



agriculture & environmental affairs

Department:
Agriculture
& Environmental Affairs
PROVINCE OF KWAZULU-NATAL

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

DC/
KZN/EIA/

BASIC ASSESSMENT REPORT

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

This template may be used for the following applications:

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

Kindly note that:

1. This **basic assessment report** meets the requirements of the EIA Regulations, 2010 and is meant to streamline applications. This report is the format prescribed by the KZN Department of Agriculture & Environmental Affairs. Please make sure that this is the latest version.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with text.
3. Where required, place a cross in the box you select.
4. An incomplete report will be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it will result in the rejection of the application as provided for in the regulations.
6. No faxed or e-mailed reports will be accepted.
7. The report must be compiled by an independent environmental assessment practitioner ("EAP").
8. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
9. The KZN Department of Agriculture & Environmental Affairs may require that for specified types of activities in defined situations only parts of this report need to be completed.
10. The EAP must submit this basic assessment report for comment to all relevant State departments that administer a law relating to a matter affecting the environment. This provision is in accordance with Section 24 O (2) of the National Environmental Management Act 1998 (Act 107 of 1998) and such comments must be submitted within 40 days of such a request.
11. **Please note that this report must be handed in or posted to the District Office of the KZN Department of Agriculture & Environmental Affairs to which the application has been allocated (please refer to the details provided in the letter of acknowledgement for this application).**

DEPARTMENTAL REFERENCE NUMBER(S)

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

SECTION A: DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS

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

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

Business name of EAP:	EnviroPro		
Physical address:	106 Kirtlington Ridge 33 Surprise Ridge Road Hillcrest 3610		
Postal address:	PO Box 1391 Kloof		
Postal code:	3640	Cell:	082 568 3687 / 082 887 4362
Telephone:	031 765 2942	Fax:	086 549 0342
E-mail:	josette@enviropro.co.za iain@enviropro.co.za		

2. NAMES AND EXPERTISE OF REPRESENTATIVES OF THE EAP

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

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
Josette Oberholzer	BSc (Hons) MSc	Member of IAIASA EAPSA certified	10
Iain Jourdan	BSc (Hons) in Geographical Science	Member of IAIASA	6

3. NAMES AND EXPERTISE OF SPECIALISTS

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

Name of specialist	Education qualifications	Field of expertise	Section/ s contributed to in this basic assessment report	Title of specialist report/ s as attached in Appendix D
Frans Prins	MA (Archaeology)	Accredited Heritage Impact Assessor (Stone Age, Iron Age, Rock Art). ASAPA accreditation 2008.	Heritage	Cultural Heritage Impact Assessment Of The Proposed Middledrift Water Supply Scheme Near Nkandla

SECTION B: ACTIVITY INFORMATION

1. PROJECT TITLE

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

Upgrading of bulk water supply and reticulation to the Middledrift Sub Supply Area (SSA) 3 – Phase 1

2. PROJECT DESCRIPTION

Provide a detailed description of the project:

The proposal is to upgrade the bulk water supply and reticulation network for the Middledrift sub supply area 3. The Scheme will be located within the Nkandla Municipal area with the boundary of the scheme defined by the Umhlathuze River to the east, the Thukela River in the west and the Nkandla forest to the north. Water for the scheme will be obtained from the Thukela – Mhlathuze transfer scheme and pumped to the existing Middledrift water treatment works which is located on the boundary between Middledrift SSA1 and Middledrift SSA2. The scheme will therefore be situated adjacent to both the abstraction point at the Thukela River and the new Middledrift water purification works.

Work will consist of the :

- Upgrading of pump stations at Middledrift SSA 3;
- Construction of a new Bulk water supply pipe to Middledrift SSA 3;
- Construction of four local storage reservoirs for Middledrift SSA 3 and;
- Construction of a reticulation network throughout the Middledrift SSA3 area.

Overall the upgrade and construction of the bulk and reticulation networks will consists of approximately 28km of Bulk water pipeline and 105km of reticulation pipelines. The primary objective of the scheme is to upgrade the existing potable supply to meet yard connection demand of 60l/c/d achievable through upgrading of pump stations, the bulk pipelines, reticulation network and construction of new storage reservoirs.

There is existing infrastructure in place but is does not meet yard connection service level requirements. The existing bulk infrastructure consists of a 75mm to 90mm HDPE water pipeline that was initially designed to supply water at the RDP level of service (25l/c/d). This Bulk infrastructure will be upgraded i.e. replaced to allow for the yard connection service level (60l/c/d), which could be metered in the future. There is also an existing purification works as well as several existing concrete reservoirs. These storage reservoirs will be upgraded and new ones constructed to improve the network while a connection to the recently completed Middledrift Water Purification Works will allow water to be supplied from the Thukela – Mhlathuze transfer scheme. The existing pump station will also be upgraded for integration in the scheme.

New infrastructure will therefore include

- 720KL Concrete Reservoir
- 80KL Concrete Reservoir
- 50 Concrete Reservoirs
- 14km New Bulk pipelines uPVC (75mm, 110mm, 160mm & 200mm) diameter
- 2 pump stations.
- The existing reticulation pipeline network will be verified and 30km of New Reticulation network (50mm -75mm) diameter will be constructed.

It is anticipated that work for phase 1 will be conducted in phases as follows.

Phase	Description
a	200mm diameter bulk pipeline, 20l/s @ 180m head pump station, 720kl bulk concrete reservoir (Phase 2) and R3-1 reservoir reticulation network
b	75mm to 160mm diameter bulk pipelines, 5l/s @ 180m head pump station, 50kl & 80kl reticulation concrete reservoirs and R3-3/4 reservoir reticulation network

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The upgrade and replacement of the existing network and construction of 28km pipeline of bulk main and 105 km of reticulation pipeline will cross several streams and the placement of infrastructure may potentially exceed 50m². It is also expected that in places, the cumulative volume of material removed from a single water course may exceed 5m³. Therefore as per the activities listed in GN 544, a basic assessment process is required. In combination all the reservoirs will hold less than the threshold volume of 50 000m³. One section of the scheme will fall within 5km of the Dhlabe nature reserve and in this section, the placement of infrastructure within watercourses will likely exceed 10m³. Impacts associated with the construction of the entire scheme will be assessed in this report and managed under the EMPr.

