environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

	(For official use only)
File Reference Number:	
Application Number:	
Date Received:	

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

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection becauseif it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. 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.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

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

If YES, please complete the formentitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECTDESCRIPTION

a) Describe the project associated with the listed activities applied for

The state-owned Umgeni Water (UW) was established in 1974 to provide bulk potable water to various Municipalities. Umgeni Water is situated in the KwaZulu-Natal Province and serves uMgungundlovu, Ugu, Sisonke and iLembe District Municipalities, Msunduzi Local Municipality and eThekwini Metro. Umgeni Water owns and / or manages major infrastructure in its operational area (storage and recreational dams, water treatment works, wastewater treatment works, tunnels and pipelines).

The KwaZulu-Natal Bulk Water Supply Plan (1984) was developed to partner Water Service Authorities with Water Utilities in KwaZulu-Natal in order to provide a regional base and a sustainable solution for the provision of potable water. In July 2007 Umgeni Water became the bulk potable water provider to the iLembe District Municipality.

The Maphumulo Bulk Water Supply Scheme was completed in 2013 to supply the inland regions of the iLembe District Municipality. The Local Municipalities of Ndwedwe and Maphumulo are positioned inland within the iLembe District Municipality. These Local Municipalities are recognised as having a high percentage of potable water supply backlogs. As part of the Bulk Water Supply Scheme, a pipeline has been constructed to serve these backlog areas. This scheme will ultimately serve a 155 km² rural area drawing raw water from the Middledrift / Madungela Abstraction point on the Tugela River (uThukela River) which is 2kms north of the existing Ngcebo Water Treatment Plant (the pipeline construction was authorised in the greater Maphumulo Phase 1 Project). Refer to Appendix A for the location of the abstraction point relative to the Ngcebo Water Treatment Plant.

The existing Ngcebo Water Treatment Plant is located in the Maphumulo Local Municipality in the District Municipality of iLembe at GPS co-ordinates: 31º1'29.096''E 28º 53'51.389''S (refer to Appendix A), approximately 100 metres from the Tugela River. The capacity of the Plant is 0.5ML p/day (mega litres per day).

The Water Treatment Plant requires to be upgraded in order to meet the water servicing needs for the priority areas described above. As part of a separate authorisation, a raw water feed pipeline (160mm uPVC pipeline) to the Ngcebo Water Treatment Plant has been established from the Middledrift abstraction works to service the proposed Water Treatment Plant upgrade.

It is proposed that the existing Ngcebo Water Treatment Plant be upgraded from a capacity of 0.5ML p/day to 4ML p/day in two project phases. The proposed first phase is to construct a 2 ML/day water works to meet short term future demands and the proposed second phase is for the remaining 2ML/day to be constructed when required in the longer term.

The first phase upgrade to 2ML/day will include the following:

- Construction of a 2ML/day Water Treatment Plant (abstraction upgrade, head of works, flocculation, Clarification, filtration, disinfection, sludge treatment and handling, utilities);
- Construction of the Plant administration building, Operator's control room, laboratory, ablution facilities, chemical storage room, security room, plant fence, access road;
- Telemetry, Programmable Logic Controller (PLC), Supervisory Control and Data Acquisition (SCADA); and
- An emergency sludge discharge pipeline.

Once the proposed upgraded Water Treatment Plant is operational, the second phase will increase the raw water intake from 2ML/day to 4ML/day. The second phase of the upgrade will be implemented without disturbance to the operation of the existing and upgraded Plants, thus ensuring continued water supply.

The proposed treatment process will comprise flocculation, clarification, filtration, chlorination and sludge treatment. The stages of the treatment are detailed as follows (refer to Appendix C for a block diagram of the process treatment):

- De-grit/ Grit removal system;
- Chemical dosing (chlorine gas, polyelectrolyte and calcium hypochlorite);
- Flocculation hydraulic channel;
- Clarification;
- Filtration - removing particles from water;
- Disinfection - for killing bacteria;
- Final water onsite storage;
- Final distribution pump house;
- De-sludge waste and Backwash Waste Recovery System;
- Sludge disposal to on-site lagoons; and
- Dry Water Treatment Residue to land.

Chlorine will be used as part of the water treatment process, however, storage requirements as a result of the upgrade increase from 0.048m³ per month to 0.384m³, which is significantly below the 30m³ threshold required to trigger a listed activity pertaining to the storage of dangerous goods. Any water spillage / overflow or leaks from the chemical storage tanks which originate from a process fault or abnormal-operation will be safely channelled to designated spillage points. No equipment or process units will be located in areas which could be at risk from natural flooding or accidental spillages. The chemical storage room has been designed to cater for chemical compatibility and to meet the required Occupational Safety and Health Act regulations. Features include proper ventilation, maintained acceptable humidity limits, appropriate door structures and alarm systems. The storage and handling of chlorine on site will be undertaken by trained staff familiar with the documented and agreed emergency response procedures.

Environmental context

Approximately 4km north of the Ngcebo Water Treatment Plant, the Nsuze River joins the Tugela River. The Nsuze River has been identified as a National Freshwater Ecological Priority Area (NFEPA). The South African National Biodiversity Institute's (SANBI's) Freshwater Programme provides strategic spatial priorities for conserving South Africa's freshwater ecosystems to support sustainable use of water resources. This includes guidelines on environmental management for Priority Areas. The SANBI National Freshwater Ecosystem Priority Areas Atlas (2011) contained in Appendix A, for the uThukela / Tugela Water Management Catchment Area demonstrates that, for the proposed development site, there are no special freshwater or terrestrial environmental management obligations in terms of NFEPA or Critical Biodiversity Areas (CBAs). Nevertheless, this environmental impact assessment will consider how the proposed development impacts on the three categories of stresses detailed in the NFEPA Implementation manual (changes in water quality and quantity, changes in habitat and biota).

The majority of the site comprises scrubland with some thicket scrubland. The site is dominated by alien vegetation and it is highly degraded. The project area has soil which is classified as having a high erosion risk. The high intense rainfall, historical land management practices and soil with erosive qualities combine to make soil erosion a significant concern in the project area (refer to Plates 1-8). The Tugela River exhibits high sediment loads and depositional features as a result of sediment running into the River systems from the catchment areas above.

Given that the Tugela River flows from between approximately 70 to 30 metres east of the proposed location of the upgraded Water Treatment Plant site, and that the emergency sludge discharge pipe (150mm in diameter) is proposed to be established between the upgraded Plant and the River, it will be essential to prevent erosion during all phases of the Project. The management of soil erosion is thus emphasised in the Environmental Management Programme (Appendix G) and Biodiversity Rehabilitation Plan (Appendix J1) for both

construction and operational phases.

Potential significant environmental impacts from the proposed development are summarised in Table 1 below:

Table 1: Summary of adverse environmental impacts from the proposed Water Treatment Plant upgrade

Changes	During construction	During operation
Water quality *'Changes in water quality that will lead to deterioration in the current condition of a river'*	• The risk of pollutants from construction vehicles and construction materials being introduced to the surrounding soil and river. • The risk of increased sediment being deposited into the River due to soil erosion which could result from the site being cleared of vegetation, coupled with an inadequate Construction Stormwater Management Plan.	• The risk of pollutants from the septic tank and soak-away being introduced to the surrounding soil and river. • The risk of water treatment residue being discharged into the River via the emergency sludge discharge pipeline. • The risk of increased sediment being deposited into the River due to soil erosion which could result from the site being inadequately rehabilitated post construction, coupled with an inadequate Operational Stormwater Management Plan.
Water quantity *'Changes in flow regime that will lead to deterioration in the current condition of a river'*	• The risk of increased surface run-off from vegetation loss due to site clearance.	• The risk of increased surface run-off from vegetation loss due to alien vegetation infestation which has not been removed. • The risk of increased surface run-off from hardened surfaces coupled with inadequate stormwater management controls.
Habitat / biota *'Loss of habitat availability and/or condition that leads to deterioration in the current condition of a river'*	• Loss of biodiversity and habitat from site clearance. • The risk of soil disturbance from earthmoving activities.	• Loss of biodiversity and habitat through inadequate rehabilitation of areas affected by construction activities.
Chemicals *Major Hazard installation*		• There is a potential health risk from exposure to chlorine gas to the Water Treatment Plant employees and adjacent populations. • The presence of chlorine gas is considered a hazardous installation and is governed by the Department of Labours' Major Hazard Installation (MHI) Regulations. The MHI Regulation places a duty on the employer to draw up an on-site emergency plan to ensure the continuous safety of the workers and the public.

Mitigations measures have been identified to minimise or prevent the impacts listed in Table 1 above and as a result, residual risks to the riverine and freshwater ecosystems from the proposed developments are anticipated to be low during both the construction and operational phases.

Recommendations have been made by the EAP to maintain the ecological integrity of the area. These include:

- Adherence to a 30 metre buffer zone from the River (including livestock access control and avoidance of modifications to the river banks);
- Rehabilitation of the riparian habitat affected by the construction activities;
- Stormwater management to ensure that natural stormwater runoff is diverted back to the River;
- Alien invasive vegetation control on site;
- The construction of erosion control measures where applicable;
- The controlled removal of indigenous plant species on site, for relocation to an adjacent suitable habitat;
- Adherence to the Department of Labours' MHI Regulations (on-site emergency plan) for the risk management of the storage and handling of chlorine gas; and
- Appropriate monitoring during operation of the Water Treatment Plant in respect of:
  - The performance of the proposed septic tank and soakaway;
  - The sludge treatment and handling regime; and
  - The use of the emergency sludge discharge pipeline.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GNR.544, 545 and 546	**Description of project activity**
GNR 544, Part 11: The construction of:… ii) channels; …v) weirs;… xi) infrastructure or structures covering 50 square metres or more… where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse…	The proposed Ngcebo upgraded Water Treatment Plant will be 10032m² in size and located within 30 metres of the Nsuze River.
GNR 544, Part 18: The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand … from i) a watercourse…	An emergency sludge pipe line will be constructed from the Ngcebo Water Treatment Plant to the Nsuze River. The pipeline diameter will be 125mm.
GNR 544 Part 37: ''The expansion of facilities or infrastructure for the bulk transportation of water, sewage or stormwater where: *(a)The facility or infrastructure is expanded by more than 1000 metres in length; or* *(b)Where the throughput capacity of the facility or infrastructure will be increased by 10% or more –*	The Ngcebo Water Treatment Plant will be upgraded from 0.5 ML/day to 4 ML/day. This constitutes an increase of 300% in Phase 1, and 400% in Phase 2 (700% in total), and thus triggers this activity.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

Describe alternatives that are considered in this application as required by Regulation 22(2)(h) of GN R.543.Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the

interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004.Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided.The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) The property on which or location where it is proposed to undertake the activity;

Alternatives properties have not been investigated because the proposed development is an upgrade to the existing Ngcebo Water Treatment Plant and for operational purposes, must be located as close as possible to the existing Plant.

Physical and logistical factors affecting the positioning of the upgraded Plant:

- The proposed development must be located as close to the existing Ngcebo Water Treatment Plant as possible for the following reasons:
  - For the upgrade to the new Plant, connections to the existing water supply pipeline and Treatment Plant will be required. The Madungela raw water pipeline will be connected to the head of works of the new Plant from the existing Plant.
  - A phased approach will be adopted with the implementation of the upgraded Plant (Phase 1 (2ML/day), and Phase 2 (4ML/day)). This is to ensure that existing water services are not interrupted by the upgrade.
  - It is intended that the operation of the upgraded Plant be as seamless as possible to maintain water service continuity.
- The layout and positioning of the upgraded Plant must be able to allow for potential expansion in the future.
- The available space within which to position the upgraded Plant is limited by the presence of the Tugela River on the east of the site, and the Kranskop Road, to the west of the site (refer to Appendix A).
- Eskom power pylons, and hence servitudes, are located to the south-west of the existing Plant (refer to appendix A).

The positioning of the proposed Plant is thus constrained to two possible locations:

- South of the existing Plant (Alternative 1, preferred option, refer to Appendix A); and
- East of the existing Plant (Alternative 2, refer to Appendix A).

