW however there is enough capacity to handle the increase (see proof of capacity in Appendix G).		
Flow channelisation as a secondary impact resulting from the	Direct	Local with the potential to impact regionally	Operational phase (long-term)	Yes – can be prevented and managed.	No	Medium	High	A number of pipeline crossing design and alignment recommendations were provided by the specialist as well as construction and rehabilitation recommendations for the bridged	Low	Low

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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
construction of the pipe bridge piers (Watercourse Impact Assessment Report, GCS).		should erosion exasperate.						crossings (see pages 34 & 35 of the Watercourse Impact Assessment Report). These recommendations have been included in the attached EMPr under section 3.11. Provided that these recommendations are adhered to, the direct disturbance impacts have been rated to have "medium-low significance" and "acceptable".		
<b>Positive Impact.</b> Local community households connection to waterborne sewerage.	Direct	Local	Long - term	Positive impact, no mitigation required. The result of the infrastructure provision is the reduced exposure to unsanitary conditions and a decrease in potential infection by excreta-related diseases.						
<b>Positive Impact.</b> Reduced risk to the catchment due to the containment of existing raw sewage.	Indirect	Regional	Long – term	Positive impact, no mitigation required.						
<b>Positive Impact.</b> Improved service delivery to areas in the uMlazi informal settlement.	Direct	Local	Long – term	Positive impact, no mitigation required.						
<b>Positive Impact.</b> Improvements in the living conditions and	Direct	Local	Long – term	Positive impact, no mitigation required.						

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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
standards for the local community through the installation of waterborne sewerage system.										
<b>Positive impact.</b> Upgrading of the currently steep, eroded walkways from the upper sections to the bottom of the bank,	Direct	Local	Construction phase (short-term)	Positive impact no mitigation required. Skilled local community members may be granted employment during the construction phase.						

**No-Go Alternative:**

IMPACTS OF THE NO-GO OPTION										
Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
Potential for raw sewage to continue to flow from informal toilets polluting the watercourse.	Direct	Regional	Long – term	Yes – can be prevented and managed.	No	High	High	By providing formal sanitation facilities to this area of the informal settlement, the raw sewage entering the watercourse will be reduced.	Medium	Low
Continual establishment and growth of weeds along the riparian zone.	Indirect	Local	Long – term	Yes – can be managed.	No	High	Low	Alien vegetation and weeds are required to be removed during construction activities should the formalisation of the ablution facilities be approved. While the proposed	Low	Low

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								activity will not eradicate the alien vegetation completely, there is an opportunity to establish indigenous grasses along the stream units.		
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### 2.4. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING OR CLOSURE PHASE

The prefabricated ablution facilities are temporary solutions to the sanitation requirements of the community in the area and are intended to be decommissioned at a later stage when formal housing developments are implemented in the area. The pipelines are highly unlikely to be decommissioned. The ablution facilities will be decommissioned in the future should the system be converted to a full water borne sewage system.

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
Potential contamination of the wetland, stream units and drainage lines with raw sewage.	Direct	Local	Short – term	Yes – can be managed.	No	Medium	High	It must be ensured that that all pipes and ablution facilities are pumped empty prior to decommissioning. When removing the ablution facilities and pipes, any spills or leaks must be immediately cleaned up. All piping leading to the abluitions must be carefully removed if necessary, ensuring that the material contained in the pipes is not allowed to leak or enter watercourses. All trenches along the pipes must be covered. If the tanks or pipes have to be washed prior to removal, the wastewater must be treated as contaminated.	Low	Low
If any tanks are not completely emptied prior to decommissioning there is potential for sewage to	Direct	Local	Short – term	Yes – can be prevented.	No	Medium	High	The tanks and pipelines must be pumped empty by an approved contractor prior to decommissioning.	Low	Low

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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
contaminate soil and nearby water resources.										
Potential contamination of the wetland, stream units or drainage lines with rubble and waste.	Direct	Local	Short – term	Yes – can be prevented.	No	Medium	High	Rubble can be temporarily stored on site in a designated skip until it is ready for disposal. All excess material and rubble must be removed from the site so not to restrict the rehabilitation process. Any rubble produced must be disposed of at a designated landfill site. This must be monitored through a site specific decommissioning EMPr.	Low	Low
Decommissioning activities causing erosion near the wetland, stream units or drainage lines.	Direct	Local	Short – term	Yes – can be prevented.	No	Medium	High	Temporary erosion control measures must be implemented to prevent erosion to any watercourse during decommissioning. All exposed areas resulting from decommissioning activities must be rehabilitated with indigenous vegetation to prevent potential erosion on the exposed areas. Decommissioning must be managed with an EMPr that has been designed specifically for the site. A site specific EMPr must be designed to guide the decommissioning process should decommissioning need to occur.	Low	Low
The onsite erosion of exposed soil before rehabilitation is	Direct	Local	Short – term	Yes – can be prevented.	No	Medium	High	As a general principle, contractors must limit vegetation clearing to the workable corridor/site along the pipelines only. The contractor must stabilise cleared areas to prevent and	Low	Low