3. ACTIVITY DESCRIPTION

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

GNR 544

11. *The construction of:*

(xi) infrastructure or structures covering 50 square meters or more where such construction occurs within a water course or within 32 meters of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.

- Pipeline infrastructure and associated gabion baskets will be placed within various water courses and the combined area of this infrastructure will likely exceed 50m².

18. *The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic metres from: (i) a watercourse;*

- During construction the cumulative volume of material either infilled or deposited within a watercourse will likely exceed 5m³.

GNR 546

16. *The construction of (iv) infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line*

(a) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga and Northern Cape:

ii. Outside urban areas, in: (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;

Pipeline infrastructure and associated gabion baskets will be placed within various water courses and the combined area of this infrastructure will likely exceed 50m². A portion of the scheme will fall within 5km of the Dhlabe Nature Reserve.

4. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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Describe alternatives that are considered in this report. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Site Alternative 1 (Preferred Alternative)

There is only one site alternative as most of the work will involve the upgrading of an existing network and will therefore follow the route of the existing network. Therefore only one site alternative will be assessed in this report. Furthermore the intention is to service the Middledrift SSA3 and allow yard connections for existing housing which does not allow for any site alternatives.

Layout Alternative 1

This is the original pipeline route as per the drawing marked Route Alternative 1 in Appendix C.

Layout Alternative 2 (Preferred Alternative)

An alternative for a section of the pipeline route has been provided as follows:

RC61 and RC62 – In this section of the scheme, the original route requires an additional two water course crossings, RC61 and RC62. The preferred route alternative adjusts the route so that these two crossings are removed and replaced by one crossing.

Technology Alternative 1 (Preferred Alternative)

There is only one technology alternative as the scheme will be supplied with water from the recently completed Middledrift Water Purification Works which extracts water from the Thukela – Mhlathuze transfer scheme. Water will be distributed to the pump station and from there distributed throughout the network.

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

5. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. List alternative sites where applicable.

Co-Ordinates For Water Course Crossings

Crossing	Latitude	Longitude
1	28°49'59.65"S	31° 3'48.34"E
2	28°50'12.49"S	31° 3'8.04"E
3	28°49'57.33"S	31° 2'19.40"E
4	28°49'55.39"S	31° 1'49.65"E
5	28°50'0.77"S	31° 1'45.53"E
6	28°50'14.31"S	31° 1'27.65"E
7	28°50'18.15"S	31° 1'22.59"E
8	28°50'41.78"S	31° 1'5.80"E
9	28°50'46.15"S	31° 0'58.47"E
10	28°50'51.54"S	31° 0'22.81"E
11	28°50'50.57"S	31° 0'11.12"E
12	28°50'46.44"S	30°59'53.29"E
13	28°50'38.73"S	30°59'35.93"E

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14	28°50'36.22"S	30°59'28.29"E
15	28°50'33.92"S	30°59'16.92"E
16	28°50'41.28"S	30°58'50.04"E
17	28°50'37.39"S	30°58'47.42"E
18	28°49'42.56"S	30°58'22.14"E
19	28°49'11.61"S	30°59'8.48"E
20	28°49'6.94"S	30°59'20.80"E
21	28°48'58.56"S	30°59'25.79"E
22	28°48'54.40"S	30°59'26.32"E
23	28°48'38.20"S	30°59'21.94"E
24	28°48'26.54"S	30°59'18.07"E
25	28°49'28.65"S	31° 1'45.53"E
26	28°49'15.41"S	31° 1'21.93"E
27	28°49'8.51"S	31° 0'50.52"E
28	28°48'50.59"S	31° 0'52.61"E
29	28°48'49.96"S	31° 0'49.20"E
30	28°48'53.81"S	31° 0'56.28"E
31	28°48'53.13"S	31° 2'16.40"E
32	28°48'34.92"S	31° 1'32.49"E
33	28°47'31.18"S	31° 3'11.06"E
34	28°47'18.53"S	31° 3'16.02"E
35	28°47'31.86"S	31° 2'59.33"E
36	28°47'26.68"S	31° 2'54.95"E
37	28°47'25.99"S	31° 2'53.13"E
38	28°48'43.04"S	31° 2'28.96"E
39	28°48'37.98"S	31° 3'19.80"E
40	28°49'0.08"S	31° 3'25.81"E
41	28°48'31.06"S	31° 3'57.69"E
42	28°47'25.23"S	31° 3'22.89"E
43	28°47'24.57"S	31° 3'25.55"E
44	28°47'18.42"S	31° 3'36.62"E
45	28°47'41.76"S	31° 3'0.24"E
46	28°47'52.40"S	31° 2'54.45"E
47	28°47'17.72"S	31° 2'49.76"E
48	28°47'11.93"S	31° 2'57.31"E
49	28°47'6.99"S	31° 2'42.92"E
50	28°47'1.35"S	31° 2'52.79"E
51	28°47'52.19"S	31° 2'12.90"E
52	28°47'50.00"S	31° 2'18.94"E
53	28°47'40.05"S	31° 2'26.40"E
54	28°48'6.08"S	31° 1'47.63"E
55	28°47'51.14"S	31° 1'25.12"E
56	28°48'48.63"S	31° 1'4.82"E
57	28°49'19.14"S	31° 1'7.02"E
58	28°48'48.05"S	31° 0'55.81"E
59	28°47'55.82"S	31° 1'36.12"E
60	28°47'55.45"S	31° 1'30.66"E
*61	28°47'12.70"S	31° 2'43.99"E
*62	28°47'9.54"S	31° 2'40.73"E

*These crossings are only required if Alternative 1, the least preferred alternative is authorised.

