

Basic Assessment Report



edtea

Department :

Economic Development, Tourism and
Environmental Affairs

PROVINCE OF KWAZULU-NATAL

(For official use only)

EIA File Reference Number:

NEAS Reference Number:

Waste Management Licence Number:
(if applicable)

Date Received:

KZN/EIA/

BASIC ASSESSMENT REPORT

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

This template may be used for the following applications:

- Environmental Authorization subject to basic assessment for an activity that is listed in Listing Notices 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 Economic Development, Tourism & 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 Economic Development, Tourism & 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 Economic Development, Tourism & Environmental Affairs to which the application has been allocated (please refer to the details provided in the letter of acknowledgement for this application).

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DEPARTMENTAL REFERENCE NUMBER(S)

File reference number (EIA):	DM/0037/2013
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:	Kerry Seppings Environmental Management Specialists cc (KSEMS)		
Physical address:	4 Woodville Lane, Off Hawkstone Avenue, Summerveld, Assagay		
Postal address:	P. O. Box 396, Gillitts		
Postal code:	3603	Cell:	079 520 1583
Telephone:	031 769 1578	Fax:	086 535 5281
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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 (years)
Kerry Stanton	MSc Cum laude BSc (Hons) MSc	- EAPSA Certified, - Certified Professional Natural Scientist (400167/12), - Certified GCX Carbon Footprint Analyst (Level 1)	18
Colin Holmes	MSc Cum laude BSc (Hons)		2
Patricia Nathaniel	BSc Honours (Environmental Management)		3

3. NAMES AND EXPERTISE OF SPECIALISTS

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

Name of specialist/Company	Education qualifications	Field of expertise	Section/ s contributed to in this basic assessment report	Title of specialist report/ s as attached in Appendix D
GroundTruth	Detailed CV available on request	Wetland	Section 4	Wetland Study: Umlazi Sanitation Management

SECTION B: ACTIVITY INFORMATION

1. PROJECT TITLE

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

The construction of Community Ablution Blocks (CABs) and associated infrastructure within the Happy City informal settlement, Umlazi, eThekweni Municipality

Background

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

The ablution facility chosen by Council to be installed is a temporary modified container. 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 point. Further detail of the programme scope is attached as Appendix G1 of this document.

This proposed development is targeted toward the Happy City informal settlement in Umlazi B. The two (2) sites are situated approximately 250m away from each other and within 50m of the same watercourse. The sites are surrounded by a medium density residential area and have been strategically located to allow for easy access to all residents of the settlement.

CAB Site 1 will consist of 2 CABs (a male and a female block) adjacent to each other on the same plot of land, however due to the close proximity of CAB site 2, the male and female blocks will be situated on either side of the watercourse (refer to Appendix A for a map indicating CAB site location). The CABs are made from corrugated steel and the associated pipework is made from unplasticized Poly Vinyl Chloride (u PVC) and are approximately 160mm in diameter (gravity sewer main lines) which will be used to connect the CABs to the existing bulk sewer pipeline which will then transfer the sewerage to the Southern Waste Water Treatment Works facility.

The proposed CAB site is located within 32 metres of a watercourse and cumulatively infrastructure exceeding 50 square metres will be constructed thus a Basic Assessment Process is deemed necessary.

Project Technology and Design

Technology

Technology options for CABs are dependent on the area characteristics and proximity to existing sewer lines. There are two basic technology options applied in proposed projects such as these, namely sewer discharge and CAB to storage tank or VIP Pit.

Sewer discharge is the option used in areas that are characterized by high population density and located in close proximity to a sewer line where the CAB is then connected to a sewer system. In a typical CAB there are two separate areas the male part (two or more flush toilets, two urinals, two hand wash basins and two showers) and the female part a (four or more flush toilets, two hand wash basins and two showers). Laundry facilities are generally present and lighting is provided via translucent roof sheeting and external mast mounted floodlights (NB: These are typical CAB designs and would vary according to the specific site

and availability of space).

The CAB to storage tank or VIP Pit is a technology applied where there is no local connection to the sewerage system and the CAB is connected to a storage tank or VIP pits. For this project, the first option will be applied as there is an existing sewer line to which the CABs can connect.

Design

There are a number of factors to consider when designing CABs, the following are a few of these factor:

- Land acquisition: Informal settlements are generally located on land plots that are owned by the eThekweni Municipality therefore landowner notification is necessary;
- Space consideration: Sites or plots must be greater than 250m²;
- Gradient: The average slope must be less than 1:3;
- Environmental consideration: There must be low risk of groundwater pollution or if present this must be mitigated; and
- Water supply: Sites must have basic level of water supplies.



Figure one: The Happy City informal settlement and proposed CAB site 1 (BX5).



Figure two: Prefabricated container in Durban (Source: eThekweni Water and Sanitation, 2010)



Figure three: The male and female blocks of CAB Site 2 will be located on either side of this watercourse (D1 Ebuhleni)

Figure one and three are of the proposed CAB site locations and Figure two illustrate the external structure of the CABs. These figures illustrate a temporary modified container comprising toilets, urinals, showers, basins, a store room, an external wash trough and a 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. In terms of quality and value the CAB's are a quick, affordable, functional and a temporary solution to the lack of sanitation in informal settlements. Furthermore the CAB's are also sustainable as they will connect directly into the proposed bulk infrastructure.

2. ACTIVITY DESCRIPTION

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

<p>As per LN 1_ GNR 544_ 18th June 2010 promulgated from the 2nd of August 2010:</p>	<p>No. 11 The construction of:</p> <ul style="list-style-type: none"> i) Canals; ii) Channels; iii) Bridges iv) Dams; v) Wiers; vi) Bulk stormwater outlet structures; vii) Marinas; viii) Jetties exceeding 50 square metres in size; ix) Slipways exceeding 50 square metres in size; 	<p>The applicant proposes to construct an ablution facility and associated pipework within the Umlazi Happy City Informal Settlement, eThekweni Municipality, triggering activity 11 of GNR 544, infrastructure covering an area greater than 50m² within 32 meters of a watercourse.</p>
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	<p>x) Buildings exceeding 50 square metres in size; or</p> <p>xi) Infrastructure covering 50 square metres or more</p> <p>Where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse.</p>	
<p>As per LN 1_ GNR 544_ 18th June 2010 promulgated from the 2nd of August 2010:</p>	<p>No.18</p> <p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from</p> <p>(i) A watercourse (ii) The sea (iii) The seashore (iv) The littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is greater-</p> <p>But excluding where such infilling, depositing, dredging, excavation, removal or moving</p> <p>(i) Is for the maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or (ii) Occurs behind the development setback line.</p>	<p>It is possible that there will be potential infilling or removal of more than 5m³ of material in a watercourse (in the case of the pipelines requiring trenched crossings).</p>

3. 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

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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.

In 2010, approximately 150 000 families were estimated to occupy 417 informal settlements within the eThekweni Municipality, of this a large portion was located within Umlazi (EWS, 2009). The residents of these informal settlements require access to basic services such as access to water and sanitation.

Alternative A1 and S1 (preferred):

Criteria for the preferred Alternative – Site Selection

The proposed scope of works for this development entails the construction of a male and female ablution block, gravity sewer main lines will connect the CABs to the existing bulk sewer pipeline in the area. The CABs will be located on a shared catchment area, existing infrastructure tie-in points, drainage to existing common waste water treatment works and defined existing settlement features that are less likely to change when new settlement plans are prepared. The location of the CAB and associated infrastructure have been chosen by taking into consideration graves, nearby watercourses, proximity to D'MOSS, existing dwellings and associated structures, proximity to tie-in points and community approval and "buy-in".

CAB site 1 (BX5 settlement) was chosen due to the absence of any form of proper sanitation within the settlement and the male and female blocks of CAB site 2 (D1 Ebuhleni) are located on either side of the watercourse as there is limited land available for both ablution blocks to be constructed on the same portion of land. Both these settlements have constraints in terms of feasible and suitable land for the proposed CABs therefore the preferred site alternatives are the only feasible options.

Criteria for the preferred Alternative – Technology Options

The ablution facility selected by the eThekweni Municipality is a temporary modified container comprising toilets, urinals, showers, basins, a store room, an external wash trough and a standpipe. CABs were chosen as the preferred technology alternative as it is a temporary structure that can be easily moved once settlements are upgraded to formal houses. CABs also connect directly to the existing bulk infrastructure in the area therefore new infrastructure is not necessary. These CABs meet the demand for proper sanitation within informal settlements in a sustainable, affordable and functional manner.

