agriculture
& environmental affairs

Department:
Agriculture
& Environmental Affairs
PROVINCE OF KWAZULU-NATAL

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EIA File Reference Number:	**DM/0056/2013**
NEAS Reference Number:	KZN/EIA/
Waste Management Licence Number: (if applicable)	
Date Received:	

BASIC ASSESSMENT REPORT:

THE CONSTRUCTION OF GEORGEDALE AND SURROUNDS BULK SEWER INFRASTRUCTURE, ETHEKWINI METRO MUNICIPALITY, KWAZULU-NATAL.

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 1or 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.
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).**

DEPARTMENTAL REFERENCE NUMBER(S)

File reference number (EIA):	**DM/0056/2013**
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:	**Jeffares and Green (Pty) Ltd**		
Physical address:	**6 Pin Oak Avenue, Hilton**		
Postal address:	**PO Box 794, Hilton**		
Postal code:	**3245**	**Cell:**	**076 157 9602**
Telephone:	**033 343 6789**	**Fax:**	**033 343 6788**
E-mail:	**summersi@jgi.co.za**		

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)
Magnus van Rooyen	**BSc Hons; MPhil (Env. Man.)**	**$IAIA_{SA}$**	**9.5 Years**
Imke Summers	**BSc (Honours)**	**$IAIA_{SA}$**	**2.5 Years**

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
Frans Prins	**MA (Archaeology)**	**Heritage Assessments**	**Section C, Number 6**	**Phase One Heritage Impact Assessment of the proposed Georgedale and Surrounds Bulk Sewer Infrastructure, eThekweni**

				Metro Municipality.
Peter Kimberg	**B.Sc Honours |**	**Aquatic and Wetland Assessment**	**Section C, Number 2**	**Aquatic & Wetland Assessment Associated with Rural Infrastructure Development Project – eThekwini Metro Area**
Jake Alletson	**BSc (Biological Science) BSc Hons (Zoology)**	**Ecological Scientist**	**Section C, Number 4**	**Consideration of Possible Environmental Impacts which might arise out of the proposed Provision of New Sanitation Services to Georgedale and Surrounding Areas, Ethekwini Metro Area**
Nithesh Ramdayal	**BSc (Geol.), BSc (Hons.)**	**Engineering Geology**	**Section C, Number 3**	**This section was completed at a desktop level and thus no report is attached in Appendix D.**

SECTION B: ACTIVITY INFORMATION

1. PROJECT TITLE

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

The construction of Georgedale and Surrounds Bulk Sewer Infrastructure, eThekwini Metro Municipality, KwaZulu-Natal.

2. PROJECT DESCRIPTION

Provide a detailed description of the project:

As part of the "Provision of Water and Sanitation to Informal Settlements within eThekwini Municipality", certain priority informal settlements were identified within the eThekwini Municipality that urgently need ablution blocks, as well as water and sewer connections to serve the communities' immediate needs. eThekwini Municipality Water and Sanitation Department are thus applying for the provision of bulk sewer and sanitation services within the greater eThekwini area. This Application applies specifically to the regions of Georgedale, Minitown, Sankotshe, Mophela, Zibuse, Mpuma and Cliffdale School Station (referred to collectively as Georgedale) in the vicinity of Hammersdale. The proposed laid pipes (sewer) will tie into existing reticulation and will provide future reticulation when the area is developed and upgraded to formal housing.

Scope of Works:

The proposed scope of works entails the construction of Container Ablution Blocks (CAB's) and the associated bulk and connector sewer infrastructure. The container ablution facilities will be located based on a shared catchment area, existing infrastructure tie-in points and drainage to existing common waste water treatment works. The sewer lines are located along the simplest routes, governed by gravity, the position of existing facilities into which infrastructure will tie in, and the avoidance of major obstructions. Sewer lines are proposed to be buried underground and will, to a large extent, run adjacent to watercourses. In some instances river crossings will be required. For this reason, a Water Use Licence is being applied for in conjunction with the NEMA Application.

The ablution facility type chosen by Council to be installed is a temporary modified container containing toilets, urinals, showers, basins, a store room, external wash trough and standpipe. 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" block should service approximately 50-75 households and be a maximum distance of 250m from any house serviced. Due to varied population densities and settlement sizes, some settlements will be provided with more CAB's than others:
Georgedale: +- 54 CAB's
Zibuse: +- 9 CAB's
Minitown: +- 11 CAB's
Mpuma: +- 24 CAB's
Sankotshe: +- 42 CAB's
Mophela: +- 35 CAB's
Cliffdale School Station: +- 17 CAB's

In total, approximately 36km of pipeline will be placed, with diameters ranging from 160-450mm. Please see Appendix G for specific details on pipe lengths and diameters associated with the specific settlements.

The scheme is predominantly a gravity dependent scheme and takes advantage of natural gradients and landforms. However, in some instances, pump stations will have to be constructed. Approximately 6 pump stations are situated throughout the entire scheme. Each pump station will have two pumps; the functioning pump and a standby pump, in the event that the functioning pump fails. The scheme will also have two rising main pipes from each pump station to the gravity main so that a standby pipe is always available in the instance that there is a blockage/burst etc. along the functioning rising main. Agreements are recommended to be put into place with the CAB cleaners and community members to ensure that any overflows/blockages/leaks along the lines, at manholes etc. are reported to the Municipality and fixed as quickly as possible.

Due to the varied and often precipitous nature of the surrounding land, the pipelines traverse a number of watercourses and drainage lines. Wherever possible, the layout has been placed outside of the prescribed 32m watercourse buffer. However some crossings are unavoidable; a Water Use Licence Application (WULA) is being applied for in this regard. In addition, these sites have been assessed by a Specialist, and recommendations have been made where necessary.

Planning and Pre-construction Phase:
Informal settlements to be serviced within this scope are prioritised by the eThekwini Human Settlements Department. Should the settlement be identified as being appropriate within the project scope, the Design Consultant identifies the possible locations of the ablution facilities, taking into account minimising future water reticulation which may promote illegal connections by placing them on the boundary of the settlement as far as possible and ensuring a maximum walking distance of approximately 250m per ablution facility. Ideally one facility is required per 50 – 75 households. A further requirement is that of placing the ablution facility at the low point of the settlement where possible, as this is the point from which sewer reticulation to individual dwellings may be provided in the future.[1] Community facilitation is then undertaken by eThekwini Waste Services (EWS) Liaison Officers to confirm the suitable location of the CAB's. [The community consultation regarding the locality of the CAB's is presently being undertaken. As such the locations of the CABs and CAB connectors may change following the consultation. However it is to be noted that the CABs will NOT located within the DMOSS, or within 32m of wetlands etc. As such it is requested that a blanket authorisation within 200m of the current locality of the CABs be provided to make provision for the relocation of the CABs on the community's request.]

Post construction phase:
Once operational, EWS Liaison Officers will ensure that a caretaker is employed to oversee the ablution facilities. This caretaker is nominated from the community and undergoes training on the functions of a caretaker and general health issues. The caretaker receives all necessary cleaning materials and is issued with toilet paper for the ablution facilities. The monitoring of the caretakers is done by EWS Supervisors, who report back to management as to any issues found on site, to ensure any necessary action is taken. EWS Waste Water Network Branch is the custodian of the ablution facilities, performing and monitoring all maintenance.

3. ACTIVITY DESCRIPTION

Describe each listed activity in Listing Notice 1 (GNR 544, 18 June2010), Listing Notice 3 (GNR 546, 18June 2010) or Category A of GN 718, 3 July 2009 (Waste Management Activities) which is being applied for as per the project description:

[1] Alan Kee, 2014: *Provision of Water and Sanitation to Informal Settlements within eThekwini Municipality - Phase 2: Application for Environmental Authorisation by eThekwini Water and Sanitation*. eThekwini Metropolitan Municipality: Water and Sanitation.

GN. R 544 (18 June 2010)	**9 (i)**	**The construction of the bulk sewer infrastructure for Georgedale and the surrounds entails the construction of infrastructure exceeding 1000m in length with an internal diameter exceeding 0.36metres or more. As such, the following applies:** ***"The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water –*** ***(i) with an internal diameter of 0,36 metres or more".***
GN No 544 (18 June 2010)	**11 (xi)**	**The Georgedale and surrounds area is topographically characterised by ridges and valleys through which a number of watercourses run. As such, a number of watercourse crossing will have to be constructed. Construction within watercourses and within 32 meters of a watercourse will have a cumulative footprint in excess of 50 square metres. As such, the following applies:** ***"The construction of:*** ***(xi) infrastructure or structures covering 50 square metres or more*** ***where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line."***
GN No 544 (18 June 2010)	**18 (i)**	**The construction of infrastructure for watercourse crossings will result in a cumulative removal/dredging/excavation of material in excess of 5 cubic metres. As such, the following applies:** ***"The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal of moving of soil, sand, shells, shell grit, pebbles or rock more than 5 cubic metres from –*** ***(i) a watercourse".***
GN No R546 (18 June 2010)	**16 (iv), (a), (ii): (dd), (ff), and (hh)**	**The proposed pipeline and associated crossings may fall within close proximity to D'MOSS listed areas, thus triggering the below listed activity:** ***"The construction of: (iv) infrastructure covering 10 square metres or more, where such construction occurs within a watercourse of within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.*** ***(a) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga and Northern Cape:***

		ii. Outside urban areas, in: ***(dd) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority;*** ***(ff) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;*** ***(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve".***

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.

Preferred Layout (A1)	**This application relates specifically to the need to provide sanitation services to targeted settlements. The preferred layouts which have been provided are considered to be the best practicable layouts and are located within key areas which are based on a shared catchment area, existing infrastructure tie-in points and drainage to existing common waste water treatment works and were produced through consultation with the Environmental Planning & Climate Protection Department EPCPD, the EAP and the Engineering team as well as specialist engineering and environmental input.**
Alternate Layout (A2)*	**The alternative layouts provided are those that were produced at the commencement of the engineering design process and thus were not produced through a consultative process, as mentioned above. The alternate layouts do not take into account environmental considerations and are therefore not recommended.**

Property Location and Activity	**The property locations are based on the need to provide sanitation services to specific settlements which are defined and prioritised by the eThekwini Human Settlements Department.**
Operational Alternative	**An operational alternative has not been considered as the option considered is the only and ultimate way to reach the intended services objective.**
No-Go Alternative	**A no-go alternative has been included.**

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:	**Latitude (S):**			**Longitude (E):**		
Alternative S1[2] (preferred or only site alternative)	0	‘	“	0	‘	“
Alternative S2 (if any)	0	‘	“	0	‘	“
Alternative S3 (if any)	0	‘	“	0	‘	“

In the case of linear activities:

Alternative:	**Latitude (S):**			**Longitude (E):**		
Alternative S1 (preferred or only route alternative)	* ***Please See Appendix G for a comprehensive list of co-ordinates for the CAB’s, CAB sewer lines, bulk mains and pump stations.**					
Alternative S2 (if any)			“			“
• Starting point of the activity	0	‘	“	0	‘	“
• Middle point of the activity	0	‘	“	0	‘	“
• End point of the activity	0	‘	“	0	‘	“
Alternative S3 (if any)			“			“
• Starting point of the activity	0	‘	“	0	‘	“
• Middle point of the activity	0	‘	“	0	‘	“
• End point of the activity	0	‘	“	0	‘	“

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

[2] “Alternative S..” refer to site alternatives.

6. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	**Size of the activity/settlement:**
Alternative A1[3] (preferred activity alternative)	**Approximate value in m²**
Mpuma	**2 581 901.65 m²**
Cliffdale	**2 601 426.38 m²**
Georgedale	**2 003 465.02 m²**
Minitown/Georgedale/Zibuse	**3 852 914.62 m²**
Sankotshe	**4 516 407.58 m²**
Mophela	**5 151 227.85 m²**
Alternative A2 (if any)	m2
Alternative A3 (if any)	m2

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	
Mpuma	**4466 m**
Cliffdale	**6060 m**
Georgedale	**3319 m**
Minitown/Georgedale/Zibuse	**7056 m**
Sankotshe	**5812 m**
Mophela	**9855 m**
Alternative A2 (if any)	m

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

Alternative:	**Size of the servitude:**
Alternative A1 (preferred activity alternative)	
Mpuma	**31 262 m²***
Cliffdale	**42 420 m²***
Georgedale	**23 233 m²***
Minitown/Georgedale/Zibuse	**49 392 m²***
Sankotshe	**40 691 m²***
Mophela	**68 985 m²***
Alternative A2 (if any)	

***This is based on a trench width of 7m.**

7. SITE ACCESS

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

Describe the type of access road planned:

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

From Durban, drive along the N3 for approximately 40km's before taking the Hammersdale off-ramp. At the off-ramp, turn left on to the MR385. Travel for approximately 10km's before reaching the greater Georgedale and surrounds area. See the Locality Map in Appendix A for further locality details relating to each settlement.

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;
8.7. servitudes indicating the purpose of the servitude;
8.8. sensitive environmental elements within 100 metres 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 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
8.10. the positions from where photographs of the site were taken.

Please See Appendix A for the site/locality plan.

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.

See Appendix B for site photographs.

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.

The alignments provided were based on a number of key engineering design criteria, including a shared catchment area, existing infrastructure tie-in points and drainage to an existing common wastewater treatment works. Please note though that the preferred layout plans have been established through a consultative process with relevant stakeholders, whereas the alternate layout plans have not been prepared through a consultative process. Please see Appendix A for a visual comparison of the preferred versus the alternate alignments.

11. ACTIVITY MOTIVATION

11.1. Socio-economic value of the activity

What is the expected capital value of the activity on completion?	**R 325 000 000.00**
What is the expected yearly income that will be generated by or as a result of the activity?	**N/A***
Will the activity contribute to service infrastructure?	**YES**
Is the activity a public amenity?	**YES**
How many new employment opportunities will be created in the development phase of the activity?	**460**
What is the expected value of the employment opportunities during the development phase?	**R 13 500 000.00**
What percentage of this will accrue to previously disadvantaged individuals?	**5%**
How many permanent new employment opportunities will be created during the operational phase of the activity?	**Cannot be determined at this stage. Job opportunities will exist for cleaning, maintenance, and supervision.**
What is the expected current value of the employment opportunities during the first 10 years?	**Cannot be determined at this stage. Job opportunities will exist for cleaning, maintenance, and supervision. Most of the labour to keep the container ablutions clean will be sourced from the local community.**
What percentage of this will accrue to previously disadvantaged individuals?	**Cannot be determined at this stage.**

***The activity provides a service to the surrounding community and therefore does not draw an income.**

11.2. Need and desirability of the activity

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

Need:

1. **The settlements within the greater Georgedale area have a lack of formalised sewer infrastructure and limited water infrastructure which does not fully**

serve the basic needs of the community. There is a need for more sewage infrastructure to meet the demands of the current and projected population.

2. **Continued efforts to upgrade informal settlements and directly improve resident's state of living will be achieved through the provision of water, sanitation and refuse removal.**
3. **"Water, electricity, sanitation, waste removal and social amenities are key critical services which have been identified by communities that are required to meet their basic needs. The provision of acceptable basic services is a critical element in the national developmental agenda." [4]**
4. **"Provision has been made by eThekwini Municipality to build 7,300 new serviced low income houses next year and totalling approximately 32,000 by 2016/17. These houses are subsidised by the KwaZulu Natal Department of Human Settlements (DoHS) for low income earners who are first time home owners and meet the criteria as set down by the DoHS. The housing programme makes provision for associated services such as water, electricity, road access, storm water control, sanitation, social facility access and road naming to be delivered in an integrated manner. All housing projects are scrutinized at the packaging stage to assess and plan for the community infrastructure that is required." [5]**

Desirability:

1. **The risk of surface and ground water contaminations is significantly lowered as dependence on pit latrines is lowered.**
2. **There is also expected to be a significant reduction in the amount of nutrient loading on local watercourses and wetland areas, resulting in reduced eutrophication, with an associated improvement in water quality, ecosystem health and biodiversity.**
3. **The pipeline infrastructure will lay the foundation for long term sanitation service provision to the intended community. The CABs will provide short term ablution facilities for the greater community.**
4. **Health and hygiene will be improved significantly for all community members involved due to the availability of communal sanitation.**
5. **The Municipality has as part of its Infrastructure Planning documented the nature and extent of the urban and rural backlogs in service delivery across the entire metropolitan area. As a result, a key focus of the eThekwini Capital Expenditure over the 2011/2015 period is the rolling out of sanitation services, which has lagged behind other key services. [6]**
6. **According to the eThekwini Municipality IDP, the proposed bulk infrastructure falls within an Urban Investment node. Bulk infrastructure will be required to cater for future demands.**
7. **One of the 'Basic Service Delivery Aims' within the National Key Performance Area is creating a 'Quality Living Environment'. In this light, eThekwini Metropolitan Municipality's aim is to provide 81 000 homes with a free basic level of sanitation by means of a UD toilet, an existing VIP or, for informal settlements, by means of a toilet/ablution block within 200m, by the year 2016/17. This is as per the baseline of 9095 serviced homes as June 2012.[7]**
8. **"Policies and Practices of the eThekwini Municipality Water and Sanitation Unit:**

[4] Govender, R., 2013: *eThekwini Municipality Integrated Development Plan; 5 Year Plan: 2012/13 to 2016/17, Annual Review 2013/2014*. pg.76. eThekwini District Municipality.
[5] Govender, R., 2013: *eThekwini Municipality Integrated Development Plan; 5 Year Plan: 2012/13 to 2016/17, Annual Review 2013/2014*. pg.155. eThekwini District Municipality.
[6] Govender, R., 2013: *eThekwini Municipality Integrated Development Plan; 5 Year Plan: 2012/13 to 2016/17, Annual Review 2013/2014*. pg.76. eThekwini District Municipality.
[7] Govender, R., 2013: *eThekwini Municipality Integrated Development Plan; 5 Year Plan: 2012/13 to 2016/17, Annual Review 2013/2014*. pg.171. eThekwini District Municipality.

The purpose of the policy is to ensure that the level of supply of potable water and the provision of sanitation provides a joint solution for the "domestic water cycle". The policy makes provision for:–

- **A solution which is affordable to the consumer and service provider;**
- **A solution which is environmentally satisfactory**
  - **prevents pollution - results in a healthy residential area - is compliant with National and Provincial legislation." [8]**

As a result, it can be considered that the planning and design phase of the implementation of essential services, such as the provision of sanitation services, takes specific note of environmental policy and the adherence to national and provincial legislation.

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

1. **Job opportunities will be created during the construction phase and operational phase.**
2. **The successful implementation of the Georgedale and Surrounds Bulk Sewer Infrastructure project will alleviate some of the development challenges faced by the Municipality as a result of population growth, basic human service provision etc. These challenges include the improvement of the living conditions for all communities involved and the addressing of the backlog in the delivery of appropriate infrastructure services in terms of sustainable sanitation services.**

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

1. **According to the Constitution of the Republic of South Africa Act 108 of 1996 and the Water Services Act 108 of 1997, Local Government must ensure that all their residents have access to safe water and sanitation. This project forms part of eThekwini Municipality's Provision of Water and Sanitation to Informal Settlements programme and consequently augments the Constitution and the Water Services Act.**
2. **This project forms part of eThekwini 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 eThekwini (based on 522 facilities x 60 dwellings x 6 people) should the project be extended to end June 2016. The improvement of the quality of life and access to a healthy environment has had a directly positive effect on people who have access to waterborne sanitation, water and washing facilities.[9]**
3. **To date in terms of employment of local labour, through the programme 270 000 person days have been worked and 1176 Full Time Equivalents 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. As this Application falls within this greater project programme, it will further assist in enhancing the above outcomes.**
4. **The successful construction of the CAB facilities will alleviate some of the developmental challenges faced by the eThekwini Municipality as highlighted in the analysis of the Integrated Development Plan (IDP). These challenges include addressing the backlog in the delivery of appropriate infrastructure services in terms of sanitation.**
5. **Local job opportunities shall be provided during the implementation and construction phase.**
6. **The community will be supplied with adequate, reliable sanitation facilities.**

[8] Govender, R., 2013: *eThekwini Municipality Integrated Development Plan; 5 Year Plan: 2012/13 to 2016/17, Annual Review 2013/2014*. pg.175. eThekwini District Municipality.

[9] Alan Kee, 2014: *Provision of Water and Sanitation to Informal Settlements within eThekwini Municipality - Phase 2: Application for Environmental Authorisation by eThekwini Water and Sanitation*. eThekwini Metropolitan Municipality: Water and Sanitation.

7. **The project will directly provide a projected population of approximately 203 760 people with access to sanitation. Please see Appendix G for further details as to the estimated potential population that will benefit from the provision of sanitation services within the greater Georgedale Scheme.**
8. **Improved access to sanitation facilities will also result in increased standards of living and the improved health and well-being of the communities involved. The incidence of sanitation-related illnesses, infant mortality, the spread of disease etc. will all decrease with the introduction of clean, communal ablution facilitates.**
9. **The need for the promotion of environmental health, good hygiene practices and sanitation is the first step leading to the creation of improved community sanitation.**
10. **Technical training of community members employed on site will be done during the labour intensive construction phase, consisting of trenching, pipe laying, plumbing and fittings. During the course of the construction period, members of the community will be employed as part of the sanitation project in order to provide job opportunities.**

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 Water Act (Act No 36 of 1998)	**Department of Water Affairs (DWA)**	**1998**
National Forest Act (Act No 84 of 1998)	**Department of Agriculture Forestry and Fisheries (DAFF)**	**1998**
National Environmental Management Act (Act No 107 of 1998 [NEMA]) as amended	**DEA**	**1998**
National Heritage Resources Act (Act No 25 of 1999)	**South African Heritage Resources Agency (SAHRA)/ Amafa AkwaZulu-Natali (Amafa)**	**1999**
National Environmental Management Protected Areas Act (Act No 57 of 2003 [NEMPAA])	**DEA**	**2003**
National Environmental Management Biodiversity Act (Act 10 of 2004)	**DEA**	**2004**

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**
If yes, what estimated quantity will be produced per month?	**0.2m^3**

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

Solid waste shall be stored on site in compliance with the EMPr until sufficient quantities have been collected to justify disposal. The waste will then be transported via skips to a permitted landfill site.

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

Construction waste will be disposed of at the nearest permitted landfill site that has capacity.

Will the activity produce solid waste during its operational phase?		NO
If yes, what estimated quantity will be produced per month?		
How will the solid waste be disposed of? (provide details of landfill site)		
Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?		

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?		NO
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?		NO
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?		NO
If yes, what estimated quantity will be produced per month?		m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	Yes	NO
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

If yes, provide the particulars of the facility:

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

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

13.3. Emissions into the atmosphere

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

If yes, 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:

Emissions will take the form of dust and engine emissions that will result from the operation of vehicles and construction equipment on site. This will be limited to the construction phase of the project and will not continue during the operational phase. Mitigation measures for such emissions are included in the site specific Environmental Management Programme (EMPr). See Appendix F for further details.

13.4. Generation of noise

Will the activity generate noise?		**NO**
If yes, is it controlled by any legislation of any sphere of government?	YES	NO
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		

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

Noise produced will be from vehicles and equipment and will be limited to the construction phase. No noise will be generated during the operational phase.