Description		
Alternative 1 (preferred alternative)GPS Centre Point	Lat (DDMMSS)	Long (DDMMSS)
The proposed position and layout of this Option is to the south of the existing Water Treatment Plant (refer to Appendix A and C for a map showing the position of this option).	31º 01' 27.77" E	28º 53' 54.05" S
Alternative 2	Lat (DDMMSS)	Long (DDMMSS)
The proposed position of this Option is to the east of the existing Water Treatment Plant (refer to Appendix A for a map showing the position of this option).	31º 01' 31.27" E	28º 53' 50.86" S

b) The type of activity to be undertaken;

Alternative activities have not been investigated as the proposed development is an upgrade to the existing Water Treatment Plant for the purpose of treating raw water for the provision of community potable water. The purpose of the upgrade is to address the potable water service backlog in the area.

c) The design or layout of the activity;

The design or layout of the proposed upgraded Water Treatment Plant is constrained by both physical and logistical factors, and design specifications.

Design specifications:

- Over and above the spatial requirements for the water treatment aspects of the proposed Plant, there are additional spatial requirements for the management of the Plant. These include facilities for Operator control; administration; ablution; and laboratory. The spatial requirements for these essential facilities are prescribed by Umgeni Water and are aligned with legal and Umgeni Water best practice standards. They are summarised as follows:
- Laboratory - floor area required: 30 m²;
- Control room - floor area required 20 m²;
- Safety, Health, Environment, Quality Officer office - floor area required 16 m²;
- Superintendent office - floor area required 16 m²;
- Kitchen room - floor area required 5 m²;
- Mechanical Workshop - floor area required 25 m²;
- Electrical and Instrument Workshop - floor area required 25 m²;
- PLC/ SCADA - floor area required 16 m²;
- Toilet room - floor area required 4 m²;
- Shower room - floor area required 0.9 m²;
- Chemical storage room and chemical dosing room - sufficient space to store 30 days chemical supply;
- First aid room;
- Waste site;
- Pipe yard; and
- Security room at access gate.

To optimise functionality, the facilities listed above must also achieve additional Umgeni Water design specifications.

Examples of facility configuration requirements include:

- The Operators control room-
  - Must be located close to the chemical dosing room;
  - Must be near the clarifier and the filter gallery, as this will enable the Operator to continuously monitor the performance of these processes from the control room;
  - Must be built above the top water level of the clarifiers; and
  - Must be at least 5 meters from the ablution facilities.
- The chemical storage room must be at least 5 - 10 meters from the chemical dosing room and the dosing points.
- The chemical dosing room must be close to the Operator's control room and the chemical storage room.
- There must be a minimum of 10 meters between the pre-chlorine dosing point and the polymeric coagulant dosing point.
- The access road inside the plant must reach the chemical storage room and the filters.
- The waste point access should be sufficient for a truck to enter.

Alternative 1 (preferred alternative)

GPS Centre Point Latitude 31º 01' 27.77" E, Longitude 28º 53' 54.05" S

The proposed position and layout of this Option is to the south of the existing Water Treatment Plant (refer to Appendix A and C for a map showing the position of this option). The features of this option are as follows:

- The option **complies** with the spatial requirements for the layout as specified by Umgeni Water (described above)
- The position of the proposed new Plant allows for future expansion to the south
- The eastern boundary of the proposed new Plant faces the Tugela River. The proximity of the boundary to the River ranges from approximately 30 – 70 metres in this option, as shown in the Figure 1 below.

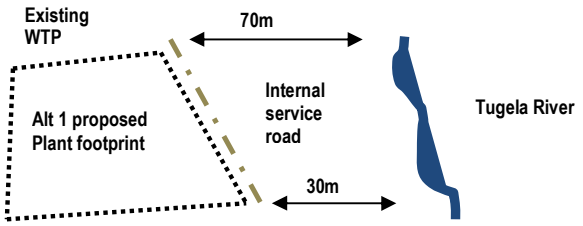

Figure 1: Preferred layout Alternative 1 proposal for new Water Treatment Plant

- The spatial configurations for this option meet the functional requirements for the proposed new Plantadequately.
- The eastern boundary of the Plant presents a lower potential risk to the Tugela River than Alternative 2. Thus, this option is the preferred option.

Alternative 2

GPS Centre Point Latitude 31º 01' 31.27" E Longitude 28º 53' 50.86" S

The proposed position of this Option is to the east of the existing Water Treatment Plant (refer to Appendix A for a map showing the position of this option). The features of this option are as follows:

- The option does **not comply** with the spatial requirements for the layout as specified by Umgeni Water (described above);
- The position of the proposed new Plant does allow for future expansion to the south; and
- The eastern boundary of the proposed new Plant faces the Tugela River. The proximity of the boundary to the River is approximately 30 metres in this option, as shown in the Figure 2 below.

Alternative 2 continued

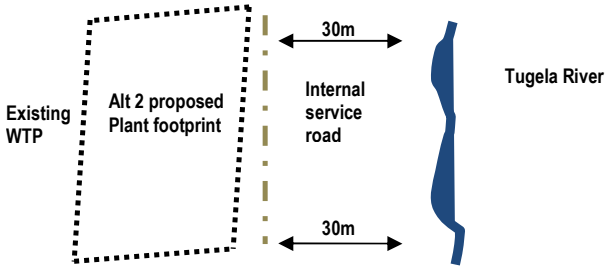

Figure 2: Alternative 2 layout proposal for new Water Treatment Plant

The spatial configurations for this option do not adequately meet the functional requirements for the proposed new Plant. The eastern boundary presents a higher potential risk to the Tugela River than Alternative 1. Thus, this option has not been investigated any further in this Report.

d) The technology to be used in the activity;

Where appropriate Umgeni Water will utilise tried and tested technologies that match the current infrastructure that is currently in place. For relevant tried and tested technologies, Umgeni Water has applied upgraded technologies which have already been approved and adopted at other Water Treatment Plants in KwaZulu-Natal. For the proposed new Ngcebo Plant, alternative technologies that have been investigated include:

- Water Treatment Residue (WTR) / Sludge treatment processes;
- WTR / sludge disposal; and
- De-gritting technologies.

d1) Alternative WRT / Sludge treatment process options

Water treatment residuals form when suspended solids in the raw water react with chemicals (e.g. coagulants) which are added to the raw water in the water treatment process. This product is also commonly referred to as sludge. In all water treatment processes, some surplus sludge is produced. The objective of water treatment residual management is thus to reduce the water content and the volume of the sludge solid to be disposed of with the lowest environmental impact.

Dewatering aims to reduce the water content of the WTR so that it can be handled like a solid. Dewatering can be achieved using sludge evaporation lagoons or drying beds. Precipitation and evaporation rates are the controlling factors for these two natural drying processes.

An emergency overflow pipe line from the lagoons to the river will be used to discharge the WRT directly into the river in the event where the water cannot be recycled as proposed. The volume that could be discharged in a day in the event of an emergency will not exceed 225 m³/day. The quality of the discharge will be similar to that of the raw water intake.

Alternative 1 (preferred alternative): WRT treatment in sludge evaporation lagoons
• The waste from the clarifiers will discharge directly into the sludge treatment plant. The clear water from the sludge plant will be return to the head of works. • The backwash waste will settle in the quiescent tanks. The clear water will be returned to the head of works. The remaining sludge will be discharged into the sludge treatment plant. • Natural sedimentation of the suspended solids occurs at the bottom of the lagoon and undergoes further degradation. Over time this settled sludge builds up and reduces the volume and capability of the lagoon, necessitating its removal and then allowing the process to begin again. • It is proposed to clean out the sludge lagoon approximately every three months. Once the sludge is laid dry it will be easy to scrape off the bottom of the floor. • The extracted WRT will then be disposed of using the preferred method (refer to disposal options in d2 below). • The process requires low investment costs and low operational costs. It is considered to be low-tech and has no energy requirement.

Alternative 2: WRT treatment process using drying beds
• A drying bed consists of a shallow bed / pond filled with drainage layers. The sludge is normally applied on the sand bed and allowed to dry by evaporation and drainage of excess water over a period of several weeks, depending on the climate. • The rainy season prolongs the process and the only way to overcome this is to have a larger surface area available to dry the WRT when it is not raining. • The mean annual rainfall for the Maphumulo Municipality ranges between 800mm and 1160mm, which is significantly above the average rainfall for South-Africa (approximately 500mm). • Sludge can be removed from the drying bed after it has drained and dried sufficiently to be separable. This can be accomplished manually using shovels and wheelbarrows, or mechanically using a front-end loader. Dried WRT can then be disposed of using the preferred method (refer to disposal options in d2 below). • The process requires moderate investment costs and low operational costs. It is considered to be low-tech and has no energy requirement. However, the need for a larger land area restricts the feasibility of this option.

d2) Alternative WRT / sludge disposal options

Alternative 1 (preferred alternative): Sludge disposal, application to land
• Sludge contains valuable slow release plant nutrients and trace elements that enrich soil and help to yield healthy crops.The application of sludge to agricultural land/forests has been shown to be advantageous. The sludge can also be used on land restoration projects. • This is a low cost disposal option when considering the environmental impact but has high logistic costs (transport and application). • The treatment process i.e. the chemical doses, affect the quality of the residual for application to land, therefore monitoring of the sludge is an essential component with this option. A pump is required to be provided to supply water to a field station that measures the turbidity and pH. • The practice of recycling clean water sludge to land is gaining recognition as being the Best Practicable Environmental Option.
Alternative 2: Sludge disposal to landfill
• The disposal of sludge to landfill is a high environmental cost disposal option as there is a shortage of landfill space and landfill management costs are subsidised by the Municipalities. • Waste collection occurs in the Town of Maphumulo and is disposed of at a legal waste disposal site. However, currently there is no waste collection service or disposal site for the rural area of the Municipality.
Alternative 3: Sludge discharge direct to surface water (Tugela River)
• This is a high environmental cost disposal option which is increasingly considered unacceptable by the Department of Water Affairs.

e) The operational aspects of the activity;

Alternative 1 (preferred alternative)
Alternative operational aspects have not been investigated as the proposed development is an upgrade to the existing Water Treatment Plant. The operational aspects comply with Umgeni Water's tried and tested methods.

(f) The option of not implementing the activity.

<u>The no-go alternative, if pursued, will have the following impacts:</u> • The Regional Water Supply Scheme will not be delivered unless this development proposal is implemented. If the no-go option was pursued, then the benefits and purpose of significant capital investment already made on water supply infrastructure which forms a part of the wider regional water supply scheme will never be fully realised to the community. • The no-go alternative fails to address the backlog for current and future community water demand and the issue of water scarcity. Provision of potable water to regional communities cannot be made possible unless there is an upgrade to the Ngcebo Water Treatment Plant. • Benefits from the supply of potable water to the community are linked to National priority goals, such

as poverty alleviation, health and hygiene improvement.

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

3. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative (preferred option)	**Size of the activity**
	10032m²

4. SITE ACCESS

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

Describe the type of access road planned:

A road accessing the plant from the Middeldrift Road will be lengthened by approximately 100 metres. The road will comply with SANS Civil Specification for Roads.

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.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

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 activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

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

The table below makes use of the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guideline on Need and Desirability (August 2010) (DEA&DP 2010).