An alternative to the CABs was the introduction of VIPs to the informal settlement. However CABs were preferred over the VIPs for the following reasons:

- CABs connect to existing bulk infrastructure in the area and can be easily moved and re-connected once the informal settlement has been upgraded to formal houses. In comparison, VIPs do not connect to bulk infrastructure therefore cannot be transferred to another informal settlement.
- VIPs can result in groundwater contamination if not properly lined, it is difficult to construct in rocky or areas with undulating hills and there is an increased cost associated with the installation of vent pipes. CABs are found to be cheaper to install, results in no groundwater contamination as all sewerage are transferred to the bulk infrastructure and eventually to the waste water treatment works facility whereas sludge that enters the pit in VIPs requires secondary treatment.

In summary the preferred site alternative was chosen to service the need of the residents of the informal settlements in relation to the environment, cost and existing sewerage infrastructure and the preferred site alternatives proved to be the most feasible. In terms of technology, the CABs were preferred over VIPs due to being cost effective and to create a connection to the existing sewerage infrastructure for future use. Therefore there were no feasible site or technological alternatives requiring further investigation.

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Preferred Alternative Specifications

Three CAB sites are proposed to service the Happy City informal settlement. CAB site 1 has male and female ablution blocks adjacent to each other whilst CAB sites 2 and 3 are situated across a watercourse with only one ablution block per site. These will have estimated dimensions of 8 x 9.5m each. Sewerage from the toilets will travel to an existing bulk gravity sewer pipeline. The bulk sewer line will tie into an existing sewer manhole in the area.

The pipes that will connect the CABs to the bulk sewer pipeline will be approximately 160 mm in diameter and will be made from unplasticized Poly Vinyl Chloride (uPVC) which is widely used during construction due to its high resistance against chemicals, sunlight and oxidation from water.

No Go Alternative i.e. not constructing the ablution facilities within the Happy City informal settlement. The no go alternative would result in the local community's continued use of other forms of ablution and their continued exposure to unsanitary conditions. The construction of formalised sanitation facilities is aimed at improving hygiene conditions within this area of the eThekweni Municipality, which would not result if the project did not go ahead.

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

4. 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 S1 ¹ (preferred or only site alternative)			
Site Number	Latitude (S):	Longitude (E):	Distance from Watercourse (m)
1 (BX5)	29°57'41.57"S	30°54'24.81"E	Approximately 25m
2 (male block) (D1 Ebuhleni)	29°57'38.80"S	30°54'31.31"E	Approximately 20m
3 (female block) (D1 Ebuhleni)	29°57'37.78"S	30°54'30.90"E	Approximately 20m
Alternative S2 ² (if any)	N/A	N/A	N/A
Alternative S3 ³ (if any)	N/A	N/A	N/A

In the case of linear activities:

Alternative:	Latitude (S):	Longitude (E):
Alternative S1 (preferred or only route alternative)		

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

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

² "Alternative S.." refer to site alternatives.

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

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5. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:		Total size of the toilet platform area:
Alternative A1 (preferred activity alternative)		304m ²
Alternative A2 (if any)		N/A m ²
Alternative A3 (if any)		N/A m ²

or, for linear activities:

Alternative:		Total size of the toilet platform area:
Alternative A1 (preferred activity alternative)		Approximately 2508 m ²
Alternative A2 (if any)		N/A m ²
Alternative A3 (if any)		N/A m ²

6. SITE ACCESS

Does ready access to the site exist?	YES X	NO
If NO, what is the distance over which a new access road will be built	N/Am	
Describe the type of access road planned:		
N/A		

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

7. 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:

- 7.1. the scale of the plan which must be at least a scale of 1:500;
- 7.2. the property boundaries and numbers/ erf/ farm numbers of all adjoining properties of the site;
- 7.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 7.4. the exact position of each element of the application as well as any other structures on the site;
- 7.5. 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;
- 7.6. walls and fencing including details of the height and construction material; N/A
- 7.7. servitudes indicating the purpose of the servitude; N/A
- 7.8. sensitive environmental elements within 100metres of the site or sites including (but not limited thereto):
 - rivers, streams, drainage lines or wetlands;
 - the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;

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- areas with indigenous vegetation including protected plant species (even if it is degraded or infested with alien species);
- 7.9. for gentle slopes the 1metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 7.10. the positions from where photographs of the site were taken.

8. SITE PHOTOGRAPHS

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

9. FACILITY ILLUSTRATION

A detailed illustration of the 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.

10. ACTIVITY MOTIVATION

10.1. Socio-economic value of the activity

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

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

Will the activity contribute to service infrastructure?

Is the activity a public amenity?

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

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

What percentage of this will accrue to previously disadvantaged individuals?

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

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

What percentage of this will accrue to previously disadvantaged individuals?

R 1,5 million	
R0	
YES X	NO
YES X	NO
Approximately 10 contract workers during construction	
Approximately R158 400	
100%	
2 caretakers	
R1,6 million	
100%	

10.2. Need and desirability of the activity

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

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 eThekweni Municipality's Provision of Water and Sanitation to Informal Settlements Programme. Details of the programme are provided in Appendix G1.

In South Africa, the Department of Water Affairs is the authority responsible for the formulation of national policy and legislation governing the delivery of water and sanitation. In Durban, the eThekweni Water and Sanitation (EWS) unit is mandated with the implementation of policies under the national legislative framework and therefore is also responsible for water and sanitation service delivery in the municipal area. As such, the EWS unit has undertaken an initiative in 2008 that was originally developed by the eThekweni Health, Architecture

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and Housing Developments in 2004. The purpose of this initiative is to provide each household with access to basic services pending the formal housing intervention.

At a municipal level the over-arching contributing factor that escalated the need for formal water and sanitation was the expansion of the municipal boundary in 2000 in addition to the cholera outbreak in the same year. As such the provision of proper water and sanitation in the informal settlements of the peri-urban and rural areas became a priority for the EWS with Umlazi being one such area.

Desirability

- The risk of surface and ground water contaminations is significantly lowered as dependence on pit latrines and other forms of sanitation is lowered.
- 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.
- 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.
- Health and hygiene will be improved significantly for all community members involved due to the availability of communal sanitation.

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

Access to formal water and sanitation in the Happy City informal Settlement of Umlazi will:

- Improve the quality of life and living standards;
- Reduce incidence and outbreak of waterborne diseases;
- General improvement in hygiene and health;
- Infuse sense of dignity for the people;
- Create jobs for the local people (caretakers of the facilities); and
- Benefit the environment (little or no flow of sewerage into the rivers and streams).

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

As above, basic sanitation facilities will be provided for within the Happy City informal settlement. The following are added benefits of the proposed development:

- The risk of surface and ground water contaminations is significantly lowered as dependence on pit latrines is lowered.
- 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.
- 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.
- Health and hygiene will be improved significantly for all community members involved due to the availability of communal sanitation.
- Sanitation projects such as these will allow the eThekweni Municipality to fulfil the goals associated with service delivery that are included in plans such as the Integrated Development Plan (IDP).

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act	All organs of State.	1998

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Environment Conservation Act	DEA / EDTEA	1989
National Water Act	DWA	1998
National Water Resources Strategy	DWA	2004
Occupational Health and Safety Act	DOL	1993
Hazardous Chemical Substance regulations	DOL	1995
Environmental Regulations for Workplaces	Department of Labour	1987
General Administrative Regulations	Department of Labour	2003
Construction Regulations	DOL	2003
eThekweni Municipality by-laws (General By-laws)	eThekweni Municipality	2008
National Environmental Management: Air Quality Act	DEA / EDTEA	2004
National Environmental Management: Waste Act	DEA / EDTEA	2008
National Standards (SANS)	SABS	2003

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

12.1. Solid waste management

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

YES	NO
X	

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

Approximately 1 m³

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

Solid waste is expected to be minimal as there will not be any material excavated for trenches as required by the pipelines since existing pipelines will be used. Solid waste which is generated by the contractors must be removed from the site to a designated disposal area within the construction site camp and disposed of at the closest available registered landfill site.