14. WATER USE

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

municipal	water board	groundwater	**river, stream, dam or lake**	other	the activity will not use water

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	**N/A**
Does the activity require a water use permit from the Department of Water Affairs?	**YES***

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

The activity does not require a water use license in terms of abstraction of water or water use, but rather as a result of works within 32m of wetlands/watercourses and the possible alteration of beds, banks and streams. The WULA will be submitted to the DWA on completion of the Environmental Authorisation process; as such no proof of submission has been appended to this report.

15. ENERGY EFFICIENCY

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

No specific energy efficiency measures have been implemented in the design phase. However as the scheme is gravity based, natural gradients have been used wherever possible to ensure that minimal pump stations are needed and thus minimal energy is used.

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

Alternative power sources are not feasible for the proposed development. Most routes are governed by gravity, and it is therefore not necessary to invest in alternative energy sources due to the low operational energy requirements.

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**	**1:7,5 – 1:5**	**Steeper than 1:5**

Alternative S2 (if any):

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

Alternative S3 (if any):

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

The greater Georgedale and surrounding area is varied in topography and contains steep slopes, open valleys, flat plains and undulating hills. As such there is a varied gradient throughout the site.

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***	Closed valley	**Open valley***	Plain	**Undulating plain/low hills***	Dune	Sea-front

Alternative S2 (if any):

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

Alternative S3 (if any):

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

***The alignment is located over a large area in which different landforms are present.**

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Has a specialist been consulted for the completion of this section?			YES*	
If YES, please complete the following:				
Name of the specialist:	Nithesh Ramdayal			
Qualification(s) of the specialist:	BSc (Geol.), BSc (Hons.)			
Postal address:	P.O. Box 794, Hilton, 3245			
Postal code:	3245			
Telephone:	033 343 6789	Cell:	076 570 6047	
E-mail:	ramdayaln@jgi.co.za	Fax:	033 343 6788	
Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?			YES	NO
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	NO
If YES, specify and explain:	N/A			
Are any further specialist studies recommended by the specialist?			YES	NO
If YES, specify:				
If YES, is such a report(s) attached in Appendix D?			YES	NO
Signature of specialist:		Date:		

***This section was completed through the assistance of an Engineering Geologist at a desktop level: According to the 1:250 000 Geological Series Map No.2930, Durban, the site is underlain by the Ordovician-Silurian age, Natal Group. The Natal Group is generally described as Red-brown coarse-grained arkosic to subarkosic sandstone; quartz arenite; micaceous sandstone; small pebble conglomerate; subordinate siltstone and mudstone. These siliclastic rock types dominate the Hammarsdale region and may be overlain in parts by alluvial and colluvial sediment. The Natal Group rocks are divided into the Lower Durban and Upper Marianhill Formations, each representing a different tectonic cycle.**

The Geotechnical Engineering Department at the eThekwini Municipality noted that shallow hard rock sandstone may be encountered within the proposed trench depth in places and power tools may be required for the removal of that rock. Ideally, a geotechnical centre-line assessment should be carried out to assess excavatability, shallow seepage that may impact trench sidewall stability and reuse of insitu materials for pipe bedding and selected backfill.

A geotechnical assessment has not been undertaken, to date, on the proposed pipe alignments and CAB localities. However one will be undertaken as part of the Water Use Licence Application, and will be included in the submission of the final Basic Assessment Report.

Please see Appendix A for a geological layout of the proposed sites.

Please note the section below has been completed separately for the infrastructure occurring within 32m of a watercourse and pipeline routes/pumpstations/CABs outside 32m of a watercourse.

PIPELINE ROUTES / PUMP STATIONS WITHIN 32M OF A RIVER OR STREAM:

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

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

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

PIPELINE ROUTES / PUMPSTATIONS / CAB FACILITIES OUTSIDE 32M OF A RIVER OR STREAM:

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

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

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available

as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

4. GROUNDCOVER

Has a specialist been consulted for the completion of this section?				**YES**
If YES, please complete the following:				
Name of the specialist:	**Jake Alletson**			
Qualification(s) of the specialist:	**BSc (Biological Science), BSc Hons (Zoology)**			
Postal address:	**PO Box 1129, Hilton**			
Postal code:	**3245**			
Telephone:	**(033) 3434972**	Cell:	**083 787 1584**	
E-mail:	**jallet@telkomsa.net**	Fax:	**(086) 6108896**	
Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?				**NO**
If YES, specify and explain:				
Are there any special or sensitive habitats or other natural features present on any of the alternative sites?			**YES***	
If YES, specify and explain:	***Please see below for details on data sets investigated, findings, sensitive habitats, and proposed mitigation measures.**			
Are any further specialist studies recommended by the specialist?			YES	NO
If YES, specify:				
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).

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

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

4.1. BIODIVERSITY

The natural vegetation communities (after Mucina and Rutherford, 2006) in the Georgedale area are KwaZulu-Natal Hinterland Thornveld (SVs 3), and KwaZulu-Natal Sandstone Sourveld (SVs 5). These two vegetation types are listed as being "Vulnerable" and "Endangered" respectively. The reasons for their status include loss of area to urban and agricultural development, and degradation of the remaining areas as a consequence of over-frequent burning, overgrazing, extraction of medicinal plants, and soil erosion. Both types are poorly represented in formal conservation areas and further impacts are to be avoided as far as possible. Some parts of the study area may be regarded as being transitional to Ngongoni Veld (SVs 4) but that type is also of conservation concern and is listed as "Vulnerable".

Further background information was obtained from a variety of sources. Reference was made to various conservation databases including the Provincial Minset, Wetlands, Transformation, Protected Areas and buffers, Nature Conservancies, Natural Heritage Sites and DMOSS sites. See appendix A for maps thereof. The findings of these studies are summarised in Table 1 below.

DATA SET	OBSERVATIONS
KZN Minset.	A small number of pipelines in the Zibuse area lie within a Biodiversity Priority 1 area. The area is defined on the basis of vegetation but is now totally transformed to semi-urban conditions.
DMOSS.	A few of the pipelines lie in DMOSS areas. Those of most concern are at Sites Sankotshe 2** and Cliffdale. Special care in site rehabilitation is recommended for those places.
Wetlands.	Several pipelines lie close to, or even cross wetlands. Management recommendations have been put forward for them.
Transformed areas.	Virtually all the pipelines lie in transformed areas. Exceptions are at Sankotshe Site 2**, Cliffdale, and Mpuma.
Protected areas and buffers.	No pipelines pass through protected areas or their buffers.
Nature conservancies and natural heritage sites.	No pipelines pass through nature conservancies and natural heritage sites.

[Sankotshe 2 does not trigger any activities as listed under the National Environmental Management Act (Act 107 of 1998) and has thus been submitted as a Tier 1 Inquiry Application to the DAEA, and is not part of this Application. The alignment on which the specialist study was conducted has been moved (as per consultation with the EPCPD and on advice from the specialist) and is now located on the periphery of the valley, alongside the existing housing and only drops into the valley bottom, through a disturbed vegetation patch, and connects with existing infrastructure.]**

During the field study/site survey, it was found that many of the sites which had been identified at a desktop level as being potentially problematic were in fact not so and were not assessed further. Further, almost all of the sites visited are extensively infested by alien weed species and that most of these plants are present at most places to some extent or other. However the following sites were flagged specifically for special attention:

SITE AS PER SPECIALIST REPORT	SPECIALIST COMMENT REGARDING ALIGNMENT	AECOM COMMENT	AECOM ACTION
Cliffdale Site 2	This vegetation is still in reasonably good condition with relatively few weeds present. Similarly, the grassland on the higher slopes is in fair condition. The first management requirement in this area is to plan the routes so that the lines are as high up the slopes as is feasible. This recommendation is put forward as a means of protecting the woody vegetation.	Alignments B/037/006 and B/037/009 were re-aligned prior to the receipt of the specialist studies. Hence they do not follow the original alignment and do pass down the steep hill.	Alignment B/037/006 has been moved as far out of the natural forest as deemed possible and has been realigned to cross a stream as the natural vegetation's narrowest point.
Cliffdale Site 3	Along much of this section the line is shown as passing through intact woody vegetation and across very steep terrain. Use of this alignment would both have severe environmental consequences and would be difficult to implement. The acceptability of the route of this part of the pipeline is questioned and it is recommended that it be changed.	This alignment can be realigned to sit above the steep slope and vegetation, however an existing household will be unable to tie into it via gravitational means.	Bulk Sewer B/037/006 has been realigned above the steep slope as far out of the natural vegetation as possible.
Mophela Site 1	At the point indicated is a stand of woody vegetation which may be at risk of environmental damage if the line passes through it. This vegetation is in moderately good condition and so should be protected as far as possible. The woody vegetation must be protected as far as possible and so	/	B/034/005 realigned further upslope to avoid natural vegetation where possible.

	a higher level alignment is recommended.		
Mpuma Site 1	**The pipeline passes through or very close to DMOSS areas and so must be considered to require careful installation. It is recommended that the pipeline route be shifted to an alignment slightly further up the slopes. In this way the woody vegetation will be largely avoided.**	**/**	**Alignments B/025/004, B/025/005 moved further upslope. Alignment B/025/008 realigned to avoid wetland.**
Sankotshe Site 1	**In the highest parts of the valley the pipelines are shown as passing through areas of woody riparian vegetation. Such alignment has potential for considerable biodiversity impact and so it is recommended that the lines be placed upslope of the plant community rather than passing through the middle.**	**The actual location of this site is to the East of Georgedale.**	**B/011/004 now ties into an existing sewer main on the Eastern side of the valley. This has allowed for alignment B/011/002 to be realigned further upslope ion the Western side of the valley.**

The biodiversity surveys reported that there are no fatal flaws in any of the pipeline routes although minor re-alignments are recommended for some sites. However, the general impression gained is that the social and environmental benefits to be gained by the installation of the new infrastructure will definitely outweigh the impacts of the construction process.

See Appendix D for further details within the specialist Biodiversity Report.