10.1	**Is the activity permitted in terms of the property's existing land use rights?**	YES	[redacted]	Please explain
	The property is un-zoned and held under trust for Traditional Authority by the Ingonyama Trust.			
10.2	**Will the activity be in line with the following?**		[redacted]	
10.2a	**Provincial Spatial Development Framework (PSDF)**	YES	[redacted]	Please explain
	Provincial Spatial Development Framework (PSDF) accessed at :http://www.kznppc.gov.za/Portals/0/Documents/PGDS%20Annexure%20C%20-%20Provincial%20Spatial%20Development%20Framework%20(Draft%202).pdf • Water provision is seen as a critical lever for the KZN Province in terms of social development and thus forms an integral part of the PSEDS. • National service delivery targets have been adopted for 'access to clean water' for households. • The PSDF explains that a 'special intervention' approach is required for the Province of KwaZulu-Natal in order to eliminate the water services backlogs within acceptable timeframes. • The PSEDS refers to the need to focus on the provision of affordable bulk water. • Maphumulo Municipality does not make a significant contribution to any industry on a Provincial Level but road networks do link social and agriculture networks to other surrounding areas of opportunity. The PSEDS identifies a secondary development corridor between eThekwini and Maphumulo. • Given the Biodiversity within the Maphumulo area, there is an opportunity to promote Community Nature Based Tourism, but, on a Provincial scale, the Maphumulo area is essentially considered to be a deprived area.			
10.2b	**(b) Urban edge / Edge of Built environment for the area**	[redacted]		Please explain
	KwaZulu-Natal Department of Local Government and Traditional Affairs, Urban Development Framework Manual July 2011, Chapter 1 and 4 Suburbs and Infill Areas. accessed at: http://devplan.kztnl.gov.za/DOCUMENTS_UPLOAD/urban_development_framework.aspx • The concept of urban edge does not apply to this project as it is located in a rural area.			
10.3	**Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).**	[redacted]	NO	Please explain
	IDP Maphumulo Local Municipality IDP accessed at: http://www.maphumulo.gov.za/index.php?option=com_docman&Itemid=178 • The IDP lists the provision of water and sanitation as an infrastructural priority. SDF • Maphumulo Local Municipality SDF is in the process of being developed. In the absence of a local SDF, the water and sanitation infrastructural priorities, detailed in the local IDP, have been aligned with the Kwazulu-Natal Spatial Development Framework (refer to Figure 3 below). • The map for Figure 3 demonstrates the 'mandated service delivery and social investment areas'. These areas are intended to be serviced through the Regional Water Scheme (Maphumulo Bulk Water Supply Scheme Phase 1, for Maphumulo, Ndwedwe and KwaDukuza Municipalities in the iLembe District) of which the Ngcebo Water Treatment Plant upgrade project forms a component thereof.			

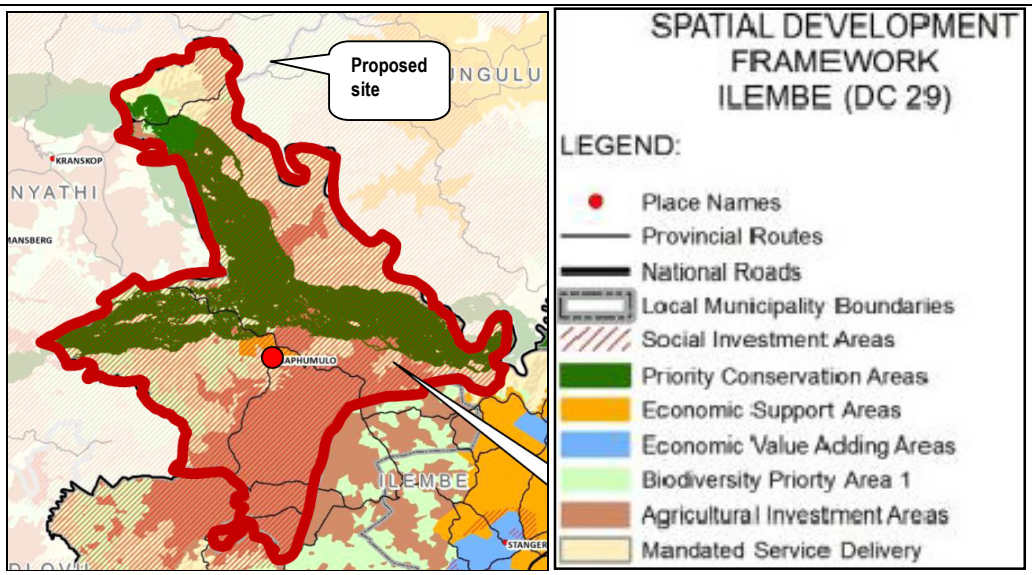

Figure 3: Extract from the Kwazulu-Natal Spatial Development Framework showing the iLembe District outlined. The entire area is indicated for mandated service delivery and social investment (Map 20 KZN SDF).

10.4	**Approved Structure Plan of the Municipality**	YES	NO	Please explain
	Refer to the answers provided in (c) above.			
10.5	**An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)**		NO	Please explain

The iLembe District Municipality has secured funding from the DAEA for the development of an Environmental Management Framework which will incorporate all of the local municipalities, including the Maphumulo Municipality. The completion of the Environmental Management Framework for the District as a whole is anticipated to be completed by next year (2014).

An Environmental Atlas was developed by the iLembe District Municipality incorporating a set of maps which serve to provide a sensitivity analysis able to be used as support tool for spatial planning and decision making within the District area. The set of maps include identification of habitat value and landscape sensitivity. The maps highlight the following characteristics associated to the area of the proposed upgrade to the Ngcebo Water Treatment Plant (northern area of the Maphumulo Municipal area):

- Landscape sensitivity –the northern area of Maphumulo has robust landscapes which are able to absorb and recover from intensive human impacts;
- Ecological sensitivity - the northern portion of Maphumulo has the most impacted, robust landscapes and vegetation types of the area, whereas the central (and especially the western boundary)features valuable habitats essential to ecosystem development and is most sensitive to human impacts;
- Land cover – unimproved grasslands feature in the north;
- Vegetation – Eastern valley Bushveld predominates in the north; and
- Habitat Value – the map indicates that the northern areas are transformed and have lower value than the large area in the central and southern portions of the Municipal area.

At a desktop level, none of the features identified above indicate that the proposed development is located in an area of environmental sensitivity. The site specific environmental characteristics are discussed in detail, in Section B4. The proposed upgrade to the Ngcebo Water Treatment plant will thus not compromise any Environmental Management Plans for the area.

10.6	**Any other Plans (e.g. Guide Plan)**		NO	Please explain
	N/A			
10.7	**Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?**	YES		Please explain
	The IDP lists the provision of water and sanitation as an infrastructural priority. In terms of the preferred delivery timeframes, the intended service has a 'backlog' status.			
10.8	**Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)**	YES		Please explain
	The supply of potable water to communities is an issue of National importance and the development forms part of a wider Regional Water Supply Scheme (Maphumulo Bulk Water Supply Scheme Phase 1, for Maphumulo, Ndwedwe and KwaDukuza Municipalities in iLembe District). Approximately half of the total households for the Local Municipal area have a current backlog for water provision, estimated at 10,173 households. Both the Provincial and local policy documents list the provision of water and sanitation as an infrastructural priority.			
10.9	**Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?**	YES		Please explain
	Additional services are not required to enable the development proposal.			
10.10	**Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?**	YES		Please explain
	The District Municipality basic infrastructural service delivery challenges are stated as follows: <u>C4.1 Water and Sanitation page 74:</u> • Rural areas are severely affected by a lack of basic services and continued service delivery backlogs. ''*Bulk water supply is a major constraint that effects the entire District and in urgent need of attention.*'' • *'31% of the population still do not have access to clean water and obtain water from rivers and streams.*'' This proposes a health risk with further implications regarding the provision of social services.' The upgrade of the Ngcebo Water Treatment Plant is listed in the District Municipality basic infrastructural service delivery plans. Figure 4 below indicates the Regional Water Supply Scheme (Maphumulo Bulk Water Supply Scheme, for Maphumulo, Ndwedwe and KwaDukuza Municipalities in the iLembe District) in the vicinity of the proposed site.			

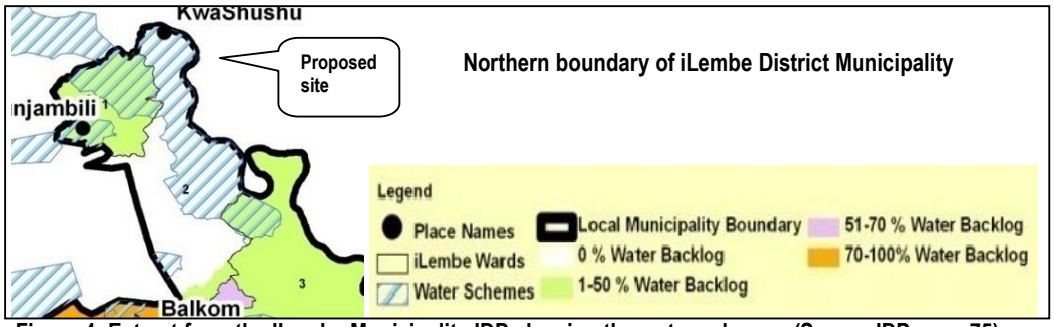

Figure 4: Extract from the ILembe Municipality IDP showing the water schemes (Source IDP page 75)

10.11	**Is this project part of a national programme to address an issue of national concern or importance?**	YES		Please explain
	The supply of potable water to communities is an issue of National importance and the development forms part of the wider Regional Water Supply Scheme (Maphumulo Bulk Water Supply Scheme, for Maphumulo, Ndwedwe and KwaDukuza Municipalities in iLembe District).			
10.12	**Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)**	YES		Please explain
	The Water Treatment Plant is already ideally positioned alongside the Tugela River. The proposed development must be located as close to the existing Ngcebo Water treatment plant as possible. Connections to the existing water supply pipeline and treatment plant at Ngcebo will be required for the upgrade to the new Plant. The Madungela raw water pipeline will be connected to the head of works of the new plant from the existing plant. The phased approach required for implementation of the new Plant (Phase 1 (2ML/day), and Phase 2 (4ML/day)) must be as seamless as possible to maintain water service continuity. Thus, the location factors favour this land use.			
10.13	**Is the development the best practicable environmental option for this land/site?**	YES		Please explain
	For logistical and operational reasons, the upgrade of the Water Treatment Plant must be implemented in close proximity to the existing Plant. The Investigation into the alternative positions and layout of the proposed Plant identified the area that balances the minimum needs of the functioning of the proposed Water Treatment Plant with the need to avoid the existing main road, Eskom power servitude and the Tugela River. This is the most cost effective option and has the least impact on the environment.			
10.14	**Will the benefits of the proposed land use/development outweigh the negative impacts of it?**	YES		Please explain
	The site already features an existing Water Treatment Plant which currently provides potable water to the community. It is now proposed to extend services to those households currently without 'access to water'. The improved conventional Water Treatment Plant proposed will provide a more reliable community water service and produce a more consistent water quality than that of the existing Plant. The construction and operation of the proposed upgrade to the Water Treatment Plant will not pose a significant risk to the surrounding environment, and the Tugela River to the east of the proposed site. Given that 'access to water' is such a significant National priority, the benefits associated to the proposal far outweigh the residual environmental risk, which is discussed in detail in Section D2 of this Report.			
10.15	**Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?**		NO	Please explain
	This question would be more appropriate for a private development. Umgeni Water would not establish another Water Treatment Plant in this area unless it was part of a water supply scheme in line with future water demand. Future development would likely entail an upgrade or replacement of existing Plant.			