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

Any solid waste generated must be disposed of at the nearest available registered landfill site. The closest landfill site is the Mariannhill Landfill site approximately 25km from the site. The closest hazardous landfill site is the Umlazi IV H:h landfill situated in Isipingo Beach. Should alternative landfill sites be used, this disposal site must be fully licensed and registered and must be approved by the ECO prior to the disposal of waste at this facility.

Will the activity produce solid waste during its operational phase?

YES	NO
	X
N/A m ³	

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

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

N/A

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

N/A

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

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

YES	NO
	X

If yes, contact the KZN Department of Economic Development, Tourism and Environmental Affairs to obtain clarity regarding the process requirements for your application.

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

YES	NO
	X

If yes, contact the KZN Department of Economic Development, Tourism and Environmental Affairs to obtain clarity regarding the process requirements for your application.

12.2. Liquid effluent

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Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO X
-----	---------

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

N/A m³

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

Yes	NO X
-----	---------

If yes, contact the KZN Department of Economic Development, Tourism and Environmental Affairs to obtain clarity regarding the process requirements for your application.

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

YES	NO X
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If yes, provide the particulars of the facility:

Facility name:	N/A		
Contact person:	N/A		
Postal address:	N/A		
Postal code:	N/A		
Telephone:	N/A	Cell:	N/A
E-mail:	N/A	Fax:	N/A
Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any: N/A			
The reuse or recycling of waste water will not be required as little to no wastewater is expected to be produced from the construction phase. During the operational phase, no wastewater will be produced.			

12.3. Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES X	NO
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If yes, is it controlled by any legislation of any sphere of government?

YES	NO X
-----	---------

If yes, contact the KZN Department of Economic Development, Tourism and Environmental Affairs to obtain clarity regarding the process requirements for your application.

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

Dust will be produced during the construction phase as well as emissions from construction vehicles accessing the site. The vehicle emissions will be comprised primarily of Carbon Dioxide (CO₂) and will be of a low concentration.

12.4. Generation of noise

Will the activity generate noise?

YES X	NO
----------	----

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

YES	NO X
-----	---------

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

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

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

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

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13. WATER USE

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

Municipal X	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:

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

N/A	
YES X	NO

This proposed activity requires a Water Use License Application (WULA) as deemed necessary by the Department of Water Affairs. Due to the extensive range of the CAB sites, the DWA has approved a single WULA be carried out for the entire Umlazi area, proof of the WULA application will be appended to the Final BAR.

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

14. ENERGY EFFICIENCY

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

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

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

It is recommended that energy saving light bulbs be used in the ablution facilities as well as translucent roofing to maximise use of sunlight during the day.

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 CAB Site 1: (refer to Appendix A for Google Earth Imagery)

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5 X	Steeper than 1:5
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Figure five: Elevation Profile from CAB Site 1 to CAB site 3

Alternative CAB Site 2 and 3: (refer to Appendix A for Google Earth Imagery)

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

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site (Please cross the appropriate box).

Alternative S1 (preferred site):

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley X	Plain	Undulating plain/low hills X	Dune	Sea-front
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3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

YES	NO
----------------	----

If YES, please complete the following:

Name of the specialist:	B Graves from Ground Truth Water, Wetlands and Environmental Engineering		
Qualification(s) of the specialist:	Available on request.		
Postal address:	P O Box 2005, Hilton		
Postal code:	3245		
Telephone:	033 343 2229	Cell:	-
E-mail:	info@groundtruth.co.za	Fax:	-

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:

--	--

Are any further specialist studies recommended by the specialist?

YES	NO
-----	---------------

If YES, specify:

n/a	
-----	--

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

YES	NO
----------------	----

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Signature of specialist:

See signature on Wetland Report attached under Appendix D.

Date:

-

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

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

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Desktop Wetland Assessment Report

GroundTruth was appointed to delineate and assess the wetland/riparian habitat surrounding the proposed CAB sites. The wetland/riparian habitats that were assessed lie within 50m from the proposed CAB sites.

Summary of Findings of Wetland Assessment

The specialist report revealed that the overall integrity of the wetland ecosystem has been extensively modified through urban and residential developments which extends into portions of both ecosystems. The overall Present Ecological State (PES) of the ecosystem is classified as being Category F-"critical" (refer to table one for an understanding of the impact categories and associated descriptions).

In order to derive an accurate assessment for overall integrity, the impact on individual wetland aspects were assessed i.e. impacts on hydrology, geomorphology and vegetation.

The following table is a summary of the category of impacts and the characterisation of wetland aspects accordingly.

Table one: Impact Scores and Present State Categories for describing the integrity of wetlands

Impact Category	Description	Impact Score Range (0-10)	Present State Category
None	Unmodified, natural.	0-0.9	A
Small	Largely natural with few modifications. A slight change in ecosystem processes is discernible and a small loss of natural habitats and biota may have taken place.	1-1.9	B
Moderate	Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact.	2-3.9	C
Large	Largely modified. A large change in ecosystem processes and loss of natural habitat and biota has occurred.	4-5.9	D
Serious	The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.	6-7.9	E
Critical	Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.	8-10	F

Hydrology

The assessment of impacts on hydrology revealed that the hydrological systems within and surrounding the informal settlements are "critical" (modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota). The impact of the modifications proved detrimental to the hydrological integrity, modifications to the wetland are linked to the following factors:

- The infilling of portions of the wetland due to the informal housing;
- Canalised flows through the wetland
- The presence of alien invasive vegetation within the wetland directly causing an increase in the uptake of water; and
- Altered water flows into the wetland.

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Geomorphology

The overall impact of the wetland geomorphology is classified as Category "D" (largely modified) for Site 1 and "E" (serious) for Site 2. This translates to a large change in geomorphic processes that has taken place and the system is appreciably altered. The following factors are directly linked to this moderate change of wetland geomorphology:

- Destruction of wetland habitat due to development;
- Extent of identified erosional features or channel incision;
- Infilling of portions of the wetland habitat resulting in deactivation of downstream areas; and
- Altered water flows into the wetland linked to catchment changes.

Vegetation

The vegetation surrounding the proposed site has been totally or almost totally altered, and if any characteristic species still remain, their extent is very low. The modification to the vegetation surrounding the proposed sites are directly linked to the following factors:

- Removal of vegetation due to cultivation of crops;
- Infilling of portions of the wetland habitats thus removing the wetland vegetation entirely;
- Stream channel modifications; and
- Encroachment of alien invasive vegetation portions of the wetland habitat.

Summary of Recommendations

Despite the modifications to the identified freshwater ecosystems, they have the potential to supply a level of ecosystem services, and form an important linkage in the landscape in terms of aquatic ecosystems. Specific planning and mitigation activities could be adopted to reduce the impacts associated with the proposed sanitation facilities, including:

- Specific activities incorporated into the layout design to protect the wetland/riparian habitat within the post-development landscape;
- Buffer zones (development to incorporate a buffer zone from the edge of the wetland to assist in protecting the wetland);
- Appropriate storm water management (such as multiple discharge points spread out across the development adjoining the wetland habitat and control of flow through the buffer zone); and
- Appropriate wetland/riparian habitat rehabilitation (a stretch of wetland habitat from the site to approximately 100m downstream should be rehabilitated).

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GROUND COVER

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

YES	NO
-----	---------------

If YES, please complete the following:

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

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

YES	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:

N/A

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

YES	NO
-----	----

Signature of specialist:		Date:	
--------------------------	--	-------	--

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

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

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.

According to the Wetland Specialist the Present Vegetation State is category F (vegetation composition has been totally or almost totally altered and if any characteristic species remain their extent is very low. Vegetation has been altered as a result of removal due to subsistence crop farming and infilling of portions of the wetland.