In the case of linear activities:

Alternative: **NA**

Alternative S1 (preferred or only route alternative)

Latitude (S):

Longitude (E):

6. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:

Water course crossings (applicable to all 62 crossings and the alternative) -
Alternative A1¹ (preferred activity alternative)

Size of the activity:

From 1-3m ² at most per crossing totalling 62-186m ² for all 66 crossings

Length of the activity:

Alternative A1 (preferred activity alternative)

28km pipeline of bulk main and 105 km of reticulation network (upgrade of existing as well as new pipeline).
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Alternative A1 (preferred activity alternative)

NAM

Alternative A2 (if any)

NAM

Alternative A3 (if any)

NAM

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

Alternative:

Water Course Crossings (applicable to all 62 crossings and the alternative)
Alternative A1 (preferred activity alternative)

Size of the site/servitude:

From 1-3m ² at most per crossing totalling 62-186m ² for all 66 crossings

Alternative A2 (if any)

NAM ²

Alternative A3 (if any)

NAM ²

7. SITE ACCESS

The bulk of the areas are accessible from existing roads or are accessible.

Does ready access to the site exist?

YES	NO
X	

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

Describe the type of access road planned:

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

8. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

- 8.1. the scale of the plan which must be at least a scale of 1:500;
- 8.2. the property boundaries and numbers/ erf/ farm numbers of all adjoining properties of the site;

¹ "Alternative A.." refer to activity, process, technology or other alternatives.

- 8.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 8.4. the exact position of each element of the application as well as any other structures on the site;
- 8.5. the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 8.6. walls and fencing including details of the height and construction material;
- 8.7. servitudes indicating the purpose of the servitude;
- 8.8. sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
 - rivers, streams, drainage lines or wetlands;
 - the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation including protected plant species (even if it is degraded or infested with alien species);
- 8.9. for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 8.10. the positions from where photographs of the site were taken.

9. SITE PHOTOGRAPHS

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

10. FACILITY ILLUSTRATION

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

11. ACTIVITY MOTIVATION

11.1. Socio-economic value of the activity

The below costs are for the entire scheme

- What is the expected capital value of the activity on completion?
- What is the expected yearly income that will be generated by or as a result of the activity?
- Will the activity contribute to service infrastructure?
- Is the activity a public amenity?
- How many new employment opportunities will be created in the development phase of the activity?
- What is the expected value of the employment opportunities during the development phase?
- What percentage of this will accrue to previously disadvantaged individuals?

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NA	
YES X	NO
YES X	NO
+90	
+-R200 000.00	
100%	

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

Maintenance officers will be employed by the water services authority to maintain the scheme. Number unknown at this stage.

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

As above.

What percentage of this will accrue to previously disadvantaged individuals?

As above.

11.2. Need and desirability of the activity

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

There is an urgent need for safe potable water as the existing network is insufficient and the current water source is in a poor state. The development of the water scheme will provide much needed job opportunities and will also encourage economic and institution empowerment². At present, most of the community does not have ready access to potable water, therefore it is expected that water related health problems are likely to occur in this area. As a part of the scheme implementation the Water Services Authority (Uthungulu) will implement a sanitation, health and hygiene promotion which will address the following issues:

The benefits of using potable water from the scheme i.e.:

- Proper methods of dealing with “grey water” from washing and cleaning will be addressed in workshop sessions;
- Households and schools will be visited and public meetings held to promote water related issues;
- Yard connection taps would be installed. Proper measures would be put in place for “grey water” with the installation of the yard connection taps.

Other water projects are also planned for the area which will benefit from this project as the Bulk upgrade will cater for all other projects that are being planned. Furthermore, during the implementation phase, the ISD consultants will educate the community regarding the need to conserve water which is a scarce resource. This will be carried out through workshops in the Middeldrift supply areas where water wastage practices will be highlighted and discouraged. Where private water connections are provided, flow restrictors will be installed to ensure that some water is available for all, not all for some. Local Community members will also be encouraged to report leaks from pipelines to the WSP, who will then call out designated plumbers to attend to the problem. In this manner, it is anticipated that the local community will be encouraged to implement water conservation practices³.

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

The scheme will provide a safe and reliable source of potable water to the community thereby assisting in reducing risks of water borne diseases and improving hygiene and sanitation for the community. The scheme will also allow for the ultimate development of a water borne sanitation

² Eyethu Engineers; Uthungulu District Municipality Upgrading Of Bulk Water Supply And Reticulation To The Middeldrift SSA 3 Business Plan 29 October 2010;

³ Eyethu Engineers; Uthungulu District Municipality Upgrading Of Bulk Water Supply And Reticulation To The Middeldrift SSA 3 Business Plan 29 October 2010;

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scheme. Wherever possible, local labour will be sourced for unskilled work and labour intensive methods will be used to ensure maximum employment of people during construction.

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

The scheme will provide a safe and reliable source of potable water to the community thereby assisting in reducing risks of water borne diseases and improving hygiene and sanitation for the community. The scheme will also allow for the ultimate development of a water borne sanitation scheme. Wherever possible, local labour will be sourced for unskilled work and labour intensive methods will be used to ensure maximum employment of people during construction.

12. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
1. National Environmental Management Act	All government bodies	1998
2. National Water Act	DWAF	1998
3. National Waste Management Act	DEAT	2008
4. Environmental Conservation Act	DEAT	1996
5. National Heritage Resources Act	AMAFA / SAHRA	1999
6. Conservation of Agricultural Resources Act	DEAT	1983
7. National Veld and Forest Fire Act	DAFF	1998

13. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

13.1. Solid waste management

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

YES	NO
X	

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

+20m³

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

Construction rubble will be collected in a skip and disposed of at a registered landfill site by the appointed construction contractor who will employ a certified waste contractor.

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

Nkandla Dumping site.

Will the activity produce solid waste during its operational phase?

YES	NO
	X

The current proposal covers only the water reticulation network and does not include a Water Treatment Works.

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

NAm³

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

NA

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

NA

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

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

YES	NO
NA	

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

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

YES	NO
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If yes, contact the KZN Department of Agriculture, Environmental Affairs and Rural Development to obtain clarity regarding the process requirements for your application.

13.2. Liquid effluent

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

YES	NO X
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If yes, what estimated quantity will be produced per month?

NA m ³	
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Will the activity produce any effluent that will be treated and/or disposed of on site?

Yes	NO X
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If yes, contact the KZN Department of Agriculture, Environmental Affairs and Rural Development to obtain clarity regarding the process requirements for your application.