10.16	**Will any person's rights be negatively affected by the proposed activity/ies?**		NO	Please explain
	Conversely, upgrade to the Ngcebo Water Treatment Plant will promote the aims of the Bill of Human Rights by providing 'access to water' and assisting with the alleviation of poverty.			
10.17	**Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?**		NO	Please explain
	This question is not applicable to this project as the property falls outside of the urban edge.			
10.18	**Will the proposed activity/ies contribute to any of the 18 Strategic Integrated Projects (SIPS)?**	YES		Please explain
	As part of the programme of stimulating the economy and creating jobs, government has developed a programme of Eighteen Strategic Integrated Projects (SIPs) largely focused on infrastructure development.The majority of the SIP goals, if not all, have strong implications for water, requiring water availability for economic development and potable water. Therefore the protection of water as a resource is considered crucial. The following SIP's are relevant for this proposal: • SIP 6: Integrated municipal infrastructure project: ➢ *'Develop National capacity to assist the 23 districts with the fewest resources (19 million people) to address all the maintenance backlogs and upgrades required in water, electricity and sanitation bulk infrastructure.'* ➢ iLembe District Municipality is undertaking the reticulation portion of the water projects in the area while Umgeni Water is funding the bulk works from their Capital Programme. • SIP 18: Water and sanitation infrastructure: ➢ *'A 10-year plan to address the estimated backlog of adequate water to supply 1.4 m households and 2.1 m households to basic sanitation. The project will involve provision of sustainable supply of water to meet social needs and support economic growth.* ➢ *Projects will provide for new infrastructure, rehabilitation and upgrading of existing infrastructure, as well as improve management of water infrastructure.*			
10.19	**What will the benefits be to society in general and to the local communities?**			Please explain
	There are employment opportunities for local communities, both temporary and permanent, from the construction and operational phases. The operational phase of the development will deliver potable water to communities. The demand for potable water is high and the delivery of the project has a high National priority.			
10.20	**Any other need and desirability considerations related to the proposed activity?**			Please explain
	N / A			
10.21	**How does the project fit into the National Development Plan (NDP) for 2030?**			Please explain
	The National Development Plan 2030 was published by the National Planning Commission. According to the Commission"*market and policy failures have resulted in the global economy entering a period of 'ecological deficit' as natural capital (groundwater, marine life, terrestrial biodiversity, crop land and grazing) is being degraded, destroyed or depleted faster than it can be replenished.* "The NPC has identified the creation of jobs as one of the two most critical tasks facing South Africa, with the need to create 11 million more jobs in the next 20 years. The NDP highlights South Africa as ranking among the lowest (i.e.128th of 132 countries) in the Yale University's Environmental Performance Index owing to the poor state of its water ecosystems. The country also ranks 148th out of 180 countries in terms of the water availability per capita. In strengthening its regulatory function, the Department has developed a Water Services Regulation Strategy which addresses the drinking and wastewater quality at local government level. This will be augmented by the development of a water resources regulatory framework which will focus on the entire water value chain. In support of the economy and employment, actions in the NDP that are focused on water resources are as follows: • *No. 28: 'A comprehensive Management Strategy, including an investment programme for water resource development, bulk water supply and wastewater management for major centres by 2012, with reviews every 5 years; and*			

	• *No. 29: 'Create Regional water and wastewater utilities, and expand mandates of the existing waterboards (between 2012-2017).'*
10.22	**Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.**
	As part of the planning work undertaken for this proposal, Specialists have been consulted during the design and development of appropriate alternatives. Mitigation measures have been developed to address the potential environmental impacts identified. Participation of all interested and affected parties has been facilitated (refer to Appendix E).
10.23	**Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.**
	Section 2 of NEMA states that 'Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and socialInterests equitably'. The purpose of the proposed development applies this principle directly through its mission to provide safe, clean water to communities. The disturbance of ecosystems has been minimised and remediation has been planned to restore biodiversity where it has been affected by construction activities (Biodiversity Rehabilitation Plan, Appendix J1).

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Heritage Resources Act (25)	*This legislation aims to promote good management of the national estate, and to enableand encourage communities tonurture and conserve their legacy so that itmay bebequeathed to future generations.* Proposed developments must consult with Amafa as part of the Environmental Assessment Process. This has been done.	National Heritage Resources Agency	1999
The National Environmental Management: Biodiversity Act (10)	*To provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act1, 998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the establishment and function of a South African National Biodiversity Institute.* The SANBI resources have been analysed and arediscussed in detail in Section B9.	Department of Environmental Affairs	2004
The National Development Plan 2030	Refer to Section 10.22 above	National Planning Commission	2012
The Constitution of the Republic of South Africa (108 of 1996)	*The Constitution sets out water resources management as a national competency. It states that everyone has a right to an environment that is not harmful to their health or well-being and supports socially justifiable economic development. The Constitution indicates the rights of individuals to have access to basic water and sets out the institutional framework for the provision of these services. Itgives municipalities the executive authority and the right to administer the provision of water services within their areas of jurisdiction.* The Constitution of the Republic of South Africa (Act No. 108 of 1996) is the legal source for all law, including environmental law, in South Africa. The Bill of Rights is fundamental to the Constitution of South Africa and the underlying principle behind Section 24 of the Act is that 'everyone has the right to an environment that is not harmful to their health or well-being'. Furthermore, the environment should be protected for present and future generations by preventing pollution, promoting		1996

	conservation and practising ecologically sustainable development.		
National Water Act (Act 36 of 1998)	*The Act requires that all water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all.* The Department has been consulted in the development of this Basic Assessment Process.The project proposal falls within the ambit of the Act as it has potential to cause pollution of a water resource defined under the Act.	Department of Water Affairs	1998
The Water Services Act, 1997 (Act No. 108 of 1997)	The Water Services Act prescribes the legislative duty of municipalities as water serviceauthorities to supply water and sanitation according tonational norms and standards. Inaddition, it regulates Water Boards as important water service providers.		1997
National Building Regulations and Standards Act (Act No. 103 of 1977) (as amended)	To provide for the uniformity in the law relating to the erection of buildings in the area of jurisdiction of local authorities and for the prescribing of building standards.	Department of Economic Affairs	1977
Conservation of Agricultural Resources Act (Act 43 of 1983)	The Conservation of Agricultural Resources Act (CARA) makes provision for the conservation of the natural agricultural resources of South Africa through combating and prevention of erosion; preventing the weakening or destruction of the water sources; protecting the vegetation; and combating weeds and invader plants.	National Department of Agriculture	1983
Integrated Environmental Management Guideline5:Companion Guideline on the Implementation of the Environmental Impact Assessments Regulations	*The Guideline provides a broad introduction to the EIA Regulations, 2010 by explaining the roles and responsibilities of the people involved in environmental authorisation applications, the processes that are involved in applying for environmental authorisation, an interpretation of the Listed EIA Activities, and answering a set of key questions which may arise (DEA, 2010).*	Department of Environmental Affairs	2010
Integrated Environmental Management Guideline 7**:** Public Participation Guideline	The guideline provides details on when to facilitate public participation, the methods to apply for notifications to Interested and Affected Parties, the formats required to be used for notifications, details on requirements for commenting and consultation periods, the process of identifying and responding to stakeholders, and guidelines for compilation of Public Participation Reports for inclusion into the Basic Assessment.	Department of Environmental Affairs	

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES [redacted]
If YES, what estimated quantity will be produced per month?	Impossible to predict

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

Waste will be recycled where possible. Waste that cannot be recycled will be disposed of at the nearest registered landfill site.

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

Waste will be collected on site and disposed of at the nearest recycling depot. If it emerges that any part of this waste cannot be recycled, it must be disposed of at the nearest permitted landfill site.

Will the activity produce solid waste during its operational phase?	YES [redacted]
If YES, what estimated quantity will be produced per month?	1825m³ / annum
How will the solid waste be disposed of (describe)?	

Suspended and dissolved solids, organic matter and other contaminants are removed from the water to produce potable water. The by-product of this Water Treatment Process is a Water Treatment Residue (WTR) which has a sludge consistency. At present the WTR, is applied to land. Approximately 5m³ of WRT/sludge is currently disposed of from the Ngcebo Water Treatment Plant per day (1825m³ per annum). With the upgrade of the facility, approximately 10m³ per day of WTR /sludge will be generated (3650 m³ per annum).

There is no existing Waste Management License (WML) for the disposal of WRT. Umgeni Water is currently seeking clarification with the DWA with regards to the classification of the WTR. A copy of the letter is attached as Appendix J2. The issue is still as yet unresolved.

If the DWA confirm that the WTR should be classified as a by-product rather than a waste product, then a Waste License Application will not be required. If the effluent discharge permit / licence is required then this would trigger GNR 718, A, 19 and a WML would be required. If the classification of WTR to a by-product is not accepted by the DWA, then Waste Management activities that may apply to the upgrade, in respect of which a Waste Management License is required in accordance with section 20(b) of NEMWA, 2008 (ACT NO. 59 OF 2008) are: GNR 718 Part 19:*The expansion of facilities of or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of pollution, effluent or waste*.

With the upgrade of the facility, approximately 3650m³ of WTR /sludge will be generated per annum. An effluent discharge permit / license does not exist for the current level of disposal. The effluent discharge permit / license, if required, will be a new application (pending clarification from DEA).

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	NO

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

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

The WTR/sludge is proposed to be applied to land as a soil conditioner.

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

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

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	NO
If YES, what estimated quantity will be produced per month?	N/A m³
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES

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.

The activity will not produce effluent, other than normal sewage by employees,

- During the construction phase: disposed of in chemical toilet ablution facilities. These chemical toilets will be located more than 100 metres from the Tugela River, and must be properly maintained. The chemical toilet supplier must empty these toilets, as and when needed.
- During the operational phase: it is proposed to construct French drains / Septic Tanks. It is anticipated that the ablutions will serve less than five employees. The Geotechnical investigation and percolation tests undertaken indicate that the soils are suitable for the effluent disposal method proposed. Refer to Appendix D2 for the Geotechnical Report. The septic tank and soakaway is proposed to be located approximately 90 metres from the River.

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

If YES, provide the particulars of the facility:

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

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

N/A

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?		NO
If YES, is it controlled by any legislation of any sphere of government?		NO

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If NO, describe the emissions in terms of type and concentration:

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?		NO

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

Refer to Appendix J2 for Umgeni Water correspondence to DWA regarding the Classification of Water Treatment Residue

e) Generation of noise

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

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

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

Noise will only be generated during the construction phase. Noise generation will be limited to the workers interactions and activities, concrete mixers or pumps etc .

13. WATER USE

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

		River, stream, dam or lake		

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:	4ML p/day
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	YES
If YES, please provide proof that the application has been submitted to the Department of Water Affairs.	

The upgraded Water Treatment Plant will need to comply with DWA water-use license requirements before the upgrade is implemented.

14. ENERGY EFFICIENCY

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

The hydraulic gradient of the proposed Water Treatment Plant will promote gravity flow throughout the treatment process. Pumping will occur only to recycle water back to the head of works. This will reduce reliability on electricity and save energy.

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

None.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A): [ ]

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

3. Has a specialist been consulted to assist with the completion of this section? YES [ ]

If YES, please complete the form entitled "Details of specialist and declaration of interest"for each specialist thus appointedand attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Kwa-Zulu Natal
District Municipality	iLembe District Municipality
Local Municipality	Maphumulo Local Municipality
Ward Number(s)	2
Farm name and number	Farm Amangcolosi No 17622
SG Code	N0GT00 000001762200000

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Un-zoned

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

Is a change of land-use or a consent use application required? [ ] NO

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:
Alternative S2 (if any):

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

2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1		Description
Shallow water table (less than 1.5m deep)	[redacted]	NO	
Dolomite, sinkhole or doline areas	[redacted]	NO	
Seasonally wet soils (often close to water bodies)	YES	[redacted]	
Unstable rocky slopes or steep slopes with loose soil	[redacted]	NO	
Dispersive soils (soils that dissolve in water)	[redacted]	NO	
Soils with high clay content (clay fraction more than 40%)	[redacted]	NO	
Any other unstable soil or geological feature	[redacted]	NO	
An area sensitive to erosion	YES	[redacted]	The majority of the Municipality features erosion prone unconsolidated Regosols that consist mainly of undeveloped loose soils.

The project area has soil which is classified as having a high erosion risk. The high intense rainfall, slope steepness and soil with erosive qualities make soil erosion a significant concern in the project area. The historical land management practices contribute to this problem. The River exhibits high sediment loads and depositional features as a result of sediment running into the River systems from the catchment areas above. Given that the Tugela River flows between 70 - 30 metres to the east of the proposed location of the upgraded Water Treatment site, it will be essential to prevent erosion at this site. Section D identifies the risk of soil erosion as a significant potential adverse environmental impact. The management of soil erosion is thus emphasised in the Environmental Management Programme and Biodiversity Rehabilitation Plan.

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

4. GROUNDCOVER

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

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

Site visits and analysis of the 2006 National Vegetation Layer from the South African National BiodiversityInstitute (SANBI),confirm that the vegetation north of the Maphumulo Municipality, and in the vicinity of the Ngcebo Water Treatment Plant, is Eastern Valley Bushveld. The CSIR Land Cover dataset of 2000 classifies most of the Maphumulo Local Municipal area 'under unimproved grasslands with some thicket scrubland'.