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5. LAND USE CHARACTER OF SURROUNDING AREA

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

Land use character			Description
Natural area	YES	NO X	
Low density residential	YES	NO X	
Medium density residential	YES X	NO	Majority of the CAB sites are in close proximity to residential areas. The development will result in positive impacts for the area as it will minimise and/or prevent contamination of nearby watercourses and the general standard of living in the area.
High density residential	YES	NO X	
Informal residential	YES X	NO	The site is situated within the Happy City informal settlement. The CABs will have a positive impact to the residents as it will provide formal sanitation to the residents.
Retail commercial & warehousing	YES	NO X	
Light industrial	YES	NO X	
Medium industrial	YES	NO X	
Heavy industrial	YES	NO X	
Power station	YES	NO X	
Office/consulting room	YES	NO X	
Military or police base/station/compound	YES	NO X	
Spoil heap or slimes dam	YES	NO X	
Quarry, sand or borrow pit	YES	NO X	
Dam or reservoir	YES	NO X	
Hospital/medical centre	YES	NO X	
School/ creche	YES X	NO	There are two schools approximately 300m in the NW and SE directions of the CAB sites respectively. The CABs will have no impact on the schools in the area.
Tertiary education facility	YES	NO X	
Church	YES	NO X	

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Old age home	YES	NO X	
Sewage treatment plant	YES	NO X	
Train station or shunting yard	YES	NO X	
Railway line	YES X	NO	A railway line is located within 500m from the proposed CAB sites. The CABs will have no impact on the railway line.
Major road (4 lanes or more)	YES	NO X	
Airport	YES	NO X	
Harbour	YES	NO X	
Sport facilities	YES X	NO	There are three sports fields within 500m from the proposed CAB sites. The CABs will have no impact on the sports facilities in the area.
Golf course	YES	NO X	
Polo fields	YES	NO X	
Filling station	YES X	NO	
Landfill or waste treatment site	YES	NO X	
Plantation	YES	NO X	
Agriculture	YES	NO X	
River, stream or wetland	YES X	NO	The proposed CAB site is located within 32 metres of a watercourse. The streams and tributaries with this area form part of the Mlazi River Catchment. The CABs will have a positive impact on the watercourses as there will be reduced pollutants and contaminants flowing into the watercourse.
Nature conservation area	YES	NO X	
Mountain, hill or ridge	YES	NO X	
Museum	YES	NO X	
Historical building	YES	NO X	
Protected Area	YES	NO X	
Graveyard	YES	NO X	
Archaeological site	YES	NO X	
Other land uses (describe)	YES	NO X	

6. CULTURAL/HISTORICAL FEATURES

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

YES	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:

n/a

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

YES	NO
-----	----

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

YES	NO
-----	----

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

SECTION D: PUBLIC PARTICIPATION

Public Participation commenced on 6 June 2014. All proof of public participation has been included in Appendix G. Signboards were placed around the site. Notices were hand delivered to members residing in the local community.

The following authorities and interest groups were notified of the application: Department of Water Affairs (DWA), Ezemvelo KZN Wildlife and eThekweni Municipality. The Ward Councillors were also notified telephonically of the proposed project. The Background Information Document was distributed to all I&APs.

The notice of application was advertised in the Isolezwe (Regional newspaper) on 18 June 2014 and in the Umlazi Times newspaper (local) on 25 June 2014.

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

1. ADVERTISEMENT

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

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

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- (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.

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 Economic Development, Tourism and 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.

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5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before this application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations (regulation 57 in the EIA Regulations, 2010) and be attached as Appendix E to this report.

6. PARTICIPATION BY DISTRICT, LOCAL AND TRADITIONAL AUTHORITIES

District, local and traditional authorities (where applicable) are all key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of this application and provided with an opportunity to comment.

Has any comment been received from the district municipality?

YES	NO
	X

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

N/A

Has any comment been received from the local municipality?

YES	NO
X	

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

Enviroplan was the initial Environmental Consultancy that was appointed by the client Mott MacDonald PDNA to act as the EAP on this proposed development. The Draft BAR was released for comment and the comments that were received will be included Appendix E. However, Kerry Seppings Environmental Management Specialists cc (KSEMS) is the new EAP therefore a revised version of the Draft BAR will be released for further comment.

Has any comment been received from a traditional authority?

YES	NO
	X

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

N/A

7. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

YES	NO
	X

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

N/A

SECTION E: IMPACT ASSESSMENT

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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.

Enviroplan was the initial Environmental Consultancy that was appointed by the client Mott MacDonald PDNA to act as the EAP on this proposed development. The Draft BAR was released for comment and the comments that were received will be included Appendix E. However, Kerry Seppings Environmental Management Specialists cc (KSEMS) is the new EAP therefore a revised version of the Draft BAR will be released for further comment.

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):

See Appendix E

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

Non-compliance with legislative requirements

During the planning and design phase of the proposed development, compliance with legal requirements is carefully considered and integrated into the design and location of the CABs in order to avoid non-compliance and delays in the Basic Assessment Process. Foreseen issues are planned for and dealt with at this phase and contingency plans are developed for unforeseen impacts and delays.

Notification of the proposed development to all I&AP

At this phase all I&APs must be informed of the proposed development. Impacts to the development itself may be identified by parties such as competent authority and neighbouring landowners and delays may be experienced if this procedure isn't carried out efficiently and thoroughly. In general, processes such as the Basic Assessment process are delayed due to insufficient notification of the development.

Impacts resulting from CAB locations

CAB sites were chosen according to the need for proper sanitation in this area (ie where no form of sanitation exists). They were strategically located in close proximity to the existing bulk sewer line to prevent additional trenching and located outside of the surrounding watercourses and 1:100 year floodline. However these locations are also dependent upon surrounding land owner approval as well as feasibility of the CAB at a specific point. CAB sites may be added or removed if any unforeseen impacts arise as these sites are conceptual and require in-depth assessment prior to development.

In addition it is important to note that the geographic co-ordinates for the CAB sites indicate the centre point of the CAB, thus the cab can be moved approximately 50m in any direction from the centre point should the need arise. Impacts were also assessed at and in the immediate vicinity of the individual CAB sites.

Impacts arising from design and technology options

The design and technology options for the CABs were based on the location of the sites to the existing sewer line. Thus the sewer discharge option was chosen to be implemented across these sites. If this option cannot be implemented in any of the sites, then the site would be moved or removed within or from the group respectively. These movements or removal of the sites can have impacts on the timeline by causing delays in the process.

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2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

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

a. Site alternatives

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

Alternative A1 and S1 (preferred alternative)

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
ENVIRONMENTAL IMPACTS										
SOIL										
Soil degradation	Direct	Local	Construction phase (short-term)	Yes- prevented and managed	No	Medium	High	Due to construction activities, soil in and around the proposed site can become eroded, degraded, compacted and destabilised. As a general principle, contractors must limit vegetation clearing to the workable corridor/site along the pipelines and CABs only. The contractor must stabilise cleared areas to prevent and control erosion and/or sedimentation of the watercourses. As recommended by the Wetland Specialist (Page 29 of Appendix D), baffle structures such as gabions must be used to dissipate the energy of flow of storm water thus encouraging infiltration and reducing	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								<p>the likelihood of erosion on the banks of the watercourse flowing downslope.</p> <p>Only vegetation that needs to be removed to accommodate the proposed infrastructure must be removed in a phased and controlled manner.</p> <p>A site specific EMPr has been designed to manage construction activities and is attached under Appendix F.</p>		
Soil Contamination	Direct	Local	Construction phase (short-term)	Yes- prevented and managed	No	Medium	High	<p>Soil contamination during the construction phase occurs as a result of accidental spills or leaks and mixing of cement on permeable surfaces, resulting in product seeping into the ground and potentially moving into the soil and groundwater.</p> <p>Mixing of cement will be done on an impervious surface and away from areas where run-off can enter into stormwater drainage lines or streams to prevent contamination.</p> <p>In addition construction vehicles and</p>	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								<p>machinery must be well maintained at all times to prevent seepage of oil and fuel into the soil. Drip tray must be used where necessary.</p> <p>Construction must be monitored by an independent ECO who must monitor compliance with the construction EMPr.</p>		
Destabilisation and erosion of stockpiled materials	Direct	Local	Construction phase (short-term)	Yes – can be prevented and managed.	No	Medium	High	<p>Material must be stockpiled in such a way that it cannot fall or cause injury or damage to properties or the natural environment. Stockpiles must not exceed 2m in height and must be covered if exposed to heavy wind or rain. Stockpiles must not be located in close proximity to any streams or drainage lines and must not be allowed to erode into these features.</p> <p>Alternatively, low walls or berms must be constructed around the stockpiles. A site-specific Environmental Management Programme (EMPr) has been designed to manage construction activities (Appendix F).</p>	Low	Low
STORMWATER										
Obstruction to stormwater flow	Direct	Local	Construction phase (short-term)	Yes – can be prevented	No	Medium	High	During construction, the storage of excavated material could obstruct the	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
			term)					<p>flow of surface water runoff and structures such as hessian bags, silt curtains etc are to be put in place to ensure that sedimentation does not occur and additional waste is not disposed of in the watercourse.</p> <p>However it is unlikely that the construction activities will significantly adversely impact the already degraded state of the existing watercourse but instead will have a positive impact on watercourses as the upgraded facilities would prevent further contamination of the watercourses and ablution facilities would also provide better sanitation for the community.</p> <p>Construction must be monitored by an independent ECO who must monitor compliance with the construction EMPr (Appendix F).</p> <p>The following are recommendations from the Wetland Specialist (Page 29 of Appendix D) for the management of storm water runoff:</p>		