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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
completed.								control erosion and/or sedimentation. Only vegetation that needs to be removed to accommodate the decommissioning must be removed in a phased and controlled manner.		
Poor stormwater management during decommissioning can lead to erosion and loss of soil.	Direct	Local	Short – term	Yes – can be managed.	No	Medium	High	Temporary stormwater structures i.e. the use of Hessian bags etc. must be utilised during decommissioning. Decommissioning must be monitored by an independent ECO who must monitor compliance with the decommissioning EMPr	Low	Low
Local community households will no longer be connected to waterborne sewerage resulting again in exposure to unsanitary conditions and an increase in potential for infection by excreta-related diseases.	Direct	Local	Long – term	No	No	High	Low	Local community households will again have no waterborne sewage connections in close proximity resulting in community members again being exposed to potential disease, infection and unsanitary conditions. This impact cannot be mitigated against.	High	High
Direct impacts on the drainage lines and streams by community members.	Direct	Local with the potential to impact regionally.	Long – term	No	No	High	Low	With no waterborne sewage, community members will again be forced to use alternative forms of effluent disposal resulting in further potential for contamination of watercourses and the surrounding	High	Medium



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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								environment by raw sewage. There is no mitigation measure in this respect.		
Risk of spills from equipment (oils, fuels etc.) contaminating soil and stormwater.	Direct	Local	Short – term	Yes – can be managed.	No	Medium	High	Any demolition equipment that could leak oil must be placed on a drip tray. Construction vehicles must have a drip tray and any oil leaks must be attended to over a drip tray. All equipment must be in good working order to reduce the likelihood of oil leaks occurring. Any re-fuelling of equipment must occur on a hardened surface, within a designated re-fuelling area where any spills can be contained.	Low	Low

## 2.5. PROPOSED MONITORING AND AUDITING

For each phase of the project and for each alternative, please indicate how identified impacts and mitigation will be monitored and/or audited.

### Alternative A1 and S1 (preferred site)

**Construction phase:** It is recommended that monitoring be done through monthly environmental construction audits ensuring compliance with an Environmental Management Programme (EMPr). An independent ECO must be appointed to undertake this monitoring process.

**Operation phase:** The applicant must ensure inspections and scheduled maintenance of infrastructure. A Post Construction Audit (PCA) must be undertaken by the ECO to ensure the EMPr requirements have been met. It is further recommended that a second PCA take place 3/4 months after rehabilitation to monitor the efficiency of the rehabilitation and erosion control.

### Assumptions, Uncertainties and Gaps in Knowledge [Regulation 22 (2) (m)]

There are no uncertainties or gaps in the information provided and the EAP is confident that sufficient information has been provided to allow an assessment of the proposal.

## 3. ENVIRONMENTAL IMPACT STATEMENT

### Environmental impact statement with a reasoned opinion as to whether the activity should be authorised or not be authorized; [Regulation 22 (2) (n)]

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.

It is the opinion of the EAP that the application submitted for the proposed sewer and water reticulation infrastructure (Alternative S1 and A1) be approved. Wetland specialist recommendations have been incorporated into the Environmental Management Programme (EMPr), which is to be strictly adhered to during construction, the proposal would result in insignificant environmental impacts. The activity would have a positive social impact on the local community by providing them access to formal sanitation facilities and reducing their exposure to unsanitary conditions that are currently experienced in the area. Employment opportunities for construction and maintenance of the pipelines within the local community will also benefit this area.

### Alternative A1 and S1 (preferred alternative)

As part of the "Provision of Water and Sanitation to Informal Settlements within eThekweni Municipality", EWS propose to construct ablution facilities, as well as water and sewer connections to serve the communities immediate needs. The proposed laid pipes will tie-into existing reticulation and will provide future reticulation when the area is developed.

This application has assessed the construction of a number of pipelines, CAB platforms and a pump station within a section of uMlazi E and V which are located within 32m of the Mlazi River and associated drainage lines. The bulk sewer pipeline crosses three stream units via the use of pipe bridges.

All potential impacts that may occur during the construction and operational phase of the pipeline have been identified in Section E above and key impacts and mitigation measures are discussed below.