Although the site includes a protected species identified as *Boscia albitrunca* (Shepherds tree), the land is highly degraded.

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

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	
Non-Perennial River		NO
Permanent Wetland		NO
Seasonal Wetland		NO
Artificial Wetland		NO
Estuarine / Lagoonal wetland		NO

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The project area falls within Quaternary Catchment V40E. The catchment area contributing to the River is approximately 788 km². The region has a low mean annual precipitation of 728.5 mm and a high mean annual potential evapotranspiration of 1787.2 mm. The riverine and aquatic ecosystem in the proximity of the Tugela Rivermust be functionally maintained to avoid a cumulative downstream effect. A 30 metre buffer between the River and the proposed development is recommended.

The proposed upgrade of the Water Treatment Plant will reduce the existing buffer zone from 100 metres to between 70 and 30 metres at its closest point (refer to Figure 5 below).

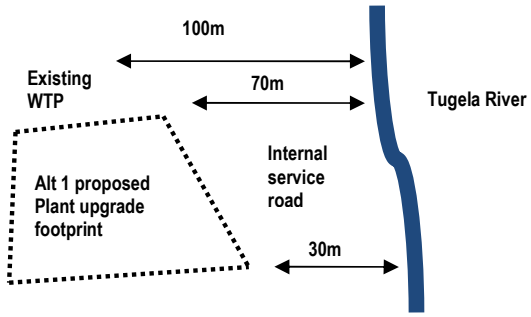

Figure 5: Buffer zone between the Tugela River and the Water Treatment Plants

6. LAND USE CHARACTER OF SURROUNDING AREA

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

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station [H]
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential[A]	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant[A]	Nature conservation area
Medium industrial [AN]	Train station or shunting yard [N]	Mountain, koppie or ridge
Heavy industrial [AN]	Railway line [N]	Museum

Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam [A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (existing Water Treatment Plant)

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

N / A

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

N / A

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)		NO
Core area of a protected area?		NO
Buffer area of a protected area?		NO
Planned expansion area of an existing protected area?		NO
Existing offset area associated with a previous Environmental Authorisation?		NO
Buffer area of the SKA?		NO

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:		NO
N / A		

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

A Heritage Impact Assessment has been undertaken and is contained in Appendix D1. Early stone age sites were identified within the greater area

- Early Iron Age Site S28º 53' 40'' E31º 01' 42", Provincial (Grade 11). This site is approximately 0.5km to the north of Ngcebo Water Treatment Plant on the other side of the river.
- Early Iron Age Site S28º 54' 20" E31º 01' 50" Provincial (Grade 11). This site is approximately 1km to the south of Ngcebo Water Treatment Plant on the other side of the river.

There are no cultural or historical features present on the proposed site. There are no buildings or structures older than 60 years in close proximity to the site. There is no known area of cultural significance, and it is therefore not necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999).

Will any building or structure older than 60 years be affected in any way?		NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		NO

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the Local Municipality in which the proposed site(s) are situated.

Level of unemployment:

High levels of poverty exist in the area as the majority of the population earns no income. The unemployment rate in the Municipality is extremely high, at 76% (Census 2001, Statistics SA). In addition, the majority of theemployed portion of the population in the Municipality earn less that R800 per month. There is a high percentage of youth (55% of total population) and elderly (5%)and thus a high rate of dependency in the Municipality.Women are overrepresented in the area (56% of the total population).

Economic profile of local Municipality:

The following are characteristics of the local economy:

- Government services are the largest contributor to the local economy (schools, clinics and government departments in Maphumulo town).Civilservants make up the largest component of the middle class in the area of Maphumulo and as a result, theysupport the local retail sector.
- Agricultural activitiesare dominated by subsistenceagriculture. Forestry is the secondmost dominant form of agricultural activity.
- Commercial activity is limited to general dealers, liquor storesand other small businesses in the small centre of Maphumulo town. There is no formal industrial development in the Municipality.
- Cultural/eco-tourism potential exists due to strong cultural background and natural heritage.

The Maphumulo Town is the centre of formal activity and provides support services and facilities to its hinterland. The area suffers from lack of skills, high dependency ratios, high poverty levels and high illiteracy levels. The entire Maphumulo jurisdiction has been identified as a poverty stricken area. In the absence of a revenue base, it has proved difficult to attract investors into the area,and this has resulted in highGovernment grant dependency.

Level of education:

Education levels are very low, with the adult majority (90%) of the population having no schooling. Schools in the Maphumulo Municipality are dispersed and difficult to access. There are no tertiary education facilities in the Municipality. A very low proportion of the population has tertiary qualification.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R20 million
What is the expected yearly income that will be generated by or as a result of the activity?	unknown
Will the activity contribute to service infrastructure?	YES
Is the activity a public amenity?	YES
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	30
What is the expected value of the employment opportunities during the development and construction phase?	R1.5 million
What percentage of this will accrue to previously disadvantaged individuals?	95%
How many permanent new employment opportunities will be created during the operational phase of the activity?	4

What is the expected current value of the employment opportunities during the first 10 years?	R 5 million
What percentage of this will accrue to previously disadvantaged individuals?	95%

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan within Appendix A of this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	None

b) Indicate and describe the habitat condition on site

Habitat Condition	**Percentage of habitat condition class (adding up to 100%)**	**Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).**
Natural	10%	There are protected *Boscia albitrunca* (Shepherd's trees) in the area. A permit will need to be applied for to relocate any of these trees within the proposed footprint of the Plant. It is anticipated that two trees may need to be relocated to outside of the proposed site area. This will be confirmed in the FBAR
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	N / A
Degraded (includes areas heavily invaded by alien plants)	20%	The majority of the site comprises scrubland with some thicket scrubland. The site is dominated by alien vegetation and it is highly degraded. The project area has soil which is classified as having a high erosion risk. The high intense rainfall, historical land management practices and soil with erosive qualities combine to make soil erosion a significant concern in the project area (refer to Plates 1-8). The Tugela River exhibits high sediment loads and depositional features as a result of sediment running into the River systems from the catchment areas above.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	70%	The project area includes the existing Ngcebo Water Treatment Plant. The area to the east of the existing Plant features historical cultivated land. To the west and north of the existing Plant is the main road, and to the south west of

		the Plant there are power pylons.

c) Complete the table to indicate:

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		**Aquatic Ecosystems**					
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	[redacted] Least Threatened	Wetland (including **rivers,** depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)		Estuary		Coastline	
		YES	[redacted]	[redacted]	NO	[redacted]	NO

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

Surrounding the proposed site is Valley Bushveld, disturbed on the higher altitudes. Thornveld vegetation features in the river valley and grassland around the proposed site.The existing Ngcebo Water Treatment Plant is approximately 100 metres away from the Tugela River.There are no protected areas in the Maphumulo Municipality. The occurrence of a common Bushveld species on the proposed site, *Boscia albitrunca* (Shepherd's tree), has been confirmed. It is a keystone species in arid Southern Africa, where it provides browse, shade, food and shelter to animals. *Boscia albitrunca* is a protected tree species (2007) in South Africa and in terms of section 12 of the National Forests Act, 1998 (Act No. 84 of 1998). This law states that "No person may (a) cut, disturb, damage, destroy or remove any protected tree; or (b) collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister."

It is recommended that any *Boscia albitrunca* which are required to be removed for establishment of the proposed Plant be identified and an application be made to sensitively relocate the tree to an appropriately agreed position in the area. This requirement is included in the Biodiversity Rehabilitation Plan.

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SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	The Witness	
Date published	Thursday, 28 March 2013	
Site notice position	**Latitude**	**Longitude**
	29°29'37.06" S	30°12'17.67" E
Date placed	18 March 2013	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
N. Pillay	Ezemvelo KZN Wildlife	pillaya@kznwildlife.com
M. Nicol	Eskom	nicolm@eskom.co.za
B. Mjubane	Maphumulo Local Municipality	bheki@maphumulo.gov.za
M. Newton	iLembe District Municipality	mike@ilembe.gov.za
B. Benson	Ingonyama Trust	bensonb@ingonyamatrust.org.za
A. Ferendinos	KZN Crane Foundation	andrew@enviroplan.co.za
Chief Magwaza	Chief	On site
Chief Zuma	Chief	On site

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
• The area does not appear to be a very environmentally sensitive one.	• Noted.
• We are not aware of any Cranes or other Red Data species in this area. Obviously this may just be due to ignorance on our part.	• Noted.
• Please take note and ensure that the following is carried forward in your documents, that in respect of Eskom's power lines, no encroachments are permitted within the	• Noted.

following in respect of our servitudes: 132kV lines = 18 metres on either side of the centre line 88kV lines = 16 metres on either side of the centre line 33kV lines = 16 metres on either side of the centre line 22kV lines = 12 metres on either side of the centre line 11kV lines = 12 metres on either side of the centre line	
• Eskom's underground cables are usually laid 1 metre to 1.5 metres, when excavation is anticipated; ensure you check with our offices for cable positions.	• Noted.
• Prior to the approval of the development, the owner shall lodge with the development Administration, for approval by the Minister, a certificate furnished by Eskom, the local municipality or other supplier of electricity for the benefit of the inhabitants of the development, to the effect that all substation servitudes required by it will be provided and have been depicted on the general plan.	• Noted.
• Trees should not be planted within their horizontal falling distance of the power lines.	• Noted.
• The roads crossing under the power lines may only cross in safe areas where, what is known as "broken conductor conditions" as defined in the Occupational Health & Safety Act 85 of 1993, are met. Generally, roads located within 10 m of wood poles are within legal safety requirements. This will be applicable to all property entrances adjoining existing roads.	• Noted.
• The ground clearance, as prescribed by the law has to be maintained, the natural ground levels within the servitude area are therefore to be retained, and no soil, or any other material, may be stock piled within the servitude area.	• Noted.
• Regarding the use of machinery, the operators are seldom informed as to the extreme danger of using equipment in close proximity to the live overhead conductors. No soil is to be disturbed, by any civil work, within a 3 m radius of any pole or stay wire. Where civil work is done outside of this radius the soil must be suitably sloped and protected so as not to cause erosion in or onto the 3 metre radius of undisturbed soil.	• Noted.
• Please note that the applicable building restrictions either side of any existing powerline must be adhered to when planning new buildings or developments on the property.	• Noted.
• Please further take note that the costs of relocations of any of Eskom's infrastructure, will be for the account of the developer.	• Noted.
• Applications can be lodged via Eskom's call centre on 086 003 7566.	• Noted.
• Please further take note that if any 275kV, 400kV or 765 kV Lines are involved, you need to send a copy of the application to Eskom's transmission division at Megawatt Park. (I can supply details).	• Noted.
• In connection with the Project I have to inform you that the Minister as the Controlling Authority as defined in the Kwazulu-Natal Roads Act No. 4 of 2001, has in terms of section 13 of the said Act, no objections to the BID as follows.	• Noted.
• In order for the Department to ensure operational efficiency	• Noted.