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								<p>Multiple discharge points that are reasonably spread out across the development adjoining the wetland habitat.</p> <p>Flow through the buffer zone should be via diffuse flow and concentrated flow should be avoided. This would assist in reducing the concentration of flows and hence the risks of erosion and further degradation of the receiving environments.</p>		
Stormwater contamination	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No, however there is a potential for resources to be lost if the River is contaminated with cement.	Medium	High	<p>The runoff entering the buffer zone should not exceed 1.5m/sec as this is considered to reduce the pollutant removal performance of the buffer area.</p> <p>It is also recommended that these outflow points incorporate a best management practice approach to trap excess suspended solids and other pollutants originating from the proposed development before entering the buffer zones. These will need to be regularly serviced and maintained to ensure adequate functioning and efficacy.</p>	Low	Low

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Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
								<p>In addition cement mixing and washing of construction vehicles could result in stormwater contamination.</p> <p>Cement mixing must take place on a hard surface or cement mixing trays must be used for this purpose. Cement mixing must not be permitted to occur where run-off can enter stormwater drainage lines or streams.</p> <p>In addition no vehicle washing must occur on site unless in a designated wash bay which must then be constructed. Wash bays must be installed with sand and grease traps if required on site.</p> <p>This must be controlled through an EMP (Appendix F).</p>		
FLORA										
Proliferation of weeds	Direct	Local	Long-term	Yes – can be prevented.	No	Medium	High	Due to site clearing and soil disturbance on a large scale, weeds become prevalent onsite. However, as gathered from the Wetland Study (Section 6.3.3, Page 25 of Appendix D) the vegetation at the proposed	Low	Low

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								<p>sites are classified as "critical" and almost all of the vegetation has been totally altered and replaced by alien vegetation.</p> <p>Therefore, following completion of construction, an alien removal programme must be implemented. Rehabilitation of the buffer zone must occur in the direct vicinity of the sanitation facilities and must include the removal of alien vegetation within the buffer zone as well as 100m downstream from the proposed sites.</p> <p>The site must be re-vegetated with indigenous vegetation. The top soil must be used for rehabilitating the site and must be kept free of alien vegetation.</p>		
Destruction and/or removal of indigenous flora	Direct	Local	Construction phase (short-term)	Yes – can be managed.	No	Low	Medium	Construction activities will disturb flora in the area. Vegetation clearing could result in the loss of naturally occurring plant species however, during an initial site visit there were no species of significance that was identified and the Wetland Specialist has stated that the present state of the vegetation at the proposed sites,	Low	Low

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								<p>is considered "critical" and if any characteristic species remain then their extent is very low.</p> <p>Therefore it is unlikely that any species of significance will be removed as a result of the construction. However, rehabilitation at the proposed sites and surrounding areas will occur to ensure improvement of the current state of the riparian habitat.</p> <p>Weeds are prevalent in the area and along the watercourse which will be cleared during construction resulting in a positive impact.</p> <p>Vegetation should only be cleared from the disturbed area where trenching is to take place. It is unlikely that a significant amount of indigenous vegetation will be removed. The disturbed area is to be rehabilitated with suitable indigenous species.</p> <p>Appendix D contains further recommendations by the Wetland</p>		

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								Specialist.		
FAUNA										
Potential loss or disturbance to fauna present within the proposed site	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Low	Low	<p>The displacement or loss of small faunal species could be a potential result of construction activities.</p> <p>Due to human presence and the disturbed landscape, it is unlikely that fauna species exist in large numbers at these sites, however, contractors and staff must be trained to avoid impacts on fauna. This must be monitored with an EMP (Appendix F).</p>	Low	Low
SENSITIVE ENVIRONMENTAL AREAS (i.e. watercourses)										
Potential pollution and contamination of streams and rivers with cement and other hazardous materials used during construction.	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Low	High	<p>Pollution and contamination of the watercourses is to be avoided at all times. However, as stated by the Wetland Specialist the hydrological state of the watercourse has reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota (Section 6.3.1 of Appendix D).</p> <p>Designated concrete mixing areas and storage areas for any hazardous materials must be assigned. These areas must not lie directly adjacent to</p>	Low	Low

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								<p>the watercourses. Cement mixing is also not permitted in any area where runoff can enter the Stream Units.</p> <p>The wetland specialist has recommended that the establishment of a 20m buffer zone from the edge of the watercourse to the proposed construction site is necessary in order to prevent contamination of watercourses.</p> <p>Construction must be managed through the site specific EMPr (Appendix F) and compliance must be monitored by an independent ECO.</p>		
Impact on D'MOSS areas and the loss of open space	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Low	N/A	<p>Natural open spaces within the Umlazi area are constantly being transformed by informal settlements thus the proposed development will occur within the informal settlement, thus contributing to the cumulative impact of the loss of open space.</p> <p>In addition, as with the abovementioned impact, development in D'MOSS areas are restricted and any construction activities should be strictly prohibited</p>	N/A	N/A

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								<p>in the D'MOSS area and should not extend pass the demarcated construction area.</p> <p>It is noted that the proposed sites are not within the city's D'MOSS area.</p>		
Development within the 1:100 year floodline	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Low	High	<p>The 1:100 year floodline must be determined in the planning phase and demarcated in the construction phase.</p> <p>All construction activities are to take place outside of the 1:100 year floodline where possible as well as the required buffer zone from a watercourse. These buffer zones promote stormwater management.</p> <p>If necessary a map is to be made available to all construction workers which indicates the proposed development in relation to the 1:100 year floodline so as to avoid activities where such as stockpiling within the demarcated area where possible.</p>	Low	Low
Erosion from vegetation clearing and exposure of bare	Direct	Local	Construction phase (short-term)	Yes – can be prevented and managed.	No	Medium	High	<p>Recommendations for the mitigation of this impact have been included in the attached EMPr but include erosion control measures (silt fences,</p>	Low	Low

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soil to the elements resulting in sediment deposition within the drainage lines and stream units during construction.								<p>sandbags etc.) and rehabilitation measures.</p> <p>As soon as possible after construction, exposed areas that have resulted from the construction activities must be re-vegetated to assist in the prevention of erosion.</p> <p>Method statements for watercourse crossings are to be submitted to the independent ECO prior to construction commencing. Further recommendations can be found in Appendix D (Specialist Report).</p>		
Littering in the watercourses, contributing to the degradation of the watercourses within the study site.	Direct	Local with the potential to impact regionally should the pollution wash down-stream.	Construction phase (short-term)	Yes – can be prevented and managed.	No	Medium	High	<p>Illegal dumping is not permitted within the site and site staff must remove any waste and litter from the construction site at the end of each day.</p> <p>The waste must be appropriately stored within the site camp and disposed of at a licenced landfill. Safe disposal certificated must be obtained and retained onsite.</p>	Low	Low
WASTE – NON HAZARDOUS AND GENERAL SOLID WASTE										

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Generation, storage and disposal of general and non-hazardous waste	Direct	Local (within construction site)	Construction phase (short-term)	Yes prevented and managed	No	Medium	High	<p>General solid waste that is expected to be generated during construction includes:</p> <ul style="list-style-type: none"> • General waste e.g. paper, plastic, glass; • Building rubble e.g. bricks, concrete; and • Scrap metal. <p>All solid waste (building rubble and scrap metal) generated during the construction phase will be first categorised by the construction contractor team then stored in designated waste receptacles. The waste will be cleared regularly by a recognised waste contractor or disposed of at the closest municipal landfill site.</p> <p>All general waste material (apart from rubble and hazardous materials) will be contained in lined general waste bins and disposed of via the municipal waste system. Litter collection bins will be provided within the Contractors camp at convenient intervals and will be cleared regularly.</p>	Low	Low