4.2. RIVER/STREAM CROSSINGS

SITE AS PER SPECIALIST REPORT	SPECIALIST COMMENT REGARDING ALIGNMENT	AECOM COMMENT	AECOM ACTION
Georgedale Site 1	**Bulk sewer line crossing on a small tributary stream. The stream channel is deeply incised at this point and the vegetation is dominated by alien weed species although some indigenous rushes (*Typha capensis*) and sedges (*Mariscus, Cyperus*, and *Scleria spp.*) are also present. Management Requirements: Standard stream crossing procedures. The depth of the channel implies that bank stabilisation will be of key importance.**	**/**	**No action has been taken.**
Georgedale Site 2, 3, 4	**Bulk sewer line crossings on the Sterkstroom River. The macro-channel is up to 30 m wide in places and is incised some 2,5 m to 3,0 m below the surrounding area. The active channel is very much smaller and is 3 m to 4 m wide in most places. The substrate consists almost entirely of sandy gravel and is largely grown over with rushes and sedges. Therefore it is considered to be a Channelled Valley Bottom Wetland. Alien weed species, dominated by *Lantana camara*, are present along the banks but some**	**/**	**River crossings B/021/005, B/021/007 and B/021/008 have been combined in favour of one crossing.**

	small vestiges of indigenous woody vegetation persist in areas where there is protection from fire. Management Requirements: Standard soil and stream crossing procedures are to be followed. This stream/river should probably be crossed on a viaduct. However, the size of the system suggests that the structure would have to be very robust to cope with flood events.		
Georgedale Site 5	**Bulk sewer line running down a small stream valley. This line passes down the valley and in close proximity to the stream in places. The vegetation is largely degraded and areas are now invaded by extensive stands of the alien Silver poplar. Management Requirements: The pipeline must be rerouted where necessary so as to ensure that it does not intrude to within 30 m of the stream channel. In addition, the area infested by the Silver poplar should also be avoided. Thereafter standard soil and stream crossing procedures are to be followed.**	**/**	**Alignment has been rerouted to lie 30m outside of the stream channel as well as to avoid the Silver Poplar infestation.**
Cliffdale Site 1	**This site is located at the point where two sewer lines meet before passing down a steep hill to cross over the Sterkstroom River. This slope is covered by dense woody**	**Alignments B/037/006 and B/037/009 were re-aligned prior to the receipt of the specialist studies. Hence they do not follow**	**No action has been taken.**

	vegetation on its lower parts and by grassland above that. Invasion by alien weeds is moderate but the original vegetation is still largely intact in most places. **Management Requirements: It may be advisable to bury the pipe under the surface of the bed due to the floodplain associated with the River.**	**the original alignment and do pass down the steep hill.**	
Cliffdale Site 3	**The river has a wide channel in this area and the condition of the vegetation is fair to good.** **Management Requirements: The acceptability of the route of this part of the pipeline is questioned and it is recommended that it be changed. The portion near the railway line needs to be raised and so be brought closer to the road. If this is not feasible, then it is suggested that the pipeline follow the railway line for approximately 300 m and then turn to follow a road up to the rising main. If the Sterkstroom is to be followed as indicated then it is suggested that the crossing point be moved close to the road crossing. This will both eliminate damage to some woody vegetation and will make construction easier.**	**This alignment can be realigned to sit above the steep slope and vegetation, however an existing household will be unable to tie into it via gravitational means.**	**Bulk Sewer B/037/006 has been realigned above the steep slope as far out of the natural vegetation as possible.**
Cliffdale Site 4	**This site includes the uppermost part of a rising main and then the falling bulk line which follows it.**	**Line B/037/001 no longer follows this alignment.**	**No action has been taken.**

	Most of these two lines pass through grassland which is in poor condition. The area has been cultivated and over-grazed in the past and the grass cover is now poor and soil erosion is taking place. At the lower end of the line is a minor stream crossing. **Management Requirements: The recommendations for trench construction and for stream crossings must be applied.**		

The biodiversity surveys reported that there are no fatal flaws in any of the pipeline routes although minor re-alignments are recommended for some sites. However, the general impression gained is that the social and environmental benefits to be gained by the installation of the new infrastructure will definitely outweigh the impacts of the construction process.

See Appendix D for further details within the specialist Biodiversity Report.

5. WETLANDS

Has a specialist been consulted for the completion of this section?			YES
If YES, please complete the following:			
Name of the specialist:	Peter Kimberg – Aquatic Specialist		
Qualification(s) of the specialist:	B.Sc Honours		
Postal address:	330 Percheron Road, Beaulieu Estate, Midrand		
Postal code:	/		
Telephone:	/	Cell:	+27 (82) 417 9191
E-mail:	peterkimberg@hotmail.com	Fax:	/
Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?			YES
If YES, specify and explain:	***Oreochromis mossambicus* (Mozambique tilapia) was noted at Site 1 and Wetland 10 during the Aquatic Assessment. This species has recently been upgraded to Near Threatened (NT) on the IUCN's Red List of Threatened Species. If recommendations listed in the Specialist Report are applied during the construction and operational phases, it is not expected that the proposed infrastructure development will have a hugely detrimental impact on the fish species.**		
Are there any special or sensitive habitats or other natural features present on any of the alternative sites?			YES
If YES, specify and explain:	**A number of wetland systems will be intersected by the proposed alignment. Please see below for further details.**		
Are any further specialist studies recommended by the specialist?			NO
If YES, specify:			
If YES, is such a report(s) attached in Appendix D?		YES	NO
Signature of specialist:		Date:	

Aquatic Assessment

The following conclusions were reached based on the results of the aquatic assessment:

- **Habitat was a limiting factor of aquatic macroinvertebrate diversity at sites 1, 2 and 6;**
- **Based on the SASS results biotic integrity was low at sites 1, 2 and 3 and moderate at sites 4, 5 and 6;**
- **The Average Score per Taxon (APST) scores mirrored those of the SASS results with the aquatic macroinvertebrate communities at site 1, 2 and 3 comprised of tolerant taxa and those at sites 4, 5 and 6 comprised of moderately tolerant taxa;**
- **The most serious impacts affecting aquatic ecosystems are:**
  - **Eutrophication due to runoff from agricultural activities as well as the large numbers of pit latrines located throughout the catchments;**
  - **Sedimentation of the habitats due to erosion of the catchments;**
  - **Indigenous vegetation removal especially in the riparian zones; and**
  - **Solid waste disposal.**

Aquatic Macroinvertebrates

Aquatic biomonitoring is associated with stream/river systems. Within the greater Georgedale area, two river systems were assessed: the uMlazi River and the uMngeni River. Within these two river systems, seven aquatic biomonitoring sites were flagged and investigated. Based on this assessment the aquatic macroinvertebrate communities at sites 4, 5, 6 and 7 were more sensitive suggesting better water quality conditions and higher biotic integrity whereas the community at site 3 was comprised entirely of tolerant taxa indicating decreased biotic integrity.

The presence of *Oreochromis mossambicus* (Mozambique tilapia) at site 1 in the Sterkspruit and wetland unit WET10 should be regarded as significant. Although this species is regarded as common and hardy it has recently been upgraded to Near Threatened (NT) on the IUCN's Red List of Threatened Species due to the threat of hybridization with the introduced species *Oreochromis niloticus* (Nile tilapia). Hybridization has already been recorded throughout the species' northern range. No hybrids were recorded in the project area suggesting that the population remains genetically pure. Populations that are genetically pure should be afforded a high degree of conservation importance.

Wetland Assessment/Delineation

A total of five wetland units were identified during the survey, within the greater Georgedale area:

SITE	GPS COORDINATES*		DESCRIPTION	HYDROGEOMORPHIC TYPE	SURFACE AREA (HA)
	S	E			
WET6	29°41'31.62"	30°40'43.17"	Situated in the Mpuma Block in the uMngeni River catchment, in the midst of a high density residential area	Hillslope seep	0.37
WET7	29°47'41.32"	29°47'33.0"	Situated between the Georgedale, Minitown and Zibuse Blocks in the uMlazi River catchment in the midst of a high density residential area	Hillslope seep	4.69
WET8	29°47'50.98"	30°37'57.97"	Situated between the Georgedale, Minitown and Zibuse Blocks in the Sterkspruit, a tributary of the uMlazi River catchment in the midst of a high density residential area	Channelled valley bottom	7.16
WET9	29°48'22.28"	30°35'34.55"	Situated between the Sankotshe and Mophela Blocks on the floodplain of the uMlazi River adjacent to the Waste Water Treatment Works	Floodplain	0.63
WET10	29°48'37.45"	30°35'1.94"	Situated in the Mophela Block in a tributary of uMlazi River. The lower reaches of this tributary are situated in a urban setting whilst the upper reaches are heavily cultivated	Channelled valley bottom	0.70

***Wetlands 1-5 are associated with another application, the specialist studies and report writing of which were undertaken in conjunction with this specialist assessment.**

The following conclusions were reached based on the results of the wetland assessment:

- **Unchannelled and channelled valley bottom wetlands were the most common wetland types in the project area;**
- **The Present Ecological State (PES) of the wetlands ranged from largely natural to seriously modified with the majority of the sites classified as the latter; and**

- **Impacts on wetland habitats were mainly associated with modification of the natural flow regime associated with hardening of the catchments.**

Despite the degraded state of the majority of the aquatic and wetland ecosystems, they still provide refuge for species of conservation concern such as *Oreochromis mossambicus* (Mozambique tilapia) which was recorded in both the Sterkspruit and uMlazi tributaries. Best practice measures should be implemented during both the construction and operational phases in order to limit impacts on these systems.

Management measures that can be implemented during the construction and operational phases have been included in the EMPr and relate to construction activities being undertaken in the winter months, the avoidance of wetland systems and correct construction practices within wetland systems. In addition, the Biodiversity Assessment (See Appendix D) has recommended measures for river/stream crossings as well as work within wetland systems.

See Appendix D for further details within the specialist Aquatic and Wetland Assessment Report.

6. 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			Description
Natural area	**YES**		**Some portions of land within the greater Georgedale region (particularly in the vicinity of Sankotshe, Mpuma, Cliffdale School Station and Georgedale) contain swathes of indigenous vegetation interspersed by housing, alien vegetation, access roads etc. Mitigation measures regarding minimal disturbance during the construction phase have been listed in the Environmental Management Programme (EMPr), limiting impacts as far as possible.**
Low density residential	**YES**		**The communal ablution facilities and associated infrastructure are within a 500m proximity to the homesteads being serviced. However impacts of the associated infrastructure will be temporary and limited to the construction phase, and will include noise and possibly dust pollution. Mitigation measures regarding minimal disturbance during the construction phase have been listed in the Environmental Management Programme (EMPr), limiting impacts as far as possible.**
Medium density residential	**YES**		**The CAB facilities and associated infrastructure are within a 500m proximity to the homesteads being**

			serviced. However impacts of the associated infrastructure will be temporary and limited to the construction phase, and will include noise and possibly dust pollution. Mitigation measures regarding minimal disturbance during the construction phase have been listed in the Environmental Management Programme (EMPr), limiting impacts as far as possible.
High density residential		**NO**	
Informal residential	**YES**		**The CAB facilities and associated infrastructure are within a 500m proximity to the homesteads being serviced. However impacts of the associated infrastructure will be temporary and limited to the construction phase, and will include noise and possibly dust pollution. Mitigation measures regarding minimal disturbance during the construction phase have been listed in the Environmental Management Programme (EMPr), limiting impacts as far as possible.**
Retail commercial & warehousing		**NO**	
Light industrial		**NO**	
Medium industrial		**NO**	
Heavy industrial		**NO**	
Power station		**NO**	
Office/consulting room		**NO**	
Military or police base/station/compound		**NO**	
Spoil heap or slimes dam		**NO**	
Quarry, sand or borrow pit	**YES**		**A number of illegal sand mining activities are being undertaken within the greater Georgedale region. As construction activities associated with the riparian crossings will be undertaken according to Method Statements and in conjunction with the EMPr, it is understood that under no circumstances can the illegal mining activities impact on the service provision construction process.**
Dam or reservoir		**NO**	
Hospital/medical centre	**YES**		**Due to the extent of the site it is assumed that the sewerage infrastructure will, at some point, be within a 500m proximity to a clinic/hospital/medical centre. As such, the relevant safety and environmental measures will be implemented, as per the recommendations of the EMPr. These measures will include traffic calming,**

			suitable signage, stockpiling measures, erosion control measures etc.
School/ creche	**YES**		**Due to the extent of the site it is assumed that the sewerage infrastructure will, at some point, be within a 500m proximity to a school/creche. As such, the relevant safety and environmental measures will be implemented, as per the recommendations of the EMPr. These measures will include traffic calming, suitable signage, stockpiling measures, erosion control measures etc.**
Tertiary education facility		**NO**	
Church		**NO**	
Old age home		**NO**	
Sewage treatment plant	**YES**		**The greater Georgedale Sewage Infrastructure Scheme is planned to tie in to existing infrastructure, which includes the Mpumalanga Waste Water Treatment Plant. The eThekwini Metropolitan Municipality have indicated that all waste water treatment plants have suitable capacity at present and in future to accommodate the increased levels of sewerage to be treated.**
Train station or shunting yard		**NO**	
Railway line		**NO**	
Major road (4 lanes or more)		**NO**	
Airport		**NO**	
Harbour		**NO**	
Sport facilities		**NO**	
Golf course		**NO**	
Polo fields		**NO**	
Filling station		**NO**	
Landfill or waste treatment site		**NO**	
Plantation		**NO**	
Agriculture	**YES**		**The situation may arise that sewerage pipelines may need to be constructed through informal agricultural/subsistence lands. In this instance, an agreement will be reached, in writing, with the relevant landowner, indicating their agreement therewith. In addition, construction and rehabilitation will be undertaken in accordance with the EMPr.**
River, stream or wetland	**YES**		**The associated infrastructure of the CAB facilities will be constructed adjacent to and through riparian crossings. See Appendix F for mitigation of construction impacts on the river in the short and long term.**

Nature conservation area	YES		**The Durban Municipal Open Space System (D'MOSS) is found in close proximity to a number of sites within the greater Georgedale region. Consultation with the EPCPD, specialists, the EAP and the Engineering team has resulted in lines being removed from within the D'MOSS area. However sensitive areas will be taken special heed of during the construction process as well as all construction being undertaken in accordance with the specifications of the EMPr.**
Mountain, hill or ridge	**YES**		**The sewerage infrastructure covers varied terrain, including hills and ridges. All construction will be undertaken in accordance with the EMPr. Special attention will be paid to the implementation of erosion control measures and slop stability.**
Museum		**NO**	
Historical building		**NO**	
Protected Area		**NO**	
Graveyard		**NO**	
Archaeological site		**NO**	
Other land uses (describe)		**NO**	

7. CULTURAL/ HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or within 20m of the site?		**NO**
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:		
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.		