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

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

Facility name:	NA		
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:

NA

13.3. Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

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

YES	NO X
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If yes, contact the KZN Department of Agriculture, Environmental Affairs and Rural Development to obtain clarity regarding the process requirements for your application.

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

There will be vehicular emissions released during construction.

13.4. Generation of noise

Will the activity generate noise?

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

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

If yes, the applicant should consult with the competent authority to determine

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

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

The noise generated will be from the construction vehicles used during construction and thus will be a temporary impact.

14. WATER USE

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

Municipal X	water board	groundwater	river, stream, dam or lake X	other	the activity will not use water
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There may be water abstraction during the construction phase for dust suppression and mixing of cement. Water use will not exceed 50 000 L per day but will be monitored. If water use exceeds the GA limit, then application for authorisation will be submitted to DWA. During the operational phase the water scheme will be supplied with municipal water from an existing supply.

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:

< 50 000 litres per day	
YES	NO X

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

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

15. ENERGY EFFICIENCY

Please note that the following is applicable to the entire proposal.

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

The pumping station will operate 18 hours a day which will reduce the impact on power demand during peak times.

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

NA

SECTION C: SITE/ AREA/ PROPERTY DESCRIPTION

Important notes:

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

Section C Copy No.
(e.g. A):

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Proposed pipeline route including the 62 water course crossings;

Flat	1:50 – 1:20 X	1:20 – 1:15 X	1:15 – 1:10 X	1:10 – 1:7,5 X	1:7,5 – 1:5 X	Steeper than 1:5 X
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2. LOCATION IN LANDSCAPE

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

Alternative S1 (preferred site):

Proposed pipeline route including the 62 water course crossings

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

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

YES	NO X
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If YES, please complete the following:

Name of the specialist: NA

Qualification(s) of the specialist: _____

Postal address: _____

Postal code: _____

Telephone: _____ Cell: _____

E-mail: _____ Fax: _____

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites? YES NO
X

If YES, specify and explain: NA

Are there any special or sensitive habitats or other natural features present on any of the alternative sites? YES NO
X

If YES, specify and explain: The bulk pumping main will cross 62 water courses.

Are any further specialist studies recommended by the specialist? NA YES NO

If YES, specify: NA

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

Signature of specialist: _____ Date: _____

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

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Alternative S1:
Applicable to
entire pipeline
route

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

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

4. GROUNDCOVER

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

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

If YES, please complete the following:

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

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

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

If YES, specify and explain:

NA

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

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

If YES, specify and explain:

The water supply scheme will be constructed in a rural area within the Nkandla Municipal area. The proposed pipeline route will run through an area of low density rural homesteads and subsistence farms. The area falls within the Sub escarpment Savanna Biome in KZN and two vegetation types are found within the area of the water supply scheme namely Ngongoni Veld (Vulnerable) and Eastern Valley Bushveld ⁴ . Ngongoni Veld is typified by dense tall grassland dominated by the grass species <i>Aristida junciformis</i> and is generally typified by a low species diversity ⁴ . Acacia species are also typical of this vegetation type. Eastern Valley Bushveld is typical of deeply incised river valleys in KZN, specifically in the lower reaches of Thukela and is typified by semi deciduous

⁴ Mucina, L. & Rutherford, M.C. (eds) Reprint 2011. The Vegetation Of South Africa, Lesotho and Swaziland; Strelitzia 19. South African National Biodiversity Institute, Pretoria.

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savanna woodlands in a mosaic of thickets and dominated by Euphorbia and Aloes while *Spirostachys africana* is a common species found in this unit. Eastern Valley Bushveld is not considered to be threatened⁴. The project area seems to be a mix of these types with very little open grassland noted and the dominant vegetation types being the *Acacia*. Some areas showed signs of invasion by *Lantana*, especially adjacent to roads and homesteads. It is not anticipated that the laying of the pipeline will impact negatively on biodiversity within this ecosystem. The pipeline route follows existing roads and tracks which tend to be disturbed and show the highest level of invasion by alien species. There will be minimal clearing of vegetation as the trench area will be relatively small, and it will be recommend in this report that only the area of the trench be cleared. Trenches must then be closed and re vegetated. It is anticipated that a large portion of the trench work will be done by hand to increase employment opportunities and this will also limit the area of impact. There will be some clearing during the upgrade of the reservoirs, however the area of clearance will be minimal and the long term impact should be low.

Are any further specialist studies recommended by the specialist?	YES	NO X
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If YES, specify: NA

If YES, is such a report(s) attached in <u>Appendix D</u> ?	YES	NO
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Signature of specialist: _____ Date: _____

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

Site Alternative 1 (Proposed pipeline route including 62 water course crossings).

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

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

Site Alternative 1 (Proposed pipeline route including 62 water course crossings).

Land use character	YES	NO	Description
Natural area	YES	NO	Most of the pipeline route runs through disturbed road reserve though there are sections that cross areas of vegetated valley bushveld and open grassland. There will be some vegetation clearing required during the laying of the pipework

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			and upgrade of the reservoirs but this should be relatively minimal given the size of the trenches which are anticipated to measure 600mm wide and 800mm deep.
Low density residential	YES	NO	The water supply scheme will supply these settlements within Middledrift SSA3 which will be positively impacted on by the proposal.
Medium density residential	YES	NO	
High density residential	YES	NO	The water supply scheme will supply these settlements within Middledrift SSA3 which will be positively impacted on by the proposal.
Informal residential	YES	NO	The water supply scheme will supply the informal settlements within Middledrift SSA3 which will be positively impacted on by the proposal.
Retail commercial & warehousing	YES	NO	
Light industrial	YES	NO	
Medium industrial	YES	NO	
Heavy industrial	YES	NO	
Power station	YES	NO	
Office/consulting room	YES	NO	
Military or police base/station/compound	YES	NO	
Spoil heap or slimes dam	YES	NO	
Quarry, sand or borrow pit	YES	NO	There appear to be some areas where soil and sand is being mined near one of the crossings. It would need to be ensured that this excavation of material does not result in damage to the pipeline.
Dam or reservoir	YES	NO	There are a number of existing reservoirs which will be upgraded and integrated into the new scheme. Therefore these reservoirs will not be negatively impacted on.
Hospital/medical centre	YES	NO	
School/ creche	YES	NO	There are schools along the route which will be serviced by the scheme and will therefore benefit from it.
Tertiary education facility	YES	NO	
Church	YES	NO	
Old age home	YES	NO	
Sewage treatment plant	YES	NO	
Train station or shunting yard	YES	NO	
Railway line	YES	NO	
Major road (4 lanes or more)	YES	NO	
Airport	YES	NO	
Harbour	YES	NO	
Sport facilities	YES	NO	
Golf course	YES	NO	
Polo fields	YES	NO	
Filling station	YES	NO	
Landfill or waste treatment site	YES	NO	
Plantation	YES	NO	
Agriculture	YES	NO	There is subsistence agriculture in places along the route which may potentially be