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								<p>Separation and recycling of waste must be practised and reuse will be encouraged where possible. Recycling of the remaining waste produced during the construction and operational phase must be an ongoing process. Waste streams must be separated at source and taken to a recognised recycling centre.</p> <p>Burning or burying of waste will NOT be allowed. Unutilised, construction materials will be removed once construction has ended, e.g. crushed stone may not be left or randomly strewn around the site. Excavated material during earth works will be stockpiled on site. If the material is suitable for fill material, it will be utilised as backfill on the site.</p> <p>General or solid waste must not affect the surrounding natural environment at any time and must always be stored away from streams, rivers and natural habitats if any.</p>		
Generation,	Direct	Local	Construction	Yes impact can	No	Medium	High	Hazardous waste (eg oil rags, oil	Low	Low

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storage and disposal of hazardous waste.		(within construction site)	phase (short-term)	be prevented and managed.				<p>cans, paint cans etc) will be stored in separate lined waste bins or on a hard surface within a bunded area of the construction camp and disposed of at the closest designated hazardous landfill site. All safe disposal certificates must be obtained and kept on site at all times. This must be monitored through an EMPr (Appendix F). .</p> <p>Hazardous waste must not affect the surrounding natural environment at any time and must always be stored away from streams, rivers and natural habitats if any.</p> <p>The hazardous waste area will be clearly marked as hazardous and flammable.</p>		
Littering around the site.	Direct	Local	Construction phase (short-term)	Yes impact can be prevented managed	No	Medium	High	<p>Littering on the site should be kept to a minimum and general housekeeping must be enforced.</p> <p>General waste bins must be readily available for litter disposal and general housekeeping. The EMPr must be followed during construction.</p>	Low	Low
Inappropriate	Direct	Local	Construction	Yes – can be	No	Medium	High	Staff must be provided with chemical	Low	Low

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use of the surrounding environment and residents properties as toilets by contractors.			phase (short-term)	prevented.				<p>toilets. The toilet waste must be disposed of at an appropriate disposal site and safe disposal certificates must be obtained.</p> <p>The staff may not use the surroundings or residents properties as toilets. Workers must be briefed by the person in charge of managing construction activities on the “do’s and don’ts” on the property, when workers arrive at the site. This must be repeated in weekly toolbox talks and monitored through a site specific EMPr (Appendix F).</p>		
Improper disposal of toilet waste from chemical toilets resulting in contamination of the surrounding environment.	Direct	Local	Construction phase (short-term)	Yes – can be managed	No	Medium	High	Chemical toilets must be placed within the construction camp and not in close proximity to the stream units. The chemical toilets must be provided by a registered company and all effluent must be regularly disposed of at a licenses facility. Safe disposal certificates must be kept on record.	Low	Low
Increase waste to landfill site.	Cumulative	Regional	Construction phase (short-term)	Yes – can be managed	No	Low	High	Due to the nature of the activity, waste is anticipated to be minimal. Where possible, recycling of waste will take place to limit the amount of waste being added to the landfill site.	Low	Low
SPILLAGE OF HAZARDOUS CHEMICALS / FUELS										

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Risk of spills from construction equipment (oils, fuels, cement etc) contaminating soil and stormwater.	Direct	Local	Construction phase (short-term)	Yes – can be managed	No	Medium	High	Any construction equipment that could leak oil must be placed on a suitably sized drip tray. Stationary construction vehicles must have a drip tray placed beneath them and any oil leaks must be controlled and attended to over a drip tray. All equipment must be in good working order to reduce the likelihood of oil leaks occurring. Any re-fuelling of equipment must occur on a hardened surface, within a designated re-fuelling area where any spills can be contained. Construction must be monitored by an independent ECO must monitor compliance with the construction EMPr.	Low	Low
NOISE										
Noise generated by construction workers, machinery and construction vehicles disturbing surrounding residents and environment.	Direct	Local (within construction site)	Construction phase (short-term)	Yes – can be managed	No	Medium	High	Excessive noise must be controlled on site. Workers will be trained regarding noise generation on site and construction hours will be kept to working hours (07h00 to 17h00).The construction activities will be monitored by an ECO who will ensure compliance with the construction EMPr. All precautions must be taken to ensure that noise generation is	Low	Low

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								kept to a minimum. If excessive noise is expected during certain stages of the construction, nearby residents must be notified prior to the event.		
AIR QUALITY										
Emissions generated from construction vehicles	Direct	Local	Construction phase (short-term)	Yes – can be managed	No	Low	High	<p>The only emissions that will be generated will be from construction vehicles which will be minimal and is not expected to significantly affect the surrounding communities or the environment.</p> <p>Regular maintenance of construction vehicles must be undertaken to ensure they are good working order and thereby reducing the amount of emissions generating from vehicles.</p>	Low	Low
Generation of dust being a nuisance to surrounding residents.	Direct	Local	Construction phase (short-term)	Yes – can be managed	No	Medium	High	Emissions will only be generated from construction vehicles. Emissions will be minimal and not expected to significantly affect surrounding communities. Dust control measures must however be implemented to ensure that excessive dust levels are not experienced on site. Measures to control dust generated during construction must be put controlled through the EMPr i.e. cleared	Low	Low

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								surfaces to be replanted as soon as possible behind the working front or dampening of dirt access roads, stockpiles and cleared areas. The dust levels must be kept below the required SANBS standard to ensure minimal impact on the surrounding community and the environment.		
RESOURCE USE & CONSERVATION										
Sourcing of raw materials i.e.: (gravel, stone, sand, cement and water) from unsustainable sources resulting in illegal sand mining and mining operations causing significant environmental damage.	Direct	Local (potential to become regional)	Construction phase (short-term)	Yes – can be managed	No	Low	High	All materials must be obtained from a registered and sustainable source and all delivery notes and slips must be made available to the ECO, where applicable. Municipal water will most likely be used for dust suppression however should water be extracted from the watercourse, the amount must not exceed 50 000 litres per day. If this limit is exceeded, a permit is required from DWA.	Low	Low
TRAFFIC										
Traffic impacts	Direct	Local	Construction	Yes – can be	No	Medium	High	The co-ordination of movement of	Low	Low

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associated with asset delivery and required construction material			phase (short-term)	prevented.				<p>vehicles on and off site to reduce risks and prevent congestion on roads in the vicinity of the site. Movement of construction vehicles to and from the sites should be avoided during peak traffic hours (7 to 9am and 4 to 6pm).</p> <p>Large vehicle turning must take place onsite and not in the adjacent roads. In cases where activities may obstruct traffic, local traffic officials must be contacted.</p> <p>Construction vehicles moving through residential areas must maintain a prescribed speed (as per the rules of the road) and no-go areas for construction must be clearly demarcated.</p> <p>Clear signs, flagmen and/ signals must be set up where necessary. Access to residential properties shall be maintained and speed limits established. Where roads are used by children to reach school, vehicle traffic must be minimized during hours that children are travelling to</p>		

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								and from school.		
SOCIO-ECONOMIC										
Interruption or damage to services (electricity, water etc.).	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Low	High	This impact can be fully mitigated against by identifying services prior to construction and avoiding damage to existing services. Alternatively, if service disruption is unavoidable, the parties affected must be notified in advance. A site-specific EMPr has been designed to manage construction activities (Appendix F).	Low	Low
Destruction to property in the vicinity of construction activities	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Medium	High	Surrounding neighbours must be consulted prior to construction to discuss the construction process and potential impacts on nearby properties, as well as opportunities regarding employment. Should unplanned impacts occur, the contractor will be responsible for the necessary repairs.	Low	Low
Health and Safety (Occupational and surrounding residents)	Direct	Local	Construction phase (short-term)	Yes – can be prevented.	No	Medium	High	During construction, possible impacts on human health and safety could occur as a result of accidents and unplanned events that may occur. There is a risk of public injury may occur associated with the movement	Low	Low

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								<p>of materials during construction/installation.</p> <p>In addition, construction workers must be made aware of the areas where safety may be a concern. These areas must be clearly demarcated during the day and night. Contractors must ensure that all workers are made aware of the associated dangers through an awareness / weekly toolbox training programme. This must be monitored through a site specific EMPr (Appendix F).</p>		
Positive impact. Potential temporary employment during construction.	Direct	Local	Construction phase (short-term)	Positive impact no mitigation required. Skilled local community members may be granted employment during the construction phase and existing workers employed by the contractor may have the contract of employment extended due to the influx of new work.						
CULTURAL										
Potential unearthing and damage to items of cultural or historical significance	Direct	Local	Construction phase (short-term)	Yes – can be managed.	No	Low	High	If any item of cultural or historical significance are discovered construction must cease immediately and AMAFA must be contacted. Construction should then cease until further notice. Staff must be made aware of what archaeological objects of significance may look like, e.g.	Low	Low

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								pottery, etc.		