A Heritage Impact Assessment has been conducted and has indicated that no heritage sites occur within the area and that there is no archaeological reason why the proposed development may not proceed as planned. Please See Appendix D for further details.

SECTION D: PUBLIC PARTICIPATION

1. ADVERTISEMENT

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

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;
(b) giving written notice to—
  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the 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
  (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.

An advert was placed in the Isolezwe Newspaper on the 25th November 2013. Please See Appendix G for proof thereof.

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.

Due to the significant number of landowners (in excess of 90) along the proposed alignments, consultation with the Competent Authority was sought with regards to the approach towards communicating and notifying, in the most efficient way possible, with interested and affected parties (I&APs). As a result of these consultations, a Stakeholder Engagement Plan (SEP) was developed which outlined the process to be followed by the EAP to ensure that landowners were duly notified, but that landowner notification forms did not have to be signed by each landowner.

Key activities within the SEP notification phase include the following:

1. **Posters: A2 posters will be erected in English and isiZulu at local community gathering points such as: community halls, ward councillor offices, libraries, schools, sports facilities, taxi ranks etc. Photographs and GPS co-ordinates for each poster erected.**

2. **Flyers: Local community members will be employed to distribute A5 isiZulu flyers (i.e. copies of the posters) to the landowners and residents along each preferred route.**
3. **Advertisements: An isiZulu advertisement will be placed in the Isolezwe local community newspaper.**
4. **Background Information Document (BID): English BIDs will be sent to the relevant government departments and non-governmental organisations via email, registered post and facsimile where applicable.**
5. **Public meetings: Several public meetings will be held by AECOM Consultants at which the local communities will be informed of the project and provided with the details thereof.**
6. **Bulk sms: Bulk smses will be sent to those on the attendance registers from the public meetings held (refer to point 5) above.**

Please See Appendix E for further details of the SEP and confirmation of the process by the DAEA.

To date, the dissemination of the posters, advertisements and BID's has been undertaken. Once the dBAR has become available, the dissemination of flyers along the line will commence. Public meetings have been undertaken in portions of the project area, but further meetings and consequent notification are expected to happen as the process continues.

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**

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

Consolidated City Comment was received on the 30th January 2014. No objections to the proposed activity were noted.

Has any comment been received from the local municipality? **YES**

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

Consolidated City Comment was received on the 30 January 2014. No objections to the proposed activity were noted.

Has any comment been received from a traditional authority? **NO**

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

No comment was received from a Traditional Authority as the land under proposed development is under the management of the eThekwini Metropolitan Municipality. The Traditional Authority/s in the vicinity of the proposed development can be considered to be notified as per the posters on site, and through the advertisement in the local newspaper and can register accordingly.

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**

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

Department of Transport – 2 December 2013

You are advised that the application is in the process of being investigated and that you will be advised accordingly of this Departments comments.

Eskom – 18 December 2013

This application affects Eskom's overhead reticulation line supply in Mpumalanga Urban Area.

Eskom will raise no objection to the proposed pipelines running parallel to or crossing the existing reticulation powerline, provided the following conditions are complied with: -

9. Eskom's rights, services and equipment must be acknowledged at all times and may not be interfered or tampered with.

10. All work within Eskom's servitude area must be done in accordance with the requirements of the Occupational Health and Safety Act No 85 of 1993. Special attention must be given to the clearances between Eskom's conductors, structures, cables and electrical apparatus and the proposed construction work as stipulated by Regulation R15 of the Electrical Installations Regulations of the aforementioned Act or any other legal requirements.

11. Eskom shall not be liable for the death of or injury to any person or for the loss of or damage to property whether as a result of the encroachment or of the use of the servitude area by the applicant, his/her agent, contractors, employees, successors in title, and assigns. The applicant indemnifies Eskom against loss, claims or damages by third parties and whether as a result if the damage to or the interruption of or interference with Eskom's services or apparatus or otherwise. The applicants attention is drawn to section 27 (3) of the Electricity Act 1987, as amended in 1994, which stipulates that the applicant can be fined and/or imprisoned as a result of damage to Eskom's apparatus.

12. No mechanical equipment, including mechanical excavators or high lifting machinery, may be used within Eskom's servitude area, or within close proximity of Eskom's services and equipment, without prior permission in writing and supervision of Eskom's authorised field services manager, Mr Calvin Sithole Tel. 033-395 3911, P O Box 5, Mkondeni, 3212. This permission must be obtained at least seven days prior to the commencement of any work within the servitude area.

13. No piles of waste shall be generated beneath the lines in the servitude area or left therein.

14. The applicant will be liable to Eskom for any damages caused to Eskom's distribution lines, structures and the site within the servitude area as a result of its operations.

15. Eskom shall at all times have unobstructed access to and egress from its servitude area.

16. An attached indemnity form to be completed and signed by the property owner or authorised person.
17. No work may be commenced with unless Eskom has received the applicants written acceptance of the certificate of compliance.

Department of Agriculture and Environmental Affairs – 20 January 2014
This office Land Use Regulatory Unit is in receipt of the abovementioned document lodged in terms of the National Environmental Act (no. 107 of 1998). A delay in response to this matter is regretted by this office.

Please be advised that in principle this office has no objections to the proposed Construction of the Georgedale & Surrounds Bulk Sewer Infrastructure; however a detailed report is required to make an informed decision. A final decision will be taken upon the receipt of a detailed application.

Ezemvelo KZN Wildlife – 29 January 2014
Thank you for forwarding the above mentioned application to Ezemvelo KZN Wildlife (Ezemvelo) for review and comment.

Ezemvelo's IEM Section is presently handling a high volume of applications with significant biodiversity issues. In light of the high volume and complexity of the projects, Ezemvelo's comments on the abovementioned project may be delayed by approximately two months, although we still strive to limit the delay as far as possible. Please direct any queries or concerns in this regard to the Acting Co-ordinator IEM, Ms Dinesree Thambu, on 033 845 1425 or thambud@kznwildlife.com.

We sincerely regret any inconvenience caused and thank you in advance for your support and understanding.

Consolidated City Comment – 30 January 2014
1. Coastal, Stormwater and Catchment Management:
No objections from Coastal, Stormwater and Catchment Management.

2. Disaster Management:
The proposal is of no concerns to this department.

3. eThekwini Electricity Department
The area is supplied electricity by ESKOM.

4. Durban Solid Waste
DSW has no requirements for this proposal.

5. Environmental Planning and Climate Protection Department:
Following review of the Background Information Document Environmental Impact Report, this Department has the following comment:

In principle, the provision of services to those households within and adjacent to risky and sensitive areas (wetlands, floodplains, watercourses, steep slopes) is not supported as this sets bad precedence. Provision of services in risky areas will also be in conflict with the principles of environmental management and sustainability.

All the risky and sensitive areas must be identified, delineated and assessed. The findings from the above assessment must guide the identification of alternate layout plans.

- **Feasible and reasonable pipeline routes and communal ablution facilities locations must be identified for further assessment by this Department.**

- **Alternative mitigation measures including a reduction in pipe size and manual trench digging should be considered for dealing with potentially sensitive areas as well as areas along and across watercourses.**

6. **Geotechnical Engineering:**

No geotechnical objections in principle to sewer installation.

Shallow hard rock sandstone may be encountered within proposed trench depth in places and power tools may be required for the removal of that rock. Ideally, a geotechnical centre-line assessment should be carried out to assess excavatability, shallow seepage that may impact trench sidewall stability and reuse of insitu materials for pipe bedding and selected backfill.

7. **eThekwini Traffic Authority:**
   No objection.

Transnet Freight Rail – 30 January 2014
BID received.

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.

Eskom – 18 December 2013
The following conditions are to be complied with:

- **Eskom's rights, services and equipment must be acknowledged at all times and may not be interfered or tampered with;**
- **All work within Eskom's servitude area must be done in accordance with the requirements of the Occupational Health and Safety Act No 85 of 1993;**
- **Eskom shall not be liable for the death of or injury to any person or for the loss of or damage to property;**
- **No mechanical equipment, including mechanical excavators or high lifting machinery, may be used within Eskom's servitude area, or within close proximity of Eskom's services and equipment, without prior permission;**
- **No piles of waste shall be generated beneath the lines in the servitude area or left therein and no damage is to be caused to Eskom's distribution lines.**

Consolidated City Comment – 30 January 2014
Environmental Planning and Climate Protection Department:
In principle, the provision of services to those households within and adjacent to risky and sensitive areas (wetlands, floodplains, watercourses, steep slopes) is not supported as this sets bad precedence. Provision of services in risky areas will also be in conflict with the principles of environmental management and sustainability.

All the risky and sensitive areas must be identified, delineated and assessed. The findings from the above assessment must guide the identification of alternate layout plans.

- **Feasible and reasonable pipeline routes and communal ablution facilities locations must be identified for further assessment by this Department.**

- **Alternative mitigation measures including a reduction in pipe size and manual trench digging should be considered for dealing with potentially sensitive areas as well as areas along and across watercourses.**

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):

Eskom – 18 December 2013

Noted. This correspondence has been forwarded on to the Applicant and the relevant precautionary measures have been included in the EMPr for application during the construction process.

Consolidated City Comment – 30 January 2014

Noted. The provision of sanitation services to the specific settlements applied for has been as per the recommendation of the eThekwini Water and Sanitation (EWS) Department. It is understood that the laying of infrastructure in risky areas is in conflict with the principles of environmental management and sustainability. As such, a consultative meeting was held with the Engineers, the Environmental Planning & Climate Protection Department (EPCPD) and the EAP, on the 21st January 2014, to determine areas are of concern along the proposed alignment routes. Where possible, alignments were rerouted outside of sensitive areas. Where this was not possible (due to the gravity fed nature of the system), the sensitive routes were flagged to be included in the specialist assessments undertaken. The specialist reports then further recommended where realignments needed to be undertaken, as per the field site investigations. These recommendations were implemented wherever the gradient and engineering design allowed for this. Where realignments were not possible, construction and operational mitigation measures were recommended in the specialist reports.

As such every effort has been made to ensure that suitable and practicable environmental and service provision measures have been met, ensuring a balance between sanitation service provision to communities in need, and environmental accountability and sustainability.