of the Provincial Road Network so as to ensure Road safety is not compromised the Department maintains a level of control over Structures and services, both within the declared or expropriated road reserve and in that portion of land immediately adjacent to the road reserve, known as the building restriction area, as defined in Section 13 (1) (a) & (b) of the Kwazulu-Natal Roads act No. 4 of 2001. • No buildings or any structures whatsoever, other than a fence, hedge or a wall, which does not rise higher than 2.1 metres above or below the surface of the land on which it stands, shall be erected on the land within a distance of 15 metres measured from the road reserve boundary of Main Road 15-1 • The road reserve boundary shall be determined in consultation with this Departments Road Information services, Tel 033-355 8600. • All structures and services are to be approved and placed in consultation with and to the satisfaction of this Cost Centre Manager, Stanger (telephone 032 4373800). • All costs incurred, as a result of these requirements shall be borne entirely by the developer. • This approval shall not exempt the applicant from the provisions of any other law.	• Noted. • Noted. • Noted. • Noted. • Noted.
• My colleague who commented on the BID recommended a Biodiversity Assessment be done but looking at the site I do not think we will need a Biodiversity Assessment.	• Noted.
• Please include the layout plan on the Draft Basic Assessment Report so that we can see the extent to which the trees will be affected.	• The layout plan is contained in Appendix C.
• The Witness is not a popular newspaper here, next time adverts should be in Isolezwe or Ilanga.	• Noted.
• As a part of social responsibility, maybe the Applicant could assist with water for the local community garden, which is nearby.	• Noted by the Applicant.
• When the time comes to employ operators and operator's assistants for the facility, we would like to request that the client recruits people with a matric from the local community so that they can learn the skills of becoming an operator or operator's assistant.	• Noted.
• Is this a very long process?	• Yes it is. This is the environmental authorization phase which must be conducted before the construction phase commences. Lyn Archer, of Umgeni Water, indicated that construction may only begin around March / April 2014. • <u>Post meeting note:</u> Discussions between Umgeni Water and the iLembe Municipality are currently underway to confirm the timeframe for construction.
• We will appreciate it if the local community can be recruited to learn skills and alleviate the poverty in the area, which is very bad.	• Noted.
• We are very appreciative that Umgeni is taking over the water purification facility and that there may be enough	• Noted. However, the reticulation is the District Municipality's responsibility.

water for everyone in the community in the future. ILembe did not supply enough water for the large community. The pump near the chief's house has never worked, even though the houses further along the line have water, he does not. We hope that things like this will be better in the future.	
• Now we will await construction – we are looking forward to it!	• Noted.
• We need the funding to come through before we begin, it will still be some time before the Tender process is complete and construction can begin.	• Noted.
• Please take note of the name of the nearby school – maybe we can send them a hard copy of the report to show members of the local community.	• This was done.

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to theFinal BAR as Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
AMAFA Heritage	W. Tshabalala	033 3946543	033 3426097	archaeology@amafapmb.co.za	P O Box 2685, Pietermaritzburg, 3200
Department of Water Affairs	M. Maharaj	031 336 2750		thakurdinm@dwa.gov.za	PO Box 1018, Durban, 4000
Department of Agriculture Forestry and Fisheries	A. Mnyungula	033 3927738		AyandaMn@nda.agric.za	P/Bag x 9029, Pietermaritzburg, 3200
Department of Agriculture	M.Myeni	082 401 0868	017819 1295	mp.landbou@mweb.co.za	
Department of Transport	M. Schmid	033 355 0570	033 342 3962	roy.ryan@kzntransport.gov.za	Private Bag X9043, Pietermaritzburg 3200

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linearor other)where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of thepublic participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

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

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIEDIMPACTS ANDPROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of thepotential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase,including impacts relating to the choice of site/activity/technology alternativesas well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A (2) of this report.

A) Planning and Design Phase

There are no direct, indirect or cumulative impacts for the environment in the Planning and Design Phase, other than the positive impacts associated with the employment of appropriate professionals involved in the development and assessment of the proposal.

B) Construction Phase

Activity	Impact summary	Significance		Proposed mitigation
	Direct impacts:	Without mitigation	With mitigation	
Construction of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River.	In some instances, the construction will occur within the buffer zone of the river. Potential risks are listed below: ➢ Habitat / Biota loss and disturbance ➢ Aquatic ecosystem impacts ➢ Soil profile disturbance and soil erosion ➢ Habitat / biota disturbance	Medium (-)	Low (-)	• Before commencing with any work, all staff members must be appropriately briefed about the potential environmental impacts from construction, the EMPr and relevant occupational health and safety issues.
Site clearance for the construction of the upgraded Water Treatment Plant facility and the emergency discharge pipeline to the River.	<u>Habitat / Biota disturbance</u> • Site clearance for construction will result in the disturbance and direct loss of habitat and species. A species of conservational significance on the proposed site has been identified as *Boscia albitrunca* (Shepherd's tree). • There is the potential for alien vegetation to become established where areas are cleared for the establishment of	Medium (-)	Low (-)	<u>Habitat/ Biota</u> • A plant rescue programme should be conducted on the property prior to the commencement of vegetation clearing. Plants identified as having conservation significance should be relocated to areas outside of the proposed development footprint.This especially applies to any Shepherds Trees on site. • Indigenous vegetation must be stockpiled for reuse for

Activity	Impact summary	Significance		Proposed mitigation
	the proposed Plant, the construction site (storage and administrative), the digging of the trench for the laying of the emergency discharge pipeline. This can reduce ecological functionality. <u>Aquatic eco-system impacts</u> • If vegetation removal close to the river is required for the establishment of the emergency discharge pipe, bank destabilisation could occur.			rehabilitation of the site when construction is complete. • Damage to the habitats must be kept to a minimum to prevent loss of species and sediment pollution from run-off. Thus, unnecessary clearing of vegetation must be avoided. • An alien vegetation control programme must be implemented on the site. • Disturbed areas must be re-vegetated as soon as possible after clearing. • The rehabilitation of disturbed areas from construction activities must adhere to the rehabilitation guidelines provided in the EMPr and the Biodiversity Rehabilitation Plan. • The 30 metre buffer zone from the River must be respected at all times. The buffer zone must be accurately pegged before construction occurs. • Bank destabilisation during construction will require additional stabilisation measures while the bank is rehabilitated, especially if there is a risk of raised water levels. • Soil used in interventions must be stabilised. Support must be provided to river banks/drainage slopes during construction to prevent the movement of soil and sediment deposition into the river. • Where sand bags are used to support natural areas whilst construction is undertaken, earth that is used to fill sand bags should come from and be returned to the designated existing excavation points. • Sandbags, if used must be in a good condition, so that they do not burst.
Construction of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River.	<u>Water quality impacts</u> • There is the potential for construction activities to contaminate the river and aquatic ecosystem. Pollution from construction-related activities could enter the ecosystem (litter, fuel leaks, shutter oil and lubricating fluid spills, litter, cement and contaminated wash-down water). • Potential of contamination of the river, and the impact on downstream water users if a Stormwater Management Plan	Medium (-)	Low (-)	<u>Water quality impacts</u> • Site workers must undergo environmental induction training before undertaking work so that they are aware of the various environmental requirements. The induction training must address the risks of potential contamination to aquatic ecosystems from construction pollution. • There must be no polluting of the River (this does not include discharge from the emergency sludge discharge to River as

Activity	Impact summary	Significance		Proposed mitigation
	is not in place during construction. • Additional sediment could enter the watercourse during construction. This could result in the build-up of silt downstream, and thus the increase in water turbidity, which could negatively impact upon the aquatic ecosystem. <u>Water quantity</u> • There is a risk of increased surface run off from vegetation loss due to site clearance.			the sludge is inert matter). • The buffer zone must be respected at all times, where possible. • Most pollution incidents can be avoided through identification of potential sources of pollution and appropriate environmental awareness and staff training. Areas of high risk should be located away from sensitive areas. Where necessary, works should be isolated from the sensitive area using barriers, fences, screens and signage. Emergency procedures, like spill contingency plans must be in place and monitoring during the construction in these areas. <u>Water quantity / quality impacts</u> • An adequate Construction Stormwater Management Plan must be developed for the operational phase to ensure that stormwater returns to the River, uncontaminated and at a controlled rate. • The recommended construction run-off controls detailed in the EMPr must be applied prior to construction.
Construction of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River.	<u>Soil profile disturbance/Soil erosion</u> • There is a risk of soil compaction, draining, drying and desiccation from stockpiling and soil profile disturbance during construction activities. • There is the potential for soil erosion to result from construction activities during clearing of natural vegetation and the exposure of soil. • There is the potential for alien vegetation to become established where areas are cleared, thereby exacerbating soil erosion.	Medium (-)	Low (-)	<u>Soil profile disturbance / Soil erosion</u> • Once earthworks are complete, disturbed areas are to be stabilised to prevent erosion. • With respect to the construction of the emergency discharge pipe to the River, anti-erosion berms must be installed where required and maintained throughout the construction period. • Disturbed areas must be re-vegetated as soon as possible after clearing.
Construction of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River.	<u>Waste management</u> • An increase in the amount of litter being generated during construction. • Non-use of proper sanitation facilities.	Medium (-)	Low (-)	<u>Waste management</u> • The environmental induction training must address the management of sanitation facilities and general site management. • The site must be managed appropriately and all rubbish must be collected in appropriate waste receptacles and disposed of at the nearest landfill site.
Construction of the upgraded Water	<u>Temporary job creation:</u> • The proposed development will result in job provision and	Low (+)	Medium (+)	<u>Temporary job creation:</u> • The employment must be a planned, controlled, fair and

Activity	Impact summary	Significance		Proposed mitigation
Treatment Plant facility and the emergency sludge discharge pipeline to the River.	skills transfer. This in turn will promote the opportunity for re-employment. There will be employment opportunities for members of the local community. • The community will benefit from technical training and skills development programmes which are planned through this project. • Construction sites attract unemployed people, so people may gather on or around the sites looking for work.			legitimate process. • Construction workers should be sourced from local communities where possible. • Local business should be supported, with respect to the purchase of materials, where possible.
	Fire risk: • Construction workers could cause a fire on site (construction usually takes place in the dry winter months when the danger of veld fires is highest).	Medium (-)	Low (-)	Fire risk: • Workers should be made aware of the potential for fires to become out of control and the damage that could be caused. • A fire response procedure should be in place.
	Construction nuisance impacts include the potential for the following: • Noise from construction activities, personnel and vehicles. • Dust. *The area is within a rural area, therefore, the above impacts are likely to be of low significance.*	Low (-)	Low (-)	Construction nuisance impacts • Dust minimisation like dampening of soil should be adopted for land clearing activities under windy conditions. • The environmental induction training for site workers must address keeping noise to a minimum as well as expected labourers conduct.
	Heritage Impacts • Although no heritage resources have been observed on the proposed sites, it is always possible that a heritage resource could be encountered.	Med (-)	Low(-)	Heritage Impacts • Should any artefact / suspected artefact / site of cultural significance be encountered during construction, then the Contractor must cease work in that vicinity and alert the relevant authorities.
	Safety of workers • Construction work poses general safety risks.	High (-)	Low(-)	Safety of workers • Potentially hazardous areas are to be cordoned off and clearly marked at all times. • All vehicles and equipment used on site must be operated by appropriately trained and / or licensed personnel. • All personnel must operate in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA). • The Contractor must make available safe drinking water fit for human consumption. • Washing and toilet facilities must be provided on site. • Adequate numbers of chemical toilets must be maintained to service the staff using this area. At least 1 toilet must be

Activity	Impact summary	Significance		Proposed mitigation
				available per 20 workers. Toilet paper must be provided. • Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.).
	Sourcing borrow material(if applicable) • Sourcing borrow material (earth) when unavailable on-site, can have a detrimental effect on the biophysical stability of the area that it is borrowed from.	Med (-)	Low (-)	Sourcing borrow material(if applicable) • If applicable, appropriate re-sloping and re-vegetation of the area that the borrow material is acquired from must be undertaken after use.
	Indirect Impacts	Without mitigation	With mitigation	
	Job creation • The potential impact of this is significant andhas a number of indirect positive impactssuch as improvement in quality of life of theworkers, increased spending in the localeconomy and the support of small business inthe local area.	Low (+)	Medium (+)	• Ensure that the required Project workers are sourced from local communities and that maximum employment numbers are maintained throughout the Project duration. • Project implementers to support local businesses where possible.
	Cumulative impacts:			
	Job creation/Skills development • Cumulatively, the impact of the proposed development is judged to be of high positive significance. The programme will create jobs and transfer skills to numerous previously unskilled persons.	Low (+)	Medium (+)	Job creation/skills development • Obtain construction workers from local communities wherever possible. • Project implementers to support local businesses where possible.
	Habitat / Biota disturbance • Although the habitat disturbance during construction will be temporary, it can affect future floral growth and faunal breeding patterns.	Medium (-)	Low(-)	Habitat / Biota disturbance • Mitigation measures detailed in the 'direct impact' section above must be followed to avoid cumulative impacts.
	Water quality impacts • Soil erosion and additional sediment which enters the watercourse during construction of the irrigation infrastructure and plotscould result in the build-up of silt downstream, and thus the increase in water turbidity, both affecting the aquatic eco-systems, medium and long term.	Medium (-)	Low(-)	• Mitigation measures detailed in the 'direct impact' section above must be followed to avoid cumulative impacts.
	Soil profile/Erosion • Potential for alien vegetation, which may become established on the cleared sites, to spread to other natural areas.	Medium (-)	Low(-)	Soil profile/Erosion • Mitigation measures detailed in the 'direct impact' section above must be followed to avoid cumulative impacts.