No-Go Alternative:

Nature of Impact (potential)	Direct, Indirect or cumulative	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation

IMPACTS OF THE NO-GO OPTION

There will be no adverse construction impacts however positive impacts such as employment opportunities and improved standard of living will not be created. Residents and households in this area will continue to have limited access to waterborne sewerage connections and will be exposed to unsanitary conditions with a high risk of infection by excreta-related diseases. In addition there will be continued eutrophication within the river and stream units from the flow of sewerage from pit latrines directly into the river and stream systems.

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2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

Alternative A1 and S1 (preferred alternative)

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

Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
IMPACTS FROM THE OPERATION OF CABS AND ASSOCIATED INFRASTRUCTURE										
Subsiding of the existing pipeline as a result of increased volume of sewerage resulting in contamination of the drainage lines and stream units including the surrounding area.	Direct	Local with the potential for a regional impact should contamination occur.	Short – term	Yes – can be prevented and managed.	No	Medium	High	<p>Pipelines have the potential to subside especially at the stream and drainage line edges. However, there will not be an installation of a new bulk sewer line as an existing one will be used.</p> <p>The existing pipeline must be regularly inspected as part of a maintenance/ inspection procedure to ensure 100% integrity of the structure. eThekweni Water and Sanitation (EWS) employ and train a local community member to be a “caretaker” for the toilet blocks. The caretaker is responsible for operation maintenance and general up keep. The caretaker is to inform EWS of any maintenance issues.</p>	Low	Low
The increased potential for leakages at	Direct	Local with the potential for a regional	Long – term	Yes – can be prevented and managed.	No	Medium	High	It is anticipated that pipelines will develop cracks over time and this will be accelerated if the pH is above 10	Low	Low

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joints in the existing pipeline and manhole connections resulting in soil / groundwater contamination due to development of cracks in the pipelines.		impact should contamination occur.						or less than 7. It is recommended that a maintenance procedure be implemented to ensure that the pipelines are checked on a regular basis. Should any cracks be identified, the portion of pipe must be immediately replaced to ensure that there is no surface or groundwater contamination. The pipeline must be designed as per engineering specifications. The pipeline must be constructed according to the relevant SABS standards. Should any cracks be identified, it is recommended that a groundwater study be conducted to determine if there has been any contamination.		
Potential blockage increasing the risk of spillages along the pipe as well as manhole overflow.	Direct	Local	Long – term	Yes – can be prevented.	No	High	High	The caretaker is to inform EWS of any operational maintenance. The maintenance programme must specify the frequency and timing of manhole inspections, aimed at identifying and clearing up material deposited during overflow events. Ablution facilities must also be included in the maintenance programme and must be regularly inspected for blockages and leaks. An	Low	Low

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								ablation maintenance team must be set-up using local labour.		
Spill of raw sewage resulting in eutrophication of stagnant pools onsite or downstream, degradation of the local in-stream habitat, domination of particular floral species, dieback of floral and faunal species increase the competitive advantage of alien species.	Indirect	Local	Long – term	Yes – can be prevented.	No	High	High	<p>Given the current state of the watercourse, the specialist rated this impact to have moderately-low significance. The following are mitigation measures that will reduce the magnitude of surcharge events and minimise or prevent eutrophication:</p> <p>No infrastructure must be established within the watercourse unit and a small buffer zone should be retained between the structures and the watercourse units.</p> <p>To reduce the risk of surcharging sewer manholes onsite and downstream, a form of gully trap should be installed at or before the connection of the toilets with the bulk line. This gully trap will block foreign objects from entering the main internal line of the site and isolate blockage problems at the source.</p>	Low	Low
Cumulative decrease in	Indirect	Regional	Long – term	Yes – can be prevented and	No	High	High	This impact is assessed as high before mitigation (acceptable but	Low	Low

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catchment-scale water quality impact on local aquatic ecology, particularly downstream, which is already experiencing water quality issues.				managed.				undesirable). Successful mitigation measures would be to reduce the potential impact to acceptable levels. The recommendations include all aforementioned (ie all measures included in this table) mitigation measures pertaining to the water quality of the surrounding watercourses. The cumulative impact would require cumulative mitigation particularly downstream of the watercourse. All of these mitigation measures have been included in the attached EMPr and further recommendations can be found in Appendix D (Wetland Specialist Report).		
Erosion of surrounding areas due to increase in stormwater from toilet platform sites. Runoff generated will likely follow existing erosion	Indirect	Local	Operational phase (long term)	Yes – can be managed.	No	High	Medium	All stormwater runoff generated by the proposed CAB platforms should be directed into stone-filled infiltration ditches rather than into underground piped systems or concrete V-channels. This will encourage infiltration across the site, provide for the filtration and removal of urban pollutants, and provide some attenuation by increasing the time	Low	Low

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rills and gullies onsite or create new ones.								<p>runoff takes to reach low points, and reduce the energy of storm water flows within the stormwater system through increased roughness when compared with pipes and concrete V-drains.</p> <p>All CAB platforms should have a slight back-fall to divert runoff away from the edge of the fill embankments. Platform runoff must be diverted away from the platforms into the stone-filled infiltration ditches.</p> <p>Erosion protection must be installed at the new stormwater outlets if applicable.</p> <p>All stormwater outlet structures must be located outside of the watercourses and ideally a 10-20m buffer should be established between the outlet structures and the watercourses.</p>		
Potential increase in volume of waste	Direct (Cumulative)	Regional	Operational phase (long term)	Yes – can be provided for.	No	High	Medium	There will be an increase in the amount of sludge directed to the South Durban WWTW however there		

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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
(sludge) sent to the South Durban Waste Water Treatment Works (WWTW).								is sufficient capacity to handle the increase (see proof of capacity in Appendix G).		
Positive Impact. Local households connection to waterborne sewerage.	Direct	Local	Long – term	Positive impact, no mitigation required. The result of the infrastructure provision is the reduced exposure to unsanitary conditions and a decrease in potential infection by excreta-related diseases. Residents and households in this area will have access to waterborne sewerage connections and will lower the risk of infection by excreta-related diseases. In addition there will be reduced eutrophication within the river and stream units from the flow of sewerage from pit latrines directly into the river and stream systems.						
Positive Impact. Reduced risk to the catchment due to the containment of existing raw sewage.	Indirect	Regional	Long – term	Positive impact, no mitigation required.						
Positive Impact. Improved service delivery to the Happy City informal settlement.	Direct	Local	Long – term	Positive impact, no mitigation required.						
Positive Impact. Improvements in the living conditions and	Direct	Local	Long – term	Positive impact, no mitigation required.						

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Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
standards for the local community through the installation of waterborne sewerage system.										

No-Go Alternative:

IMPACTS OF THE NO-GO OPTION										
Nature of Impact (potential)	Direct or Indirect	Extent of Impact	Duration of Impact	Can impact be prevented/reversed or managed?	Will irreplaceable resources be lost?	Probability before mitigation	Mitigatory Potential	Mitigation measure	Probability after mitigation	Significance after mitigation
Potential for raw sewage to continue to flow from informal toilets polluting the watercourse.	Direct	Regional	Long – term	Yes – can be prevented and managed.	No	High	High	By providing formal sanitation facilities to this area of the informal settlement, the raw sewage entering the watercourse will be reduced.	Medium	Low
Continual establishment and growth of weeds along the riparian zone.	Indirect	Local	Long – term	Yes – can be managed.	No	High	Low	Alien vegetation and weeds are required to be removed during construction activities should the formalisation of the ablution facilities be approved. While the proposed activity will not eradicate the alien	Low	Low

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								vegetation completely, there is an opportunity to establish indigenous grasses along the stream units.		
Continued eutrophication	Direct	Local	Long term	Yes – can be prevented and managed	No	High	Medium	The formal sanitation facilities will result in reduced eutrophication within the river and stream units.	Low	Low
Continued violation basic human rights	Direct	Long term	– Yes – can be managed.	No	High	Low	High	By providing formal sanitation facilities to this area the pre-requisites to fulfil the conditions for basic human rights will be met.	Low	Low
No permanent employment created	Direct	Long term	– Yes – can be managed.	No	High	Low	High	By providing formal sanitation facilities to this area permanent employment will be created for local members of the community.	Low	Low
Challenges faced by the eThekweni Municipality as highlighted in the IDP will continue.	Direct	Long term	– Yes – can be managed.	No	High	Low	Medium	The challenges highlighted in the IDP include increase in the number and range of informal settlements, poor service delivery, lack of employment and destruction to the natural environment by development not contained within the IDP. All of these aspects can be addressed on a local scale should the proposed development go ahead.	Low	Low

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

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

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

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

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

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

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2.5. PROPOSED MONITORING AND AUDITING

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

Alternative A1 and S1 (preferred site)

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

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

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

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

3. ENVIRONMENTAL IMPACT STATEMENT

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

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

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

Alternative A1 and S1 (preferred alternative)

As part of eThekweni Municipality's water and sanitation projects, eThekweni Water and Sanitation propose to construct a CAB and associated infrastructure within the Happy City informal Settlement. This application has assessed the construction of this proposed development which is located within 32m of a watercourse and as such all potential impacts associated with the CABs and associated infrastructure have been assessed.