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			damaged during construction.
River, stream or wetland	YES	NO	The pipeline route crosses several water courses and these areas may be impacted on during construction.
Nature conservation area	YES	NO	
Mountain, hill or ridge	YES	NO	The bulk of the route is located on ridgelines but in places does also descend into various valleys. Additional precautions to manage erosion must be taken.
Museum	YES	NO	
Historical building	YES	NO	
Protected Area	YES	NO	
Graveyard	YES	NO	Five modern grave sites occur within 25m of the Water Supply Scheme and the HIA report suggests that a buffer of at least 10m be maintained around each grave. However these should not be directly affected by the proposal.
Archaeological site	YES	NO	A cultural heritage survey of the proposed Middledrift Water Supply Scheme near Nkandla identified five archaeological sites from the Early Iron Age. The water supply scheme does not put any of these sites at risk, however the report suggests that a buffer zone of at least 100m be maintained around these sites. Should any development occur within 100m of these sites, a heritage specialist should be appointed to monitor development. However, it is confirmed that none of the development will take place within 100m of these sites with the nearest development only coming to within 154m of Site 2 and 120m of site 1. Apart from this concern there is no known archaeological reason why the proposed development may not proceed on the remainder of the study area as planned.
Other land uses (describe)	YES	NO	

6. CULTURAL/ HISTORICAL FEATURES

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

YES	NO
X	

Due to the scale of the project, a heritage assessment was commissioned (see Appendix D). If YES, contact a specialist recommended by AMAFA to conduct a heritage impact assessment. The heritage impact assessment must be attached as an appendix to this report.

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Briefly explain the recommendations of the specialist:

A cultural heritage survey of the proposed Middledrift Water Supply Scheme near Nkandla identified five archaeological sites and five modern grave sites. According to the HIA report, the archaeological sites are all Early Iron Age occurrences. The report suggests that a buffer zone of at least 100m be maintained around these sites. Should any development occur within 100m of these sites, a heritage specialist should be appointed to monitor development. Apart from this concern there is no known archaeological reason why the proposed development may not proceed on the remainder of the study area as planned. The water supply scheme does not put any of these sites at risk, as construction does not come within 100m of any of the Early Iron Age sites with the nearest being 154m from site 2 and 120m from Site 1. Therefore there should be no risk to the heritage sites. Five modern grave sites occur within close proximity to the Water Supply Scheme and the report suggests that a buffer of at least 10m be maintained around each grave. Attention is also drawn to the South African Heritage Resources Act, 1999 (Act No. 25 of 1999) and the KwaZulu-Natal Heritage Act (Act no 4 of 2008) which, requires that operations that expose archaeological or historical remains should cease immediately, pending evaluation by the provincial heritage agency.

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

YES	NO
	X
YES	NO
X	

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

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

As the pipeline route will exceed 300 m in length, it is understood that clearance from AMAFA is required. A heritage report has been commissioned (Appendix D) and has been submitted to AMAFA.

SECTION D: PUBLIC PARTICIPATION

As the project is located within a rural area with strong traditional ties, the public participation method used had to ensure that existing channels of communication were used in order to notify surrounding stakeholders so as to avoid creating any offense. Surrounding stakeholders rely on direct means of communication through elected officials and traditional authorities which in this case was the Ward Councilor the Inkhosi for the Magwaza Tribal authority as well as the Amakhosi for the neighboring traditional areas who were included in the process. It is important to note that any communication that takes place with community members without working through these officials is seen as disrespectful and to a point irrelevant.

The following steps were followed during the public participation process.

- A meeting was held with the ward councilor and the Amakhosi and their Izinduna where project details were presented.
- The Ward Councillor and the Induna and Inkhosi for the Magwaza tribal authority indicated a willingness to engage with the community, agreeing that this was the best procedure for notification.
- Signboards detailing the upgrade were erected on site.
- The Ward Councillor was provided with pamphlets for distribution.
- The Ward Councillor will be provided with a complete copy of the Basic Assessment report for dissemination to the community.

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- With regards to authority communications, all relevant authorities have been notified of the application and have been provided with copies of this BAR.

1. ADVERTISEMENT

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

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the local and district municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity (as identified in the application form for the environmental authorization of this project); and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and

- (b) state—
- (i) that an application for environmental authorization has been submitted to the KZN Department of Agriculture, Environmental Affairs and Rural Development in terms of the EIA Regulations, 2010;
 - (ii) a brief project description that includes the nature and location of the activity to which the application relates;
 - (iii) where further information on the application can be obtained; and
 - (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE PROCESS

The EAP must ensure that the public participation process is according to that prescribed in regulation 54 of the EIA Regulations, 2010, but may deviate from the requirements of subregulation 54(2) in the manner agreed by the KZN Department of Agriculture, Environmental Affairs and Rural Development as appropriate for this application. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate.

Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

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

6. PARTICIPATION BY DISTRICT, LOCAL AND TRADITIONAL AUTHORITIES

District, local and traditional authorities (where applicable) are all key interested and affected parties in each application and no decision on any application will be made before the relevant local authority

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is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of this application and provided with an opportunity to comment.

Has any comment been received from the district municipality?