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

a. Site alternatives

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

Alternative S1 (preferred alternative)

Direct impacts:

- **Creation of skilled jobs for professional planners, designers, engineers, local liaison officers etc.**
- **Relevant input from the EPCPD, the engineers and the EAP, into the proposed layouts, will result in alignments which service the respective communities, but also take into account environmental considerations.**

Indirect impacts:

- **Creating job opportunities for community members through the review process and community consultation.**

Cumulative impacts:

- **Reduced environmental impacts associated with suitable specialist input.**

Alternative S2 (if any)

Direct impacts:

- **A poorly designed pipeline route, which does not take into consideration the presence of sensitive habitats such as watercourses and wetlands, or areas of conservation significance, would result in environmental damage.**
- **Poorly placed CAB's would not service the communities efficiently.**

Indirect impacts:

- **Inappropriate design of the crossing points could result in adverse environmental impacts such as contamination, erosion and sedimentation of the watercourse. It is the opinion of the EAP and the Project Engineers that the preferred watercourse crossing types have been appropriately designed.**

Cumulative impacts:

- **If the pipeline is routed through areas of conservation significance, this would result in disturbance of these areas, opening them up to invasion by alien vegetation. This would have adverse impacts on biodiversity.**
- **Poorly designed crossing points could result in water quality impacts which would adversely affect downstream water users.**
- **If the CABs do not meet the needs of the communities they are intended to serve, community members will continue to make use of their existing pit latrines, and the adverse environmental impacts associated with these systems would continue to occur.**

No-go alternative (compulsory)

Direct impacts:

- **The communities involved will not be serviced to a greater level as required and existing infrastructure (where available) will continue to serve the community at a substandard level. In addition, the future increased population will not have access to basic services.**
- **The communities involved will not receive better access to sanitation.**
- **The negative environmental impacts associated with the use of pit latrines, including groundwater contamination and increased risk of eutrophication in surface water resources, would persist.**

Indirect impacts:

- **There will be no increase in employment opportunities. No jobs will be created for professional planners, designers, engineers, local liaison officers etc. and the 155 jobs which would be created in the operational phase will no longer be available.**
- **The government standard for sanitation service provision will be not be met.**
- **A denial of basic human rights as stated in the Constitution of South Africa's Bill of Rights, will continue in this community.**

Cumulative impacts:

- **The developmental challenges faced by the eThekwini Municipality as highlighted in the analysis of the Integrated Development Plan (IDP) will remain i.e. basic access to adequate sanitation.**
- **The communities involved will not be serviced to a greater level as required and existing infrastructure will continue to serve the community at a substandard level.**
- **The government standard for sanitation services provision will be not be met.**
- **The infringement on human rights will continue in this community.**

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1	Alternative S2
There are no foreseeable impacts associated with the planning and design	**The planning and design of the pipeline route must be done with care and with the**

phase as the mitigation measures described in the adjacent block have been implemented during the planning and design phase which has occurred to date; therefore no further mitigation measures are deemed necessary. **Should the no-go alternative prevail, the community of Georgedale and surrounds will continue to receive sanitation services (where available at all) below the expected threshold and standard.**	**input of the EPCPD as well as relevant Specialists. This would allow for the identification and delineation of sensitive habitats, which would allow the pipeline designers to re-align the route as necessary to avoid impacting these areas.** **Siting of the CAB's must be decided through consultation with the communities these facilities are intended to service. This will ensure that the infrastructure efficiently and effectively meets the needs of the community, reducing reliance on pit latrines, and as a result, reducing impacts associated with the use of these systems.**

b. Process, technology, layout or other alternatives

List the impacts associated with any process, technology, layout or other alternatives that are likely to occur during the planning and design phase (please list impacts associated with each alternative separately):

The preferred layout has been determined using various factors: the final alignment lies within key areas which are based on a shared catchment area, existing infrastructure tie-in points and drainage to existing common waste water treatment works. Most routes within the final alignment are governed by gravity. Therefore, no alternate layout has been considered as the preferred option is the best available and most suitable.

Alternative A1 (preferred alternative)

Direct impacts:

- **Creation of skilled jobs for professional planners, designers, engineers, local liaison officers etc.**

Indirect impacts:

- **Inappropriate design of the crossing points could result in adverse environmental impacts such as contamination, erosion and sedimentation of the watercourse. It is the opinion of the EAP and the Project Engineers that the preferred watercourse crossing types have been appropriately designed.**

Cumulative impacts:

- **None identified**

Alternative A2 (if any)

Direct impacts:

- **A poorly designed pipeline route, which does not take into consideration the presence of sensitive habitats such as watercourses and wetlands, or areas of conservation significance, would result in environmental damage.**

Indirect impacts:

- **Poorly located CAB's would not service the communities efficiently, meaning that reliance on pit latrines would not be reduced and that the Municipality is nor meeting its mandate for improved sanitation service provision.**

Cumulative impacts:

- **Poorly designed crossing points could result in water quality impacts which would adversely affect downstream water users.**
- **If the pipeline is routed through areas of conservation significance, this would result in disturbance of these areas, opening them up to invasion by alien vegetation. This would have adverse impacts on biodiversity.**
- **If the CABs do not meet the needs of the communities they are intended to serve, community members will continue to make use of their existing pit latrines, and the adverse environmental impacts associated with these systems would continue to occur.**

No-go alternative (compulsory)

Direct impacts:

- **The communities involved will not receive better access to sanitation.**
- **The negative environmental impacts associated with the use of pit latrines, including groundwater contamination and increased risk of eutrophication in surface water resources, would persist.**

Indirect impacts:

- **No jobs will be created for professional planners and designers.**

Cumulative impacts:

- **The developmental challenges faced by the eThekwini Municipality as highlighted in the analysis of the Integrated Development Plan (IDP) will continue i.e. basic access to adequate sanitation.**

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1:	**Alternative A2:**
There are no foreseeable impacts associated with the planning and design phase as the mitigation measures described in the adjacent block have been implemented during the planning and design phase which has occurred to date; therefore no further mitigation measures are deemed necessary. **Should the no-go alternative prevail, the community of Georgedale and surrounds will continue to receive sanitation services (where available at all) below the expected threshold and standard.**	**The planning and design of the pipeline route must be done with care and with the input of the eThekwini Environmental Planning Section as well as relevant Specialists. This would allow for the identification and delineation of sensitive habitats, which would allow the pipeline designers to re-align the route as necessary to avoid impacting these areas.** **Siting of the CAB's must be decided through consultation with the communities these facilities are intended to service. This will ensure that the infrastructure efficiently and effectively meets the needs of the community, reducing reliance on pit latrines, and as a result, reducing impacts associated with the use of these systems.**

2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

a. Site alternatives

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

Alternative S1 (preferred site)

Direct impacts:

Soils

During the construction phase, soils will be excavated and cleared for the pipeline routes, CAB's and pump stations. Potential disturbances include compaction, physical removal and potential pollution by hydrocarbons. Furthermore, if standard stormwater control measures are not implemented during the construction phase, soil erosion and subsequent removal of vegetation may occur.

Vegetation and fauna

During the construction phase vegetation will be cleared for the construction of the pipeline routes, CAB's and pump stations. Wherever possible, alignments have been placed alongside existing foot/cattle paths, and generally areas that have been

impacted upon already for similar uses. As such it is anticipated that the vegetation redghnmoval will be limited.

Surface water
Clearing of vegetation during the construction phase will increase surface runoff and therefore adequate stormwater measures will need to be implemented. Waste generated during the construction phase may enter the environment through surface water runoff.

Air quality and Noise Pollution
Dust generation from stockpiles and soil stripping, vehicle traffic on dirt roads and motor vehicle fumes will have an impact on air quality. During the construction phase, the operation of machinery and equipment, as well as the construction vehicle traffic will increase noise levels.

Cultural and Historical
A specialist Assessment of heritage resources was undertaken for the project. No heritage resources were observed within or adjacent to the proposed development area. Should any heritage resources, as defined in the National Heritage Resources Act 25 of 1999, be discovered during the course of development activities, the developer must cease all work immediately, and adhere to standard protocol.

Visual
The project involves the construction of infrastructure over an extensive area. However, due to the fact that the pipelines will be buried, the only points of aesthetic impact will be the manholes, pump stations and CAB's. The manholes and pump stations will have a limited visual impact as they are not extensive structures, and the CAB's are simply container structures which will be placed within communities.

Traffic
An increase in heavy vehicle (construction vehicles) traffic will be limited to the construction period.

Socio-Economic
Construction in the area is expected to have a positive impact on the area and local community as it will provide employment opportunities during the construction phase.

Waste
The volume of waste produced will be limited to the construction phase. However if mitigation measures that are specified in the EMPr are adhered to then impacts will be minimal to non-existent. Solid waste produced must be correctly disposed of at a registered landfill site.

Indirect impacts:
Soils
Insufficient stormwater control measures may result in localised high levels of soil erosion, possibly creating dongas or gullies, which may lead to decreased environmental health and water quality.

Vegetation and Fauna
Increase in alien invasive species, therefore a possible loss in biodiversity.

Cumulative impacts:
Soils
Increased sedimentation and eutrophication within the river/stream systems may result if measures listed in the EMPr are not adhered to.

Surface Water

Surface water runoff shall stay the same. Erosion of sediment may increase because remediation measures may not be implemented.

Fauna
Threatened species identified may be at risk if the recommendations listed in the construction phase are not adhered to. It is a recommendation of the EAP that an Operational Maintenance and Spill Contingency plan be developed and implemented at the sites at which the Mozambique Tilapia are found, so that spills and leaks will not detrimentally affected the species.

Traffic
An increase in heavy vehicle (construction vehicles) traffic will be limited to the construction period. Traffic control measures will be implemented on site as per the EMPr.

Waste
There will be an increase in construction waste for the duration of the construction period. Following this, waste levels will go back to what they are at present and will be limited to domestic waste.

Socio-Economic
Potential for local employment during the construction and operational phases will have positive short term advantages through augmented income in families / communities.

Alternative S2 (if any)

Direct impacts:
As the alternate layout will not be pursued, there will be no construction-phase impacts.