The main construction impacts are those that will have a detrimental effect to the ecological integrity of the proposed site as well as the surroundings including hydrological impacts, impacts on vegetation and

geomorphology in the area. These impacts have also been assessed by GroundTruth, the Wetland Specialist appointed to conduct a Wetland Study for the proposed sites (Appendix D).

Despite the natural environment being in a highly transformed and degraded state the EMPr (Appendix F) together with the Wetland Study has made several recommendations to ensure that a no-net-loss approach is taken during the construction and operation phases of the CABs. As such these recommendations are based on maintaining the current levels of ecosystem integrity and service delivery of the systems within the study area. The recommendations also consider mitigation and offset impacts of the proposed development on the systems by rehabilitating the habitat.

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

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

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

The 'No-Go' Alternative

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

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

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SECTION F. RECOMMENDATION OF EAP

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

YES	NO
X	

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

If "YES", please attach the draft EMPr as Appendix F to this report and list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

1. It is recommended that alternative A1 and S1 (i.e. formalisation of ablution facilities within the Happy City informal settlement) be accepted from environmental and social perspective.
2. The applicant must ensure that mitigation measures and controls specified in the EMPr are adhered to. The construction of the pipelines and ablution facilities must be monitored by an independent ECO who should ensure compliance with the construction EMPr.
3. It is recommended that environmental construction audits be conducted on a monthly basis. In addition a pre-construction audit and post-construction audit (PCA) must be conducted. A second PCA must take place 3/4 months after rehabilitation to monitor the efficiency of the rehabilitation and erosion control.
4. The contractor and his staff must attend an environmental awareness training course, presented by the site engineer or a suitably qualified EO from the engineers / contractors, prior to construction commencing. The environmental awareness training course should cover the following key aspects: (a) basic awareness and understanding of key environmental features of the work site and the surrounding environment, (b) understanding the importance of, and reasons why, the environment must be protected, (c) ways to minimize environmental impacts, and (d) requirements of the Environmental Authorisation and EMPr. The EAP must be on hand to aid with any environmentally-based questions.
5. Construction activities must comply with designated working hours and surrounding residents must be informed prior to commencement of construction activities.
6. Emergency contact numbers must be placed at each construction site.
7. Adequate chemical toilet facilities must be provided for all staff members as standard construction practice. The chemical toilets must be from a registered company and all sewage must be disposed of at an appropriate facility. Safe disposal certificates must be kept on record.
8. Existing infrastructure (i.e. electricity lines, water pipelines) must be identified prior to construction. Any costs associated with negative impacts to these services must be borne by the applicant and should the need arise to disrupt these services for any reason, the relevant authority must be contacted for permission and details of the disruption must be communicated to the affected residents.
9. As there are no formal stormwater drainage facilities on site, the contractor must prepare a Stormwater Control Method Statement (MS) to ensure that all construction methods adopted on site do not cause, or precipitate, soil erosion. The designated responsible person on site, as indicated in the Stormwater MS (usually the contractor) should ensure that no construction work takes place before the stormwater control measures are in place. The Stormwater MS must be submitted to the ECO prior to implementation.
10. As recommended by the Wetland Specialist (Appendix D), multiple discharge points must be reasonably spread out across the development adjoining the wetland habitat to allow for the exit of stormwater.

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- Accompany each discharge point should be a suitable baffle structure eg gabions that will dissipate the energy of storm flow and encourage infiltration thus reducing the likelihood of erosion.
11. The erosional features within the wetland habitat need to be appropriately stabilised to ensure that no further erosion of the system occurs.
 12. A buffer zone of between 15m and 30m must be maintained from the edge of the watercourse to the proposed sites. Stormwater flow through the buffer zone should be via diffuse flow and not concentrated flow to reduce the risk of erosion and further degradation of the receiving environments.
 13. The duration of exposed soil must be kept to a minimum and rehabilitation of the disturbed area must be initiated as soon as construction is completed.
 14. Materials must be stockpiled in appropriate areas where storm water runoff cannot erode into the stockpile.
 15. Dust control must be implemented throughout the construction phase.
 16. Any alien vegetation found within the construction site must be cleared to ensure that invasion of disturbed areas does not occur.
 17. Cement mixing must take place on a hard surface or on cement mixing trays. Cement mixing will not be permitted to occur where run off can enter the watercourses. In addition cement and fuels must be stored within bunded and hard surfaced areas. If the creation of a permanent bunded area is not feasible, these materials must be stored on drip trays capable of holding at least 110% of the spilled volume.
 18. Littering must not be permitted on the site and general housekeeping must be enforced.
 19. Waste must be stored in the bins within the waste collection area in the construction camp and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent to the skips / bins and must be disposed of at an appropriate land fill site.
 20. Hazardous waste must be stored on a hard surface within a bunded area and must not be allowed to enter watercourses and the surrounding environment.
 21. All excess material and rubble must be removed from the site so as not to restrict the rehabilitation process. All excess material and rubble must go to an approved, designated landfill and a safe disposal certificate must be obtained.
 22. Recycling should be undertaken where possible to limit waste added to the landfill site.
 23. The watercourse may not be used as a water source by staff unless water abstraction is approved and permitted by DWA.
 24. A spill response procedure must be designed to manage spills during construction. Suitable spill kits must be available and staff must be made aware of the spill response procedure.
 25. In the event of Heritage resources or artefacts being uncovered during construction, activities around the site must cease immediately and AMAFA must be contacted to investigate the findings.
 26. A maintenance plan for the operational phase of the development must be drawn up to monitor and identify any potential spills or leaks along the pipeline or at the ablution facilities.
 27. All mitigation measures outlined in the method statement for pipeline construction across the watercourse must be adhered to.
 28. Piped bridges are to be used where the pipeline crosses the watercourses.
 29. A spill contingency/emergency response plan must be drawn up to handle possible sewer spillages, overflows, pump station failures, etc., as well as to document the procedures that need to be followed in the event of an emergency incident
 30. There may not be hunting/ fishing of wildlife or poaching of livestock on the site and no setting of snares or

traps.

31. Following construction, rehabilitation should be implemented. Rehabilitation of the riparian habitats adjacent to the ablution facilities where feasible must be conducted. This includes deactivation of the erosion gully ensuring no further lateral erosion takes place and the eradication of alien vegetation.

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SECTION G: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information

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Appendix A – Site Plan(s)

- Appendix A1 - Topographic Map indicating the proposed sites and surrounding land uses.
- Appendix A2 - Ariel map indicating the 1:100 year floodline, D'MOSS, 2m contours and servitudes.

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Appendix B – Site Photographs

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Appendix C – Facility Illustration(s)

- Proposed Layout of CABs (Alternative A1 and S1-preferred alternative)
- Prefabricated Toilet Layout

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Appendix D – Specialist Report

NB: The specialist refers to the sites as Happy City (now BX5) an AX2 (now D1 Ebuhleni- at this site the male and female blocks are separated by a stream).

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Appendix E –Comments and Responses Report

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Appendix F – Draft Environmental Management Programme

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Appendix G – Other Information

Public Participation Process

- Background Information for the proposed development
- Signboards
- Notification of Landowners
- Notification of Authorities
- Newspaper adverts
- Distribution of BID
- Registered I & APs
- Notification of release of Draft BAR (To be included in Final BAR)