YES	NO
	X

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

The report has been provided to the Uthungulu District Municipality for comment however it should be noted that the municipality is also the applicant in this case. All comments and responses received to date have been included in the comments and response table in Appendix E.

Has any comment been received from the local municipality?

YES	NO
	X

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

The report has been provided to the Nkandla Local Municipality for comment. All comments and responses received to date have been included in the comments and response table in Appendix E.

Has any comment been received from a traditional authority?

YES	NO
X	

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

Minutes from the meeting held with the traditional authority are included in Appendix E. See minutes in Appendix E for feedback during the meeting.

7. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders?

YES	NO
	X

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

All relevant identified stakeholders have been notified and provided with a copy of this report. Please see the comments and response table in Appendix E.

SECTION E: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

See Comments and Response Table in Appendix E.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached as Appendix E to this report):

[See Comments and Response Table in Appendix E.](#)

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

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

There are no impacts associated with the planning and design phase.

2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

- a. Site alternatives
- b. Process, technology, layout or other alternatives

2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

- a. Site alternatives
- b. Process, technology, layout or other alternatives

SITE ALTERNATIVES

Site Alternative 1 (Preferred Alternative) / Route Alternative 1

Proposed pipeline route including 62 water course crossings along original route.

CONSTRUCTION PHASE

Impacts The following lists the potential impacts associated with the construction phase and is applicable to the proposed site.	Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:
<ol style="list-style-type: none"> 1. Generation of emissions from construction vehicles. 2. Dusty conditions generated by construction vehicles travelling over exposed soil. 3. Damage to properties, fencing and subsistence farming plots during laying of pipework. 4. Erosion of exposed soil prior to the rehabilitation of the construction area, especially in steeper sections of the scheme. 5. Excavation of trenches resulting in large areas of land being cleared and at risk of erosion. 6. Trenches remaining open for long periods of time, causing them to collapse, creating an erosion and safety hazard. 7. Incorrect filling of trenches on completion creating points of erosion, especially on slopes and near water courses. 8. Deposition of eroded material into the water courses when laying pipe across the water courses impacting water quality (increased turbidity, reduction of dissolved oxygen). 9. Damage to water course and impacts further downstream due to temporary stream diversions during stream crossings. 10. Clearing of vegetation during laying of the pipeline route and access road resulting in loss of indigenous vegetation and exposure of soil to erosion. 	<ol style="list-style-type: none"> 1. All construction vehicles will be fitted with the appropriate silencers and exhausts. Emissions generated from these vehicles will be negligible and are not expected to significantly affect surrounding communities. 2. A water cart will be used to dampen dusty surfaces and suppress dust. 3. For the most part the pipeline will be laid within the road reserve. However if any properties or crops are likely to be affected, the contractor will liaise with the community. The pipeline trenches will be 600mm wide (1m at the most) and 800mm deep at the most and for the most part will be dug by hand in order to allow employment for local unskilled labour, thereby limiting the area of the excavation and damage that could be caused by large vehicles. 4. Exposed areas will be rehabilitated and re-vegetated as soon as possible during construction. Cleared areas may not be left exposed for long periods of time and should be re-vegetated in stages on completion of a section of the pipework. Additional precautions may be required as the soils are anticipated to be shallow and