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

- **The communities involved will not receive better access to sanitation and basic services applicable to the provision of basic human rights.**
- **Existing sanitation services infrastructure (where available) will deteriorate and maintenance costs may increase.**
- **The communities involved will continue to be served at a substandard level which is not in line with Government standards. This level may decrease further over time as infrastructure deteriorates further.**
- **Opportunity cost in loss of short, medium and long term employment.**
- **Eutrophication within the river/streams, stemming from agricultural practices, and the flow of sewage from pit latrines directly into the river/stream systems will continue.**

Indirect impacts:

- **There will be no increase in employment opportunities. The 155 jobs which would be created in the operational phase will no longer be available.**
- **The communities will continue to be served at a substandard level which is not in line with Government standards.**
- **Decrease in hygiene levels and possible infections where alternative ablution facilities are utilised.**
- **Denial of basic human rights and needs.**

Cumulative impacts:

- **The developmental challenges faced by the eThekwini Municipality as highlighted in the analysis of the Integrated Development Plan (IDP) will continue i.e. basic access to adequate sanitation.**
- **Existing sanitation services infrastructure will deteriorate and maintenance costs may increase.**
- **The communities involved will continue to be served at a substandard level which is not in line with Government standards.**
- **Decrease in hygiene levels and possible infections where alternative ablution facilities are utilised.**
- **Opportunity cost to communities in loss of short term economic stimulus.**

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1	Alternative S2
Soils • **Soil should be stockpiled in such a way as to minimize erosion;** • **Erosion berms or alternative mitigation measures must be implemented where necessary;** • **Exposed soils and material stockpiles shall be protected against wind erosion; and** • **The location of stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors.** ***Vegetation and Fauna*** • **All construction areas should be demarcated prior to construction to ensure that the footprint of the impacts are limited (including areas where vehicles may traverse);** • **All alien invasive species within the construction and development footprint should be removed and follow up monitoring and removal programmes should be initiated throughout the construction phase and once construction is complete, for the duration recommended in the Biodiversity Report;** • **Reseed cleared areas with an indigenous grass seed mix to prevent soil erosion;** • **Hunting and/or fishing activities on site are prohibited. This includes the setting of traps, or the killing of any animal caught in construction works;** • **No animal, reptile or bird of any sort found on site may be killed. This specifically includes snakes or other animals considered potentially dangerous. If such an animal is discovered on site an appropriately skilled person should be summoned to remove the animal from the site. Consideration should be given to selection and nomination of such a person prior to site establishment. If no-one is available, training should be provided to at least two site staff members.** ***Waste Management and Pollution Prevention*** • **Demarcated areas including the location and layout of waste storage and treatment facilities, ablution facilities, stockpiling and spoil areas and hazardous material storage areas where waste can be securely contained during the construction phase should be established. When adequate volumes (not more than 1 month) have accumulated all waste is to be removed from site and disposed of at a licensed facility;** • **Where possible, separate waste receptacles (for example glass, plastic, organic material etc.) shall be provided to allow for recycling;**	

- **Waste is not to be buried on site;**
- **The Contractor shall submit a Method Statement detailing a solid waste control system (storage, provision of bins, site clean-up schedule, bin clean-out schedule and point of disposal as a minimum) to the RE for approval;**
- **Storage of waste volumes must not exceed those stipulated in National Environmental Management: Waste Act, Schedule 1;**
- **Hydrocarbons should be stored in a bunded storage area;**
- **All hazardous materials including paints, turpentine and thinners must be stored appropriately to prevent these contaminants from entering the environment;**
- **Prior to removal, empty drums must be stored in a bunded area to prevent spillage;**
- **Drizit or similar type product must be used to absorb hydrocarbon spills in the event that such spills should occur.**

Surface Water

- **Care must be taken to ensure that in removing vegetation adequate erosion control measures are implemented;**
- **The propagation of low-growing dense vegetation suitable for the habitat such as grasses or sedges is the best natural method to reduce erosion potential;**
- **No watercourse may be diverted, dammed or modified without the approval of the Method Statement by the RE/ECO;**
- **No work may commence in wetland systems without the approval of the Method Statement by the RE/ECO.**
- **Water shall not be pumped from the settlement ponds into the river without the approval of the ER; and**
- **Washing of clothes and equipment, bathing and swimming in rivers, streams and dams, is strictly forbidden.**

Air Quality

- **Heavy vehicles and machinery should be serviced regularly to minimise exhaust fume pollution;**
- **Soil stockpiles will be located in areas to limit the erosive effects of the wind, and to limit dust;**
- **Removal of vegetation will be avoided until such time as soil stripping is required, which will limit dust.**
- **Vehicle speeds on unpaved roads must be no more than 40 km/h to limit the amount of dust generated;**
- **Haulage distances should be at a minimum;**
- **Material loads shall be suitably covered and secured during transportation;**
- **Water should be sprayed onto gravel roads when required;**
- **Environmentally friendly soil stabilisers may be used as additional measures to control dust on gravel roads and construction areas, where necessary;**
- **All equipment should be kept in good working order;**
- **Should excessive emissions be observed, the Contractor is to have the equipment seen to as soon as possible;**
- **Equipment should be operated within its specifications and capacity and should not be overloaded;**
- **All machinery/plant should be serviced and lubricated regularly to ensure a good working order;**
- **Ensure that the potential noise source will conform to the South African Bureau of Standards recommended code of practice, South African National Standards (SANS) Code 10103:2008, so**

that it will not produce excessive or undesirable noise when it is released; • **All the Contractors' equipment shall be fitted with effective exhaust silencers and shall comply with the South African Bureau of Standards recommended code of practice and the SANS Code 0103:1983, for construction plant noise generation;** • **All of the Contractors' vehicles shall be fitted with effective exhaust silencers and shall comply with Road Traffic Act (Act 29 of 1989) when any such vehicle is operated on a public road.** ***Cultural and Historical*** • **Should any heritage resources, as defined in the National Heritage Resources Act 25 of 1999, be discovered during the course of development activities, the developer must cease all work immediately, and adhere to the standard protocol as laid out in the aforementioned Act.** ***Traffic*** • **Provide sufficient area for the storage of heavy vehicles within the construction site;** • **Ensure that all road diversions and closures are considered as part of the development footprint and do not add any unnecessary roads;** • **Ensure that heavy / large load traffic is appropriately routed and appropriate safety precautions are taken to prohibit road collisions and traffic incidences;** • **Ensure that vehicle operators are suitably licensed, have had appropriate environmental and safety induction, are aware of specific site procedures, and are well rested and cognisant when operating heavy or unsafe vehicles / machinery;** • **Ensure that sufficient warning and safety signage has been erected throughout the construction site; and** • **Where necessary, traffic calming measures need to be constructed to ensure the slow movement of vehicles and machinery.** ***Monitoring*** • **The contractor must appoint an on-site Environmental Liaison Officer (ELO) who will manage the day to day compliance with the EMPr. An independent Environmental Control Officer (ECO) must be appointed to conduct site audits (the frequency of which is to be defined by the DAEA) and monitoring of compliance to the EMPr.**	

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the construction phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:

The most cost-effective, reliable and long term options have been considered in the process, technology and layout.

Indirect impacts:

No indirect impacts identified.

Cumulative impacts:

No cumulative impacts identified.

Alternative A2

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

- **The communities involved will not receive better access to sanitation and basic services applicable to the provision of basic human rights.**
- **Existing sanitation services infrastructure (where available) will deteriorate and maintenance costs may increase.**
- **The communities involved will continue to be served at a substandard level which is not in line with Government standards. This level may decrease further over time as infrastructure deteriorates further.**
- **Opportunity cost in loss of short, medium and long term employment.**
- **Eutrophication within the river/streams, stemming from agricultural practices, and the flow of sewage from pit latrines directly into the river/stream systems will continue.**

Indirect impacts:

- **There will be no increase in employment opportunities. The 155 jobs which would be created in the operational phase will no longer be available.**
- **The communities will continue to be served at a substandard level which is not in line with Government standards.**
- **Decrease in hygiene levels and possible infections where alternative ablution facilities are utilised.**
- **Denial of basic human rights and needs.**

Cumulative impacts:

- **The developmental challenges faced by the eThekwini Municipality as highlighted in the analysis of the Integrated Development Plan (IDP) will continue i.e. basic access to adequate sanitation.**
- **Existing sanitation services infrastructure will deteriorate and maintenance costs may increase.**
- **The communities involved will continue to be served at a substandard level which is not in line with Government standards.**
- **Decrease in hygiene levels and possible infections where alternative ablution facilities are utilised.**
- **Opportunity cost to communities in loss of short term economic stimulus.**

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1:	**Alternative A2:**
All mitigation measures explained under the site alternatives would apply.	

2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

a. Site alternatives

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

Alternative S1 (preferred alternative)

Direct impacts:

Impacts that may arise during the operational phase are varied and can include:

- **Continued eutrophication of wetlands and river/stream systems due to spills associated with incorrect/poor maintenance activities regarding the bulk sewerage infrastructure.**
- **Vandalism and theft of infrastructure resulting in numerous knock on effects such as the breaking of lines, leaks etc.;**
- **The provision of sanitation services and the attaining of basic human rights associated with access to services, for the communities involved;**
- **Permanent employment opportunities for members of the community associated with the cleaning/maintenance of CAB's;**
- **The successful implementation of mandates listed in the IDP;**
- **The sanitation infrastructure has been planned to include population growth within the settlements applied for, thus providing the opportunity to expand upon the operational infrastructure and provide access to sanitation services for future population growth.**

Indirect impacts:

- **Damage to the integrity of the flora as a result of incomplete measures listed in the construction rehabilitation as per the EMPr;**
- **The sedimentation of wetlands and river/stream systems as a result of incomplete/incorrect construction rehabilitation measures;**
- **Erosion along the pipe alignments and at points such as manholes and pumpstation as a result of incorrect erosion control measures listed in the construction EMPr;**

Cumulative impacts:

- **The extended spread of alien plant invasion throughout the points of construction due to incomplete maintenance measures not implemented as per the recommendations of the Biodiversity Reports;**
- **Localised extinction of the Mozambique tilapia if sewage spills are extensive enough and not mitigated immediately;**
-

Alternative S2 (if any)

Direct impacts:

As the alternate layout will not be pursued, there will be no operational-phase impacts.

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

- **The communities involved will not receive better access to sanitation and basic services applicable to the provision of basic human rights.**
- **Existing sanitation services infrastructure (where available) will deteriorate and maintenance costs may increase.**
- **The communities involved will continue to be served at a substandard level which is not in line with Government standards. This level may decrease further over time as infrastructure deteriorates further.**
- **Opportunity cost in loss of short, medium and long term employment.**
- **Eutrophication within the river/streams, stemming from agricultural practices, and the flow of sewage from pit latrines directly into the river/stream systems will continue.**

Indirect impacts:

- **There will be no increase in employment opportunities. The 155 jobs which would be created in the operational phase will no longer be available.**
- **The communities will continue to be served at a substandard level which is not in line with Government standards.**
- **Decrease in hygiene levels and possible infections where alternative ablution facilities are utilised.**

- **Denial of basic human rights and needs.**

Cumulative impacts:

- **The developmental challenges faced by the eThekwini Municipality as highlighted in the analysis of the Integrated Development Plan (IDP) will continue i.e. basic access to adequate sanitation.**
- **Existing sanitation services infrastructure will deteriorate and maintenance costs may increase.**
- **The communities involved will continue to be served at a substandard level which is not in line with Government standards.**
- **Decrease in hygiene levels and possible infections where alternative ablution facilities are utilised.**
- **Opportunity cost to communities in loss of short term economic stimulus.**

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1	**Alternative S2**
• **It is imperative that all mitigation measures included in the site specific EMPr will need to be adhered to in order to reduce environmental impacts.** • **It is a recommendation of the EAP that an Operational Maintenance and Spill Contingency plan be developed and implemented for the sites at which the Mozambique Tilapia are found so that spills/burst lines etc. will not have a detrimental affected on the species.** • **Community education/awareness programmes (including all CAB cleaners) be undertaken yearly at which community members are made aware of the process involved to notify the municipality of leaks/spills of the system. As a result of the extensive nature of the sanitation system, it is not possible to implement routine maintenance measures along each line, and as such, community involvement is key in ensuring leaks and spills are detected and fixed as soon as possible.**	

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the operational phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:

- **No other processes, technologies, layouts or alternatives have been considered as the end goal of the construction of CAB facilities and associated infrastructure for the communities in question will not be attained if this is considered. The most cost-effective, reliable and long term options have been considered in the process, technology and layout.**

Indirect impacts:

- **No indirect impacts identified.**

Cumulative impacts:

- **Service provision for all communities involved.**

Alternative A2

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

- **The communities involved will not receive better access to sanitation.**

Indirect impacts:

- **There will be no increase in employment opportunities. The 155 jobs which would be created in the operational phase will no longer be available.**

Cumulative impacts:

- **The developmental challenges faced by the eThekwini Municipality as highlighted in the analysis of the Integrated Development Plan (IDP) will continue.**

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1	**Alternative A2**
All mitigation measures included in the site specific EMPr will need to be adhered to in order to reduce environmental impacts. However, no significant operational impacts have been identified.	