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The main construction impacts identified relate to the potential contamination of the watercourses through poor construction practises, lack of stormwater management and increased risk of erosion. The EMPr has been designed to mitigate pollution/contamination and should be constantly obeyed by the contractor to ensure pollution is avoided. Temporary stormwater and erosion controls must be implemented in areas susceptible to erosion (see sections 3.4 and 3.10 of the attached EMPr). Rehabilitation of disturbed areas must also be undertaken to further ensure the stability of cleared areas to prevent potential erosion and sedimentation of the stream units.

A Watercourse Impact Assessment Report was undertaken by GCS Water and Environmental Consultants and is summarised in Section C above with the full report available in Appendix D. The wetland specialist acknowledged the degraded state of the stream units and associated vegetation however a number of site specific recommendations were made by the specialists which must be adhered to throughout the construction process. These have been incorporated into the attached EMPr. Recommendations were also taken into account during the design phase with the number of water crossings being reduced as well as the crossing technique being designed to avoid trenching. CAB sites were also relocated to avoid watercourse crossings and increase the buffer area between the construction footprint and the watercourse habitat.

In terms of the operational phase of the proposed activity, rehabilitation measures must be implemented upon completion of the construction activities. This will ensure that stream units and drainage line bank stability is maintained and that sedimentation of the stream units does not occur. The operational phase will have positive impacts for the community members as they will have access to formal sewage and ablution facilities enhancing living conditions in this area. Regular maintenance and monitoring of the pipelines and ablution facilities must be undertaken to identify and prevent any potential spills/damage to pipelines and thereby the surrounding environment during the operational phase.

The construction and operational phase of the proposed development is also anticipated to provide employment to members of the community members thus assisting in poverty reduction in this area as well as benefiting the community's health and safety.

The EMPr produced for this development is attached under Appendix F and includes methods and protocol to be followed by each of the parties involved during the construction phase (including wetland specialist recommendations). It is envisaged that, provided the EMPr is strictly adhered to during the construction process, it is not expected that the proposal will have significant impacts on the environment. In conclusion, if all the suggested mitigation methods outlined in this report are followed, then impacts can be rated as low.

### **Alternative A2 and S1**

While the potential impacts will be similar to those listed in Section E, the increased number of water crossings, would result in a greater likelihood for spills to occur in the close vicinity of the watercourses. Trenching across the watercourses would also result in direct disturbance to the Stream Units and associated in-stream habitats. The layout provided for Alternative A1 and S1 above, is an approved amendment to Alternative A2 and S1.

### **No-go alternative (compulsory)**

The 'No-Go' alternative (i.e. not upgrading the sanitation facilities in the uMlazi area) will lead to the primary goal of providing sewer connections to toilet blocks in the informal settlement within eThekweni Municipality not being met. The significance of this is that the local community members will be forced to continue to use other forms of informal ablution facilities and would thus continue to be exposed to unsanitary conditions and potential excreta-related disease. While the risk of leaking sewerage pipelines would not be an impact for the no-go alternative, the watercourse would continue to receive raw sewage from the informal facilities currently in use.

It is also expected that no new employment opportunities will be created for local residents during construction and operation.

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### SECTION F. RECOMMENDATION OF EAP

Is the information contained in this report and the documentation attached hereto in the view of the EAPs sufficient to make a decision in respect of this report?

YES	NO
X	

If "NO", please contact the KZN Department of Agriculture & Environmental Affairs regarding the further requirements for your report. **N/A**

If "YES", please attach the draft EMPr as Appendix F to this report and 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:

1. It is recommended that alternative A1 and S1 (i.e. formalisation of ablution facilities in uMlazi E and V) be accepted from environmental and social perspective.
2. The applicant must ensure that mitigation measures and controls specified in the EMPr are adhered to. The construction of the pipelines and ablution facilities must be monitored by an independent ECO who should ensure compliance with the construction EMPr.
3. It is recommended that environmental construction audits be conducted on a monthly basis. In addition a pre-construction audit and post-construction audit (PCA) must be conducted. A second PCA must take place 3/4 months after rehabilitation to monitor the efficiency of the rehabilitation and erosion control.
4. The contractor and his staff must attend an environmental awareness training course, presented by the site engineer or a suitably qualified EO from the engineers / contractors, prior to construction commencing. The environmental awareness training course should cover the following key aspects: (a) basic awareness and understanding of key environmental features of the work site and the surrounding environment, (b) understanding the importance of, and reasons why, the environment must be protected, (c) ways to minimize environmental impacts, and (d) requirements of the Environmental Authorisation and EMPr. The EAP must be on hand to aid with any environmentally-based questions.
5. Construction activities must comply with designated working hours and surrounding residents must be informed prior to commencement of construction activities.
6. Emergency contact numbers must be placed at each construction site.
7. Adequate chemical toilet facilities must be provided for all staff members as standard construction practice. The chemical toilets must be from a registered company and all sewage must be disposed of at an appropriate facility. Safe disposal certificates must be kept on record.
8. Existing infrastructure (i.e. electricity lines, water pipelines) must be identified prior to construction. Any costs associated with negative impacts to these services must be borne by the applicant and should the need arise to disrupt these services for any reason, the relevant authority must be contacted for permission and details of the disruption must be communicated to the affected residents.
9. As there are no formal stormwater drainage facilities on site, the contractor must prepare a Stormwater Control Method Statement (MS) to ensure that all construction methods adopted on site do not cause, or precipitate, soil erosion. The designated responsible person on site, as indicated in the Stormwater MS (usually the contractor) should ensure that no construction work takes place before the stormwater control measures are in place. The Stormwater MS must be submitted to the ECO prior to implementation.
10. The duration of exposed soil must be kept to a minimum and rehabilitation of the disturbed area must be initiated as soon as construction is completed.
11. Materials must be stockpiled in appropriate areas where storm water runoff cannot erode into the stockpile.
12. Dust control must be implemented throughout the construction phase.
13. Any alien vegetation found within the construction site must be cleared to ensure that invasion of disturbed areas does not occur.
14. Cement mixing must take place on a hard surface or on cement mixing trays. Cement mixing will not be

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- permitted to occur where run off can enter the watercourses. In addition cement and fuels must be stored within bunded and hard surfaced areas. If the creation of a permanent bunded area is not feasible, these materials must be stored on drip trays capable of holding at least 110% of the spilled volume.
15. Littering must not be permitted on the site and general housekeeping must be enforced.
  16. Waste must be stored in the bins within the waste collection area in the construction camp and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent to the skips / bins and must be disposed of at an appropriate land fill site.
  17. Hazardous waste must be stored on a hard surface within a bunded area and must not be allowed to enter watercourses and the surrounding environment.
  18. All excess material and rubble must be removed from the site so as not to restrict the rehabilitation process. All excess material and rubble must go to an approved, designated landfill and a safe disposal certificate must be obtained.
  19. Recycling should be undertaken where possible to limit waste added to the landfill site.
  20. The watercourse may not be used as a water source by staff unless water abstraction is approved and permitted by DWA.
  21. A spill response procedure must be designed to manage spills during construction. Suitable spill kits must be available and staff must be made aware of the spill response procedure.
  22. In the event of Heritage resources or artefacts being uncovered during construction, activities around the site must cease immediately and AMAFA must be contacted to investigate the findings.
  23. A maintenance plan for the operational phase of the development must be drawn up to monitor and identify any potential spills or leaks along the pipeline or at the ablution facilities.
  24. All mitigation measures outlined in the method statement for pipeline construction across the watercourse must be adhered to.
  25. Piped bridges are to be used where the pipeline crosses the watercourses.
  26. Pipe bridges must have means to discourage pedestrian use or be strong and safe enough to such use.
  27. Work carried out within drainage lines should be done with care to avoid environmental damage.

**SECTION G: 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

Appendix E: Comments and responses report

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information

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### **Appendix A – Site Plan(s)**

- Topographical Map indicating the proposed site and adjacent land uses.
- GIS Map illustrating affected land portions.
- Aerial image indicating current land use, environmental features and existing services.
- Aerial Photograph showing the contour intervals.
- Aerial photo showing location of photographs in Appendix B.

**Appendix B – Site Photographs**



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### **Appendix C – Facility Illustration(s)**

- Proposed Layout of Alternative A1 and S1 (preferred alternative)
- Proposed Layout of Alternative A2 and S1
- Typical River Crossing
- Bank Lateral Support Drawing
- Prefabricated Toilet Layout
- Pump Station Layout

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### **Appendix D – Specialist Reports**

- Proposed Mlazi WP 89 V5-7 Sanitation Project: Watercourse Impact Assessment Report (GCS Water and Environmental Consultants, March 2014).

**Appendix E –Comments and Responses Report**

**Appendix F – Draft Environmental Management Programme**

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### Appendix G – Other Information

#### Public Participation Process

- Signboards
- Notification of Landowner
- Notification of Authorities
- Newspaper adverts
- Distribution of BID and BID
- Registered I & APs
- Notification of release of Draft BAR (To be included in Final BAR)

#### Additional generic Information about the project

#### DWA General Authorisation