Activity	Impact summary	Significance		Proposed mitigation
	• Stormwater runoff during construction has the potential to erode topsoil and result in sedimentation of water courses if not controlled. Continued soil erosion, as a result of the removal of natural vegetation could eventually degrade the river system downstream.			
	No-go option			
	Direct, Indirect and Cumulative impacts:			
	Socio-Economic Disadvantages of the no-go option: • The Regional Water Supply Scheme will not be delivered unless this development proposal is implemented. If the no-go option was pursued, then the benefits and purpose of significant capital investment already made on water supply infrastructure which forms a part of the wider regional water supply scheme will never be fully realised to the community. • The no-go alternative fails to address the backlog for current and future community water demand and the issue of water scarcity. Provision of potable water to regional communities cannot be made possible unless there is an upgrade to the Ngcebo Water Treatment Plant. • Benefits from the supply of potable water to the community are linked to National priority goals such as basic human rights, poverty alleviation, and health and hygiene improvement. **Biophysical** Advantages of the no-go option: • there is less risk of pollutants from operation and maintenance activities from entering the River. • there is less risk of foreign materials being introduced to the River; • there is less risk of soil disturbance and soil compaction around the proposed Plant; • there is less risk of increased surface run-off from vegetation loss; and; • there is less risk of increased erosion if soils are not protected and an operational Stormwater Management Plan is not in place.	N/A	N/A	• If the no go alternative is pursued, the disturbance to the natural habitat will be avoided, however, the construction must take place to realise the operational benefits i.e. the critical Regional Water Scheme will not be able to be delivered. In particular, potable water to communities in the backlogged Municipal area will not be able to be provided. The provision of water to more people, as part of the Regional Water Supply Scheme, necessitates the upgrade of the Ngcebo Water Treatment Plant.

C) Operational Phase

Activity	Impact summary	Significance		Proposed mitigation
	Direct impacts:	Without mitigation	With mitigation	
Operation of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River.	<u>Operation of the upgraded Water Treatment Plant and emergency sludge discharge pipeline to the River</u> • Operation of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River may result in the risks listed below: ➢ Habitat / Biota disturbance ➢ Water quality / quantity ecosystem impacts ➢ Soil profile disturbance and soil erosion	Med (-)	Low (-)	• Before commencing with the operational phase, all staff members must be appropriately briefed about the potential environmental impacts from the operation, the EMPr and relevant occupational health and safety issues.
Operation of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River.	<u>Habitat / Biota disturbance</u> • There is the continued risk of potential alien vegetation to colonise and dominate the area, thus contributing to the reduction of habitats for flora and fauna. • After construction, there is the potential for the Water Treatment Plant personnel, or the community, to neglect to adhere to the 30 metre buffer zone area, thereby causing disturbance to the natural ecosystem. Habitat disturbance can affect floral growth and faunal breeding patterns. • There is a risk that inadequate rehabilitation of the site will result in the loss of biodiversity and habitat.	Med (-)	Low (-)	<u>Habitat / Biota disturbance</u> • An on-going alien vegetation control programme must be implemented after construction, on the site. • The buffer zone of 30 metres from the River must continue to be respected at all times. • The EMPr and the Biodiversity Rehabilitation Plan must be adhered to. • Monitoring of the area to determine rehabilitation progress will be necessary and details for this are provided in the EMPr.
Operation of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River.	<u>Water quality impacts</u> • When maintenance is being carried out to the Plant, there is the potential for contamination of the River and the aquatic ecosystem. Pollution from maintenance-related activities could enter the ecosystem (litter, fuel leaks, lubricating fluid spills, litter, cement and contaminated wash-down water). • Potential of contamination to the River, and the impact on downstream water users if a robust stormwater management plan is not in place during operation. <u>Water quantity impact</u>	Med (-)	Low (-)	<u>Water quality impacts</u> • Staff must undergo environmental induction training before operation of the Plant so that they are aware of the various environmental requirements. The induction training must address the risks of potential contamination to aquatic ecosystems from pollution (see waste management below). • There must be no polluting of the River (emergency sludge discharge via the emergency discharge pipeline is not considered to be pollution). • The buffer zone of 30 metres from the River must be respected

Activity	Impact summary	Significance		Proposed mitigation
	• There is a risk of increased surface water run-off originating from alien vegetation infestation, if not removed and managed. • There is a risk of increased surface water run-off from the increased hardened surfaces if coupled with inadequate stormwater management controls.			at all times, wherever possible. • Areas of high risk should be located away from sensitive areas. E.g. storing of chemicals. Where necessary, maintenance works should be isolated from the sensitive area using barriers, fences, screens and signage. Emergency procedures like spill contingency plans must be in place. Water quantity impact • An adequate Operational Stormwater Management Plan must be developed for the operational phase to ensure that stormwater returns to the River, uncontaminated and at a controlled rate. • The recommended construction run-off controls detailed in the EMPr must be applied prior to construction.
Operation of the upgraded Water Treatment Plant facilityand the emergency sludge discharge pipeline to the River.	Soil profile disturbance/Soil erosion • Without soil and stormwater management structures, the risk of erosion will remain high. • There is the continued risk of potential alien vegetation to colonise and dominate the area, thus contributing to soil erosion.	Med (-)	Low (-)	Soil profile disturbance/Soil erosion • Appropriate erosion and stormwater management structures must be installed around the site. Stormwater should be channelled into the existing natural drainage line. Any stormwater runoff from higher-lying areas should be directed into a stormwater furrow of adequate size, towards a safe collection point where no erosion will take place. • Erosion must be contained and prevented on an on-going basis. • On-going rehabilitation of disturbed areas from construction activities must adhere to the rehabilitation guidelines provided in the EMPr and Biodiversity Rehabilitation Plan.
Operation of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River.	Waste management • Litter can cause pollution and negatively impact the natural areas.	Med (-)	Low (-)	Waste management • The environmental induction training for staff must address the management of general waste. • General waste must be collected in appropriate waste receptacles and disposed of at the nearest landfill site.
	Chemical management • There is a potential health risk from exposure to chlorine gas to the Water Treatment Plant employees and adjacent populations. • The presence of chlorine gas is considered a hazardous Installation and is governed by the Department of Labours'	Med (-)	Med/Low (-)	Chemical management • The Department of Labour MHI Regulations must be adhered to.

Activity	Impact summary	Significance		Proposed mitigation
	Major Hazard Installation (MHI) Regulations. The MHI Regulation places a duty on the employer to draw up an on-site emergency plan to ensure the continuous safety of the workers and the public.			
Operation of the upgraded Water Treatment Plant facility and the emergency sludge discharge pipeline to the River.	Fire management: • Incorrect application of fire management could reduce the potential for the vegetation to establish. • Flora and fauna need the opportunity to seed and breed respectively. Burning regimes that are too frequent can lead to impairing the habitats ability to renew itself.	High (-)	Low (-)	• The rehabilitated areas must not be mowed, grazed or burned until the end of the second growing season after sowing.
Operation of the upgraded Water Treatment Plant facility.	Permanent job creation (self-employed/co-operative): • The proposed development will result in permanent job provision (4 positions) and skills transfer for members of the local community. • The community will benefit from technical training and skills development.	Med (+)	Med (+)	Permanent job creation: • Local business should continue to be supported, with respect to the purchase of materials, where possible.
	Water security • The proposed development will result in more reliable access to clean water hence increasing water security in the area and improving community health and hygiene.	High (+)	High (+)	N/A
	Monitoring and Management: • The monitoring and management of the development post-construction should be conducted, at agreed frequencies, for a prescribed length of time.	Low (+)	Med (+)	Monitoring and management should include the following: • Visual site assessment. • Regular inspections of rehabilitation interventions.
	Indirect Impacts			
	Job creation • The potential impact of this is significant and has a number of indirect positive impacts, such as improvement in quality of life of the employees, increased spending in the local economy and the support of small business in the local area.	Med (+)	Med (+)	• Project implementers to support local businesses where possible e.g. maintenance of infrastructure.
	Increased awareness of environmental management through training • As an indirect impact there is likely to be some increased awareness amongst employees regarding riverine ecology and the importance of rehabilitation.	Med (+)	Med (+)	N/A).

Activity	Impact summary	Significance		Proposed mitigation
	Cumulative impacts:			
	Job creation/Skills development • Cumulatively, the impact of the proposed development is judged to be of high positive significance. The programme will create jobs and transfer skills to numerous previously unskilled persons.	Med (+)	Med (+)	N/A
	Increased awareness of environment • The programme is creating increased awareness amongst the employees regarding riverine ecology, the importance of rehabilitation and the importance of protecting biodiversity.	Med (+)	Med (+)	N/A
	Operational cost savings from the application of regional water scheme(economies of scale)	High (+)	High (+)	N/A
	Associated to the application of the regional water scheme is the continual improvement in water service and water quality through application of latest technologies and improved skills.	High (+)	High (+)	N/A
	Habitat / Biota disturbance • Habitat disturbance can affect floral growth and faunal breeding patterns.	High (-)	Low(-)	Habitat / Biota disturbance • Mitigation measures detailed in the 'direct impact' section above must be followed to avoid cumulative impacts.
	Water quality impacts • Additional sediment caused to enter the watercourse during maintenance of the Plant could result in the build-up of silt downstream, and thus the increase in water turbidity, both affecting the aquatic eco-systems medium and long term. • Potential for prolonged contamination of the downstream water systems and their subsequent degradation over time, if pesticides are not properly selected and applied.	Med (-)	Low(-)	• Mitigation measures detailed in the 'direct impact' section above must be followed to avoid cumulative impacts.
	Soil profile/Erosion • Potential for alien vegetation, which may become established, to spread to other natural areas. • Stormwater runoff has the potential to erode topsoil and result in sedimentation of water courses if not controlled. Continued soil erosion, as a result of the removal of natural vegetation could eventually degrade the river system downstream.	Med (-)	Low(-)	Soil profile/Erosion • Mitigation measures detailed in the 'direct impact' section above must be followed to avoid cumulative impacts
	No-go option			
	Direct, Indirect and Cumulative impacts:			

Activity	Impact summary	Significance		Proposed mitigation
	Socio-Economic Disadvantages of the no-go option: • The Regional Water Supply Scheme will not be delivered unless this development proposal is implemented. If the no-go option was pursued, then the benefits and purpose of significant capital investment already made on water supply infrastructure which forms a part of the wider regional water supply scheme will never be fully realised to the community. • The no-go alternative fails to address the backlog for current and future community water demand and the issue of water scarcity. Provision of potable water to regional communities cannot be made possible unless there is an upgrade to the Ngcebo Water Treatment Plant. • Benefits from the supply of potable water to the community are linked to National priority goals such as basic human rights, poverty alleviation, and health and hygiene improvement. **Biophysical** Advantages of the no-go option : • there is less risk of pollutants from operation and maintenance from entering the watercourse. • there is less risk of foreign materials being introduced; • there is less risk of soil disturbance and soil compaction; • there is less risk of increased surface run-off from vegetation loss; and • there is less risk of increased erosion if soils are not protected.	N/A	N/A	• If the no go alternative is pursued, the disturbance to the natural habitat will be avoided, however, the operational-related impacts will then not be realised which in this case will mean that the critical Regional water Scheme will not be able to be delivered. In particular, potable water to communities in thebacklogged Municipal area will not be able to be provided. The provision of water to more people, as part of the Regional Water Supply Scheme, necessitates the upgrade of the Ngcebo water Treatment Plant.