2.4. IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING OR CLOSURE PHASE

a. Site alternatives

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

Alternative S1 (preferred alternative)

The CAB structures are considered to be temporary structures which will be utilised to provide sanitation services to the greater settlements in question. 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. As such there may come a point where the CAB structures will be removed from site. However it should be noted that the structures will be utilised at other sites and will not be decommissioned or closed. It must also be noted that these structures are fully contained within a container and will not be built on foundations. The decommissioning of these structures is not anticipated, therefore, to have a significant impact. Measures listed in the EMPr regarding the decommissioning or closure of the structures are to be implemented.

The proposed laid pipes are considered permanent and long term infrastructure which will tie-in to existing reticulation and will provide future reticulation when the area is developed. The proposed pipeline infrastructure will not be decommissioned or closed.

Direct impacts:
None

Indirect impacts:
None

Cumulative impacts:
None

Alternative S2

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

- **The communities involved will not receive better access to sanitation.**

Indirect impacts:

- **There will be no increase in employment opportunities. The 155 jobs which would be created in the operational phase will no longer be available.**

Cumulative impacts:

- **The developmental challenges faced by the eThekwini Municipality as highlighted in the analysis of the Integrated Development Plan (IDP) will continue i.e. basic access to adequate sanitation.**

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1	Alternative S2
Measures listed in the EMPr with regards to the closure or decommissioning of the CAB structures are to be adhered to. These are to include the scarification of hardened surfaces, revegetation etc.	

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the decommissioning or closure phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

The CAB structures are considered to be temporary structures which will be utilised to provide sanitation services to the greater settlements in question. 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. As such there may come a point where the CAB structures will be removed from site. However it should be noted that the structures will be utilised at other sites and will not be decommissioned or closed. It must also be noted that these structures are fully contained within a container and will not be built on foundations. The decommissioning of these structures is not anticipated, therefore, to have a significant impact. Measures listed in the EMPr regarding decommission or closure of the structures are to be implemented.
The proposed laid pipes are considered permanent and long term infrastructure which will tie-into existing reticulation and will provide future reticulation when the area is developed. The proposed pipeline infrastructure will not be decommissioned or closed.

Direct impacts:
None

Indirect impacts:
None

Cumulative impacts:
None

Alternative A2

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

- **The communities involved will not receive better access to sanitation.**

Indirect impacts:

- **There will be no increase in employment opportunities. The 155 jobs which would be created in the operational phase will no longer be available.**

Cumulative impacts:

- **The developmental challenges faced by the eThekwini Municipality as highlighted in the analysis of the Integrated Development Plan (IDP) will continue i.e. basic access to adequate sanitation.**

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1	Alternative A2
Measures listed in the EMPr with regards to the closure or decommissioning of the CAB structures are to be adhered to. These are to include the scarification of hardened surfaces, revegetation etc.	

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 S1 (preferred site)	Alternative S2
An onsite Environmental Liaison Officer (ELO) must be appointed to oversee and ensure that the EMPr is correctly and stringently implemented and maintained for the duration of the construction phase of the activity. The ELO will be responsible for the day to day environmental monitoring of the construction of the water supply scheme. **An independent Environmental Control Officer (ECO) will be employed to conduct audits of the activity for the duration of the construction phase. The ECO will audit the compliance of the EMPr and specify any corrective measures that may be required. The ECO will also be in the position to issues penalties if any gross non-compliance with the EMPr occurs.**	

Alternative A1 (preferred alternative)	Alternative S2
The preferred site is the preferred alternative.	

3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative S1 (preferred site)
The impacts related to the Georgedale and surrounds sanitation services will generally occur during the construction phase of the activity. All these impacts can predominantly be mitigated as described in the document above. Furthermore, detailed mitigation and management principles for the construction phase will be included in the Environmental Management Programme (EMPr).

The proposed activity will have little to no significant negative impact on the receiving environment as the project designers have taken steps to identify and delineate the extent of any sensitive environments (including watercourses, wetlands and areas of conservation significance) and as far as possible, have re-aligned the pipelines around these areas. In addition, mitigation measures for identified impacts have been proposed and if these are undertaken correctly and stringently, the negative impacts associated with the development will be of a short duration. An approved EMPr must be in place for the construction activities as well as the decommissioning of the contractor's camp. An independent ECO must be appointed to enforce EMPr compliance.

The social impact of the proposed project will be of high significance to the local and wider community. The impact shall be of a positive long term significance with a high impact.

In the light of the impending need for improving the current sanitation services to these communities, the impacts identified herein, the definite successful mitigation of these impacts, and the definite positive impacts that will be forthcoming from the activity, and as there are no fatal flaws associated with the project, it is EAP's opinion that the proposed development should receive environmental approval.

Alternative S2

This alternative is not being pursued.

Alternative A1 (preferred alternative)

The proposed activity will have no significant negative impact on the receiving environment if the mitigation measures and management of the impacts (particularly during the construction phase) are undertaken. It is imperative that an approved EMPr be in place for the construction activities. An independent ECO should be appointed to enforce EMPr compliance.

Alternative A2

No-go alternative (compulsory)

The no-go alternative will have highly significant negative social impacts, of a long term duration on the surrounding communities. Basic levels of sanitation will not be met. There will be no increase in employment opportunities in the planning, construction and operational phases. The 155 jobs which would be created in the operational phase will no longer be available. The developmental challenges faced by the eThekwini Municipality will continue. Decrease in hygiene levels and possible infections where alternative ablution facilities are utilised.

SECTION F. RECOMMENDATION OF EAP

Is the information contained in this report and the documentation attached hereto in the view of the EAPr sufficient to make a decision in respect of this report?	**YES**	
If "NO", please contact the KZN Department of Agriculture & Environmental Affairs regarding the further requirements for your report.		

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:

The authorization should include the following provisions:

- **An EMPr must be compiled for the Site Establishment and Construction phases, prior to the contractor moving on site.**
- **An Environmental Liaison Officer (ELO) must be appointed for day to day environmental management and an independent Environmental Control Officer (ECO) to complete monthly compliance audits of the EMPr for the duration of the construction phase.**
- **All stipulations set out by stakeholders such as Eskom, in the comments section, with regards to servitudes, must be upheld.**
- **It is a recommendation of the EAP that an Operational Maintenance and Spill Contingency plan be developed and implemented for the sites at which the Mozambique Tilapia are found so that spills/burst lines etc. will not have a detrimental affected on the species.**
- **Community education/awareness programmes (including all CAB cleaners) be undertaken yearly at which community members are made aware of the process involved to notify the municipality of leaks/spills of the system. As a result of the extensive nature of the sanitation system, it is not possible to implement routine maintenance measures along each line, and as such, community involvement is key in ensuring leaks and spills are detected and fixed as soon as possible.**

With regards to the following:

Construction within rivers:

- **Construction within the river systems must be approved by the RE/ECO, according to a Method Statement.**
- **Site specific mitigation measures as set out in the EMPr must be followed stringently.**

Noise Pollution:

- **Maintain machinery regularly, as per the manufacturer's specifications.**
- **Limit working hours from 7:00 to 17:00.**

Air Pollution:

- **Maintain vehicles and machinery to control exhaust emissions.**
- **Topsoil stockpiles to be vegetated if they are to stand for more than 2 months.**

Water Pollution:

- **Machinery is to be maintained so that it does not leak or spill fluids.**
- **All measures shall be taken to prevent any pollution from entering any watercourse or any wet area.**
- **Stabilising vegetation must only be removed where necessary, and must be replaced with indigenous, non-invasive vegetation as soon after development as possible.**
- **Storm water management must approximate pre-development conditions.**

Erosion Measures:

- **Apply all possible erosion control measures (diversion berms, geotextiles etc.) to any areas which may be susceptible to erosion. Erosion control measures to be pegged down wherever necessary.**
- **Ensure that whatever erosion takes place is rehabilitated as soon as possible.**

Accidental Spillages:

- **Any spillage shall be cleared up immediately, with the substances being taken to the nearest registered landfill site capable of disposing of such materials.**
- **A register shall be kept of all incidents on site, showing measures taken to clear up the spillages.**

Heritage Issues:

- **If, under any circumstance an artefact of cultural or historical significance is unearthed, AMAFA must be contacted immediately and all work must cease.**

Health and Safety:

- **Traffic signage should be erected to advise people of roadwork's and heavy machinery in the area.**
- **A maximum speed limit of 40km/h, or as per the traffic engineers' advice, should be imposed on all construction vehicles.**
- **Pollution that could be detrimental to humans, flora and fauna shall be minimised as much as possible (dust control methods must be implemented, avoid using the surrounding environment as a toilet, avoid pollution of any kind entering the soil and water systems etc).**

Waste Management:

- **All solid waste shall be collected and separated into recyclable and non-recyclable waste in on site waste bins and regularly disposed of in the nearest registered landfill site.**
- **Hazardous waste shall be disposed of at the Shongweni Landfill site.**
- **No long drop toilets will be allowed on site. All chemical/portable toilets are to be serviced regularly by a registered service provider.**

Environmental Control:

- **The employment of an on-site Environmental Liaison Officer (ELO) who would be responsible for the day to day management of the construction phase of the activity is essential.**
- **An independent Environmental Control Officer must be employed to undertake audits (the frequency of which is defined by the DAEA) of the compliance with the EMPr.**

Alien Invasive:

- **All alien invasive species must be cleared from the construction site and measures must be put in place to inhibit the relocation of these species into disturbed area during the rehabilitation phase of the project.**
- **The duration of alien plant control plans should be implemented as defined in the Biodiversity Report.**

Working in wetlands/watercourses:

- **Construction activities should, as far as possible be conducted during the winter months in order to limit impacts on downstream aquatic ecosystems;**
- **When pipelines are taken through river crossings care should be taken to limit the construction footprint to the smallest possible area. The construction footprint should be clearly demarcated and riparian areas outside the construction footprint should not be degraded.**
- **Certain sections of the proposed pipeline routes (e.g. at Georgedale Site 2) lie in wetlands. If these routes are retained then especial care must be taken in regard to the soil handling so that preferential drainage routes are not created.**
- **The stream bed and banks must not be left in a state which will lead to accelerated soil erosion. Gabions may be used to protect the area.**
- **Original vegetation types must be re-established with only indigenous plants. If rushes, reeds or sedges are needed, they may be grown from plugs of such vegetation taken from the surrounding area. The plugs must be individually dug and it will not be acceptable for areas of vegetation to be denuded for this purpose.**
- **No soil, gravel, or any other material may be dumped anywhere in a stream/river channel.**

- **No cement or cement product may be thrown into a stream or river and no cement/concrete mixing equipment may be washed there.**

Soil handling for trench excavation and filling:

- **The topsoil from the excavations must be set aside and kept separate from the subsoil which is excavated from below. After the pipe has been installed the reverse procedure must be followed with the subsoil being returned first.**
- **If there is a surplus of subsoil as a result of the volumes taken up by the pipe and any bedding material, then care must be taken to leave space for all of the topsoil to be returned. The soils must be compacted as is appropriate and, at the completion of the process, the original surface profile must be re-established. Any surplus subsoil may be disposed of by scattering it thinly around in the area on either side of the pipeline trench.**
- **The working servitudes must be kept as narrow as is possible and the widths at any given site should be determined by the Environmental Control Officer in collaboration with the engineers.**
- **As much work as possible should be done manually.**

Rehabilitation:

- **The rehabilitation of all vegetation must be undertaken as soon as possible after the completion of the construction phase.**
- **Both the trench and the working area must be revegetated by planting them over with indigenous grass species. If the original grass plants are still viable then they may be used but otherwise seed must be used.**
- **Only indigenous species will be allowed to be used for the rehabilitation.**

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