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<p>11. Loss of riparian vegetation during excavation for pipework crossings on water courses, leading to erosion and damage to stream banks.</p> <p>12. Mechanical damage to the banks of the water courses during excavation of the pipe crossings.</p> <p>13. Temporary increase in waste and litter due to the construction process.</p> <p>14. Contamination of the receiving environment due to inappropriate storage and usage of hazardous materials and substances (cement, fuel etc.)</p> <p>15. Improper disposal of construction rubble i.e. illegal burying or dumping of rubble preventing rehabilitation.</p> <p>16. Insufficient number of toilet facilities resulting in unsanitary conditions on site.</p> <p>17. Inappropriate disposal of toilet waste resulting in the contamination of the environment.</p> <p>18. Generation of noise.</p> <p>19. Contaminated run off polluting the water courses.</p> <p>20. Encroachment of alien vegetation into areas disturbed during construction.</p> <p>21. Speeding construction vehicles creating unsafe working conditions and putting pedestrians and livestock at risk.</p> <p>Indirect impacts:</p> <p>22. Unsustainable sourcing of raw materials such as gravel, sand, water etc. which could result in the promotion of illegal mining operations which can cause significant damage to the environment.</p> <p>Cumulative impacts:</p> <p>23. Pollution and sediment increase within the catchment.</p> <p>24. Cumulative impact on Dhlabe nature reserve which is 5kms from RCs 52-56 and Res3-11.</p>	<p>with a high erosive potential. In certain steeper sections where homesteads being supplied are more inaccessible, additional precautions to manage erosion will be required, namely for pipework leading to and from RCs 42-44 and RCs 47-50 as well as RCs 54 and 55, 59 and 60.</p> <p>5. Only the minimum area required for the trench may be cleared. Trench size should not need to be more than 1m wide at most, therefore the most suitably sized equipment must be used to excavate the trench. In sensitive areas which are difficult to access or where the area is particularly steep, the trenches will need to be dug by hand.</p> <p>6. Trenches must not remain open indefinitely. Trench work must be completed in sections and then closed once the pipe has been laid in that section. Small inspection holes may be left open along the route but the rest of the trench must be closed. Cleared areas may not be left exposed for long periods of time and must be re vegetated as each stage of pipework is completed. Trenches must not remain open during building shut down periods i.e. over Christmas and Easter. Trench work must be planned so that trenches are closed before these shut down periods as there is a risk that the trenches will either collapse or fill with water if left unattended and this can create a hazard for children and animals. Sections of trench near homes and pedestrian walking areas must be demarcated.</p> <p>7. Care must be taken to ensure that when closing trenches, soil is compacted sufficiently and left so that the level of the trench is slightly higher than the surrounding land, to allow settling. Should soil settle below the level of the surrounding land, it will leave a depression along which water will travel and this could create a focal point for erosion. This can be especially problematic on sloped sections where water will follow the depression along the pipeline route, building up speed down steeper sections and creating furrows. If this occurs near water courses, it will erode the river banks and cause them to collapse. Rehabilitation through replanting of indigenous grass species soon after closure will aid in stabilising</p>
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	<p>soil and preventing erosion and will assist in controlling dust release.</p> <p>8. Areas exposed to erosion must be protected through the use of sand bags, berms and efficient construction processes i.e.: limiting the extent (footprint) and duration that areas are exposed. A single access point to each water course crossing must be established, but only if a crossing is required for establishment of the pipeline. No ad hoc crossings to be created and multiple access points must be avoided. Vehicle movement near the water courses must be restricted. No material may be stockpiled within 32m of any water course and excavated material must be re-used or removed on completion of these sections of the work to avoid entry of material into the water courses, especially during heavy rainfall events. Where possible, pipeline routes across water courses should be dug and laid by hand to reduce heavy machinery movement around the water courses. Excavators and vehicles on tracks should not be used near the water courses as these will cause more damage than vehicles equipped with tyres.</p> <p>9. Where possible, the pipeline will be strapped to existing structures, however in most cases, it will be necessary to lay the pipeline in the stream bed, in which case, a suitably qualified contractor will be appointed to handle the temporary stream diversion work to ensure that the flow rate and stream morphology are taken into account. It is preferable to carry out work in stream beds during winter when flow rates are lower. Stream diversion should take place at the widest point of the stream and care must be taken to manage potential erosion and introduction of sediment into the stream. This can be managed by using appropriate materials for the stream diversion and using sediment traps to capture dislodged sediment. Only a portion of the stream may be diverted at a time while the pipeline is laid in sections so as to avoid any risks associated with damming the flow which might lead to localized flooding. Soft material gabions will be used instead of concrete encasement (placed just downstream of the pipe) in order to mitigate potential impacts</p>
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	<p>while working in the stream beds. Stream diversions must be removed as soon as the work is complete and may not be left in place indefinitely.</p> <p>10. The pipeline route follows the road reserve of existing roads in most places, except where the shortest or best route requires it to move away from the road to reach homesteads. For the most part the route runs through disturbed road reserve. However, it is imperative that throughout the scheme, and especially near the water course crossings that only the minimal area required for the trench is excavated and cleared. Therefore the correct machinery must be used at all times. In some sections, the route will need to traverse densely vegetated areas in order to reach homesteads that are well off the road and inaccessible by vehicle. In such cases the relatively small trench size should only result in the loss of a small strip of vegetated area which must then be re-vegetated on completion. In these areas which are in most cases difficult to access, clearing of vegetation and excavating of the trench will need to be done by hand as vehicle access will be restricted. Furthermore, there is a higher risk of damage and disturbance to surrounding vegetation and higher risk of erosion in these areas. Areas where particular precautions must be taken include RCs 42-44 and RCs 47-50 as well as RCs 54 and 55, 59 and 60. The vegetation type in the southern reaches of the scheme where most of the pipework will be carried out is Eastern Valley Bushveld which is not endangered and Ngongoni veld which is listed as vulnerable but is also not endangered. The areas near the road tend to be more disturbed and invaded by alien species while the proportion of indigenous vegetation increases as one moves away from the road. Therefore where possible, the route should follow close to the road (providing this is permitted by the authority administering the road i.e. DOT and municipality). Again in the more heavily vegetated areas, loss of vegetation will be reduced by clearing only the area required to lay the trench and where necessary, using local labour to dig the trenches by hand. This will reduce the impact on the</p>
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	<p>indigenous vegetation. The contractor must ensure that invasive species do not gain a foothold along the cleared route until the indigenous vegetation has had time to re-establish.</p> <ol style="list-style-type: none"> 11. At most of the water courses being crossed, there is already an existing road or track crossing which has already been disturbed and transformed. There should therefore be minimal disturbance of the vegetation as the pipework will be strapped to the existing structure. However, where clearing of riparian vegetation is required it should be kept to a minimum due to the small size of the pipe and associated trench, which where possible will be dug by hand reducing the area of impact. 12. Where possible, vegetation clearance, even of alien species, should be kept to a minimum as it this will be performing a role in bank stabilization. Vegetation that has been removed should be replaced with indigenous species. Vehicle access to the water course banks should be restricted and no tracked vehicles i.e. excavators should be operated in close proximity to the water courses. 13. Littering will not be permitted on site. Waste management will be controlled through the implementation of the EMP. 14. All hazardous materials and substances will be stored within a secured area in the construction camp. No storage of material is to occur within 32m of any water course. The storage area will be a hard surfaced, bunded and covered area. Cement mixing must be done on a hard surface that is protected from storm water runoff. 15. Contractors will be required to dispose of construction rubble at an appropriate landfill site. Delivery notes and safe disposal certificates to prove appropriate disposal will be required during the construction audits conducted by an independent environmental consultant. 16. Appropriate and sufficient toilet facilities will be provided by the contractor and will be controlled through the EMP. 17. Toilet facilities must be provided by a registered company and all sewage must be disposed of at an appropriate facility. Safe disposal certificates will
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	<p>be kept on record. Any spills must be immediately contained and the spilled material disposed of appropriately. Toilets may not be located within 32m of any water course.</p> <p>18. All construction vehicles must be fitted with standard silencers. The noise generated will be a temporary impact during construction.</p> <p>19. The engineer must ensure that only clean storm water runoff enters the environment. Any contaminated runoff must be collected and disposed of.</p> <p>20. The construction EMPr specifies that alien vegetation will not be allowed to encroach onto the site and must be continually removed.</p> <p>21. Speed limits must be obeyed and enforced.</p> <p>Indirect impacts:</p> <p>22. The implementation of the EMPr will manage these issues. Contractors must provide proof of sustainable sourcing of materials i.e. permits for quarries and sand winning operations from which stone and sand have been obtained.</p> <p>Cumulative impacts:</p> <p>23. Provided the EMPr is implemented in order to ensure control of erosion and stormwater runoff, this should be mitigated against. Heavy vehicles must be kept more than 32m from the banks of any watercourse.</p> <p>24. Given the nature of the proposal and distance from the reserve, it is not anticipated that there will be any impacts on the reserve itself. Furthermore as all these points are located in sensitive areas where vehicle access is restricted and sections of the site are quite steep, additional precautions will be taken to manage erosion and vegetation loss i.e. trenches will be dug by hand and machinery use will be heavily restricted.</p>
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OPERATIONAL PHASE