C) Decommissioning and Closure Phase

There were no anticipated situations were any decommissioning would be required.

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

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

Alternative A (preferred alternative)

The proposed upgrade to the Ngcebo Water Treatment Plant will occur adjacent to the existing Plant. The eastern boundary of the proposed Plant will range between 30 and 70 metres from the Tugela River. The Potential significant environmental impacts from the proposed development are summarised as:

Construction phase

Water quality

- The risk of pollutants from construction vehicles and construction materials being introduced to the surrounding soil and river.
- The risk of increased sediment being deposited into the River due to soil erosion which could result from the site being cleared of vegetation, coupled with an inadequate Construction Stormwater Management Plan.

Water quantity

- The risk of increased surface run-off from vegetation loss due to site clearance.

Habitat/biota

- Loss of biodiversity and habitat from site clearance.
- The risk of soil disturbance from earthmoving activities.

Operation phase

Water quality

- The risk of pollutants from the septic tank and soakaway being introduced to the surrounding soil and river.
- The risk of increased sediment being deposited into the River due to soil erosion which could result from the site being inadequately rehabilitated post construction, coupled with an inadequate Operational Stormwater Management Plan.

Water quantity

- The risk of increased surface run-off from vegetation loss due to alien vegetation infestation which has not been removed.
- The risk of increased surface run-off from hardened surfaces coupled with inadequate stormwater management controls.

Habitat / biota

- Loss of biodiversity and habitat through inadequate rehabilitation of the construction site.

Chemicals

- Health risk to Water Treatment Plant Employees and adjacent populations from exposure to chlorine gas if not stored and handled correctly.

Mitigations have been applied to minimise or prevent the impacts listed above. Residual risk to the riverine and freshwater ecosystems from the proposed development is therefore anticipated to be low during both the construction and operational phases.

The main recommendations to maintain the ecological integrity of the area include:

- Adherence to a 30 metre buffer zone from the River (including livestock access control and avoidance of modifications to the river banks);
- Rehabilitation of the riparian habitat affected by the proposed construction activities;
- Stormwater management to ensure that natural stormwater runoff is diverted back to the River;
- Alien invasive vegetation control on site;
- The construction of erosion control measures where applicable;

- The controlled removal of indigenous plant species for relocation to an adjacent suitable habitat , if found on the proposed footprint of the site;
- Adherence to the Department of Labour MHI Regulations (including on-site emergency plans) for the storage and handling of chlorine gas; and
- Compliance with DWA water-use license requirements before the implementation of the proposed upgrade; and
- Appropriate monitoring during operation of the Water Treatment Plant in respect of:
    - The performance of the proposed septic tank and soakaway;
    - The sludge treatment and handling regime; and
    - The use of the emergency sludge discharge pipeline.

The proposed activities during construction will not have a significant impact on the environment provided that the EMPr, which contains recommendations to avoid and reduce adverse environmental impact, is followed. The environmental impacts predicted for the construction phase are not considered significant given the following factors:

- The temporary nature of the construction related impacts;
- Existing knowledge, skills and experience within Umgeni Water;
- The ease to which mitigations can be applied during both the construction and operational phases;
- The low residual risk to the environment, once the recommendations contained in this Report are applied to the management of the site; and
- The National significance of the benefits associated to the provision ofpotable water to the Region's households.

Significant capital investment has already been made on water supply infrastructure which forms a part of the Regional Water Supply Scheme. The Scheme can only be fully realised once the upgrade of the Ngcebo Water Treatment Planthas been implemented.

The EAP concludes that the proposal will have a negligible, short-term, adverse effect on the receiving environment during construction; but a significantly high positive effect, once operational.

No-go alternative (compulsory)

If the no go alternative is pursued the disturbance to the natural habitat will be avoided, however, the operational-related impacts will then not be realised which in this case will mean that the critical Regional Water Scheme will not be able to be delivered, which translates to potable water to communities who currently have no access to water. The provision of water to more people and an increasing population, as part of the Regional Water Supply Scheme, necessitates the upgrade of the Ngcebo Water Treatment Plant.

Other impacts associated to the no-go alternative are:

- Failure to address the inequalities of the past as those currently without access to water will continue to suffer.
- Failure to address the prevalence of water-borne diseases associated to the lack of adequate water service infrastructure, and hence failure to improve health of communities.
- Failure to support much needed developmentwithout adequate services, investment in new developments like housing, currently halted due to lack of water service provision, will continue to be disabled through the lack of water provision.

SECTION E. RECOMMENDATION OF PRACTITIONER

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

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

N/A

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

Construction

- Before commencing with any work, all staff members must be appropriately briefed about the potential environmental impacts from construction, the EMPr and relevant occupational health and safety issues.

Habitat / Biota impacts

- A plant rescue programme should be conducted on the property prior to the commencement of vegetation clearing. Plants identified as having conservation significance should be relocated to areas outside of the proposed development footprint. This especially applies to any Shepherd's Trees on site.
- Indigenous vegetation must be stockpiled for reuse for rehabilitation when construction is complete.
- Damage to the habitats must be kept to a minimum to prevent loss of species and sediment pollution from run-off.
- Unnecessary clearing of vegetation must be avoided. An alien vegetation control programme must be implemented on the site.
- Disturbed areas must be re-vegetated as soon as possible after clearing.
- The rehabilitation of disturbed areas from construction activities must adhere to the rehabilitation guidelines provided in the EMPr and the Biodiversity Rehabilitation Plan.
- The 30 metre buffer zone from the River must be respected at all times. The buffer zone of 30 metres from the River must be accurately pegged before construction occurs.
- Bank destabilisation during construction will require additional stabilisation measures while the bank is rehabilitated, especially if there is a risk of raised water levels.
- Soil used in interventions must be stabilised. Support must be provided to river banks/drainage slopes during construction to prevent the movement of soil and sediment deposition into the river.
- Where sand bags are used to support natural areas whilst construction is undertaken, earth that is used to fill sand bags should come from and be returned to the designated existing excavation points.
- Sandbags, if used must be in a good condition, so that they do not burst

Water quality impacts

- Site workers must undergo environmental induction training before undertaking work so that they are aware of the various environmental requirements. The induction training must address the risks of potential contamination to aquatic ecosystems from construction pollution
- There must be no polluting of the River (emergency discharge of sludge from the Water Treatment Plant via the emergency sludge discharge pipe is not considered to be pollution).
- Most pollution incidents can be avoided through identification of potential sources of pollution and appropriate environmental awareness and staff training. Areas of high risk should be located away from sensitive areas. Where necessary, works should be isolated from the sensitive area using barriers, fences, screens and signage. Emergency procedures like spill contingency plans must be in place and monitoring during the construction in these areas.

Water quantity / quality impacts

- An adequate Construction Stormwater Management Plan must be developed for the operational phase to ensure that stormwater returns to the River, uncontaminated and at a controlled rate.
- The recommended construction run-off controls detailed in the EMPr must be applied prior to construction.

Soil profile disturbance/Soil erosion

- Once earthworks are complete, disturbed areas are to be stabilised to prevent erosion.
- With respect to the construction of the emergency discharge pipe to the River, anti-erosion berms must be installed where required, and maintained throughout the construction period.

- Disturbed areas must be re-vegetated as soon as possible after clearing.

Waste management

- The environmental induction training must address the management of sanitation facilities and general site management.
- The site must be managed appropriately and all rubbish must be collected in appropriate waste receptacles and disposed of at the nearest landfill site.

Local economy

- The Employment must be a planned, controlled, fair and legitimate process.
- Construction workers should be sourced from local communities where possible.
- Local business should be supported, with respect to the purchase of materials, where possible.

Fire risk:

- Workers should be made aware of the potential for fires to become out of control and the damage that could be caused.
- A fire response procedure should be in place.

Construction nuisance impacts

- Dust minimisation through the dampening of soils during windy conditions should be considered.
- The environmental induction training for site workers must address keeping noise to a minimum as well as expected labourers conduct.

Heritage Impacts

- Should any artefact / suspected artefact / site of cultural significance be encountered during construction, then the Contractor must cease work in that vicinity and alert the relevant authorities.

Safety of workers

- Potentially hazardous areas are to be cordoned off and clearly marked at all times.
- All vehicles and equipment used on site must be operated by appropriately trained and / or licensed personnel.
- All personnel must operate in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA).
- The Contractor must make available safe drinking water fit for human consumption.
- Washing and toilet facilities must be provided on site.
- Adequate numbers of chemical toilets must be maintained to service the staff using this area. At least 1 toilet must be available per 20 workers. Toilet paper must be provided.
- Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.).

Sourcing borrow material(if applicable)

- If applicable, appropriate re-sloping and re-vegetation of the area that the borrow material is acquired from must be undertaken after use.

Community

- Project implementers to support local businesses where possible.

Operation

- Before commencing with the operational phase, all staff members must be appropriately briefed about the potential environmental impacts from the operation, the EMPr and relevant occupational health and safety issues.
- Compliance with DWA water-use license requirements before the implementation of the proposed upgrade.

Habitat / Biota disturbance

- An on-going alien vegetation control programme must be implemented after construction, on the site.
- The 30 metre buffer zones must continue to be respected at all times.
- Monitoring of the area affected by construction activities, to determine rehabilitation progress will be necessary and details for this are provided in the EMPr.

Water quality impacts

- Staff must undergo environmental induction training before operation of the Plant so that they are aware of the various environmental requirements. The induction training must address the risks of potential contamination to aquatic ecosystems from pollution (see waste management below).
- There must be no polluting of the River (note: the use of the emergency discharge pipeline is not considered a polluting activity).
- The buffer zones must be respected at all times, wherever possible.
- Areas of high risk should be located away from sensitive areas. E.g. storing of chemicals. Where necessary, maintenance works should be isolated from the sensitive area using barriers, fences, screens and signage.
- Emergency procedures like spill contingency plans must be in place.

Water quantity impacts

- An adequate Operational Stormwater Management Plan must be developed for the operational phase to ensure that stormwater returns to the River, uncontaminated and at a controlled rate.
- The recommended construction run-off controls detailed in the EMPr must be applied prior to construction.

Soil profile disturbance/Soil erosion

- Appropriate erosion and stormwater management structures must be installed around the site. Stormwater should be channelled into the existing natural drainage line. Any stormwater runoff from higher-lying areas should be directed into a stormwater furrow of adequate size, towards a safe collection point where no erosion will take place.
- Erosion must be contained and prevented on an on-going basis.
- On-going rehabilitation of areas disturbed by construction activities must adhere to the rehabilitation guidelines provided in the EMPr and Biodiversity Rehabilitation Plan.

Waste management

- The environmental induction training for staff must address the management of general waste.
- General waste must be collected in appropriate waste receptacles and disposed of at the nearest landfill site.
- The rehabilitated areas must not be mowed, grazed or burned until the end of the second growing season after sowing.

Local economy:

- Local business should continue to be supported, with respect to the purchase of materials, where possible.

Chemical Management:

- Department of Labour MHI Regulations (including on-site emergency plans) for the storage and handling of chlorine gas must be adhered to.

Monitoring and management should include the following:

- Visual site assessment.
- Regular inspections of rehabilitation interventions.

Increased awareness of environment

- Encourage employees to become more aware of, and educated in, the ecological values and sensitivity of the riverine environment.

Is an EMPr attached? YES

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Rebecca Bowd
NAME OF EAP

_____ 31 October 2013
SIGNATURE OF EAP DATE

Appendices

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix D1: Heritage Impact Assessment

Appendix D2: Geotechnical Assessment

Appendix E: Public Participation

Appendix E1: Adverts

Appendix E2: Notifications to I&AP's

Appendix E3: Comments and Responses Report

Appendix E4: Notification to Authorities and Organs of State

Appendix E5: Registered I&APs list

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J1: Biodiversity Rehabilitation Plan

Appendix J2: Umgeni Water correspondence to DWA regarding the Classification of Water Treatment Residue