Impacts The following lists the potential impacts associated with the operational phase and is applicable to the proposed site.	Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:
<ol style="list-style-type: none"> 1. Provision of good quality drinking water to local communities. 2. Erosion around water courses and damage to water course banks where pipe crossings have been placed. 3. Damage to drainage lines (soil compaction, erosion) where pipes have been laid. 4. Placement of pipes in the beds of water 	<ol style="list-style-type: none"> 1. This is a positive impact. 2. Gabions will be strategically placed along the stream banks to protect the pipeline and stabilize the banks and prevent erosion. It must also be ensured that trench rehabilitation has been effectively carried out before contractors leave the site, especially

<p>courses impacting on the flow regime of the river.</p> <p>5. Long term impact on vegetation and biodiversity.</p> <p>Indirect impacts:</p> <p>6. Improvement in health of the community due to reduced risk of water borne diseases.</p> <p>Cumulative impacts:</p> <p>7. Cumulative impact on the water resource providing the water for the Water Supply Scheme.</p>	<p>where approaching the water course crossings and on steeper hills. Soil in the trenches must be compacted effectively to the same level or slightly higher than the surrounding land to prevent settling which could create depressions for water to travel along, creating erosion funnels and exposing the pipeline. It must be ensured that indigenous vegetation is planted after the soil has been compacted and that this vegetation has taken successfully before contractors leave the site.</p> <p>3. Streams have been avoided where possible with only essential crossing being made. Once the pipe has been laid it will be below ground / stream bed level and there should not be any associated ongoing impact. In the water courses the pipework must either be strapped to an existing structure if there is one or laid flush with the bedrock or the stream bed so as not to create a point for erosion. The pipe must be further protected by concrete casing or gabions. On the remaining sections, the area of disturbance should be minimal due to the small trench size and vegetation will be able to re grow over the trenches once these have been closed.</p> <p>4. Once the pipe has been laid, it will be encased in a concrete case or gabion basket which will as far as possible lie flush with the river bed. If possible the pipe will be laid in the bedrock.</p> <p>5. In terms of what is proposed and what was noted during the site visits, it is not expected that the proposal will have significant impact on biodiversity and once the pipeline is in the ground, there will be no further impacts during operation as the pipeline will be buried and the cleared area re-planted. Furthermore the pipeline route is focused along road reserves keeping it within more disturbed areas.</p> <p>Indirect impacts:</p> <p>6. This is a positive impact.</p> <p>Cumulative impacts:</p> <p>7. Excessive abstraction from a water resource can lead to a reduction in flow which can impact on the ecological reserve of the water resource and impact on aquatic life. It is therefore important to ensure that cumulative water abstraction from a system does not exceed the ecological</p>
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	<p>reserve of the system. A controlled extraction point will to some extent control informal extraction from the river and will at least enable water use to be managed and monitored. The water for this scheme will be supplied by a new Water Treatment Works which will form part of another project and does not fall within the scope of the current proposal. It is worth noting however that the business plan makes allowance for water conservation and reduction of water usage by :</p> <ul style="list-style-type: none">a. Controlling low levels of water losses through better control of water pressures using PRV's, BPT's, intelligent PRV's which will provide high pressure during high demand and low pressure at low demand, where applicable;b. Encouraging the adoption and implementation of proactive O&M procedures such as: rehabilitation of existing network systems; preventative maintenance; passive leakage control, and uniform O&M policies.c. Reduction of low levels of apparent water losses through meter management and replacement, reduce illegal connections, managing zonal bulk meter readings;d. Promoting the efficient use of water by consumers through: consumer awareness campaigns; consumer education campaigns; school education, and the establishment of a consumer forum;e. Regulating and enforcing the wastage of water through the enforcement of water by-laws, and registration of plumbers;f. Promoting the use of alternative water resources and technologies such as: implementing rain harvesting pilot projects; development of local boreholes; investigations into unconventional water resources;g. Conserving water resources by supporting water programmes and the management of ground water
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	resources ⁵ .
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LAYOUT ALTERNATIVES

Layout Alternative 2 (Original Route) Versus Layout Alternative 2 (Preferred Alternative)

RC61 and RC62: In this section of the scheme, the original route requires an additional two water course crossings, RC61 and RC62. The preferred route alternative adjusts the route so that these two crossings are replaced by one crossing.

CONSTRUCTION PHASE

Impacts The following lists the potential impacts associated with the construction phase and is applicable to the proposed site.	Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:
<ol style="list-style-type: none"> 1. Construction impacts will be the same as those discussed in the previous section for Site alternative 1. 2. Unnecessary disturbance of additional water courses. 	<ol style="list-style-type: none"> 1. Mitigation measures will be the same as those discussed in the previous section for Site alternative 1. 2. The preferred alternative (Alternative 2) will ensure that with the adjustments to the route there will only be one water course crossing in this section of pipeline as opposed to two. This as opposed to the original layout (Alternative 1) which requires that two crossings be made at RC61 and RC62. Given the steep nature of the area it is recommended that where water course crossings can be avoided, they should be.

OPERATIONAL PHASE

Impacts The following lists the potential impacts associated with the operational phase and is applicable to the proposed site.	Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:
<ol style="list-style-type: none"> 1. Operational impacts will be the same as those discussed in the previous section for Site alternative 1. 	<ol style="list-style-type: none"> 1. Mitigation measures will be the same as those discussed in the previous section for Site alternative 1.

TECHNOLOGY ALTERNATIVES

CONSTRUCTION PHASE

ALTERNATIVE A1: Water for the scheme will be obtained from the Thukela – Mhlathuze transfer scheme and pumped to the Middledrift water treatment works .	
Impacts The following lists the potential impacts associated with the construction phase and is applicable to the proposed technology alternatives.	Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:
<p>Direct impacts:</p> <ol style="list-style-type: none"> 1. Impacts will be as per the previous section. 2. Making use of existing infrastructure for the supply of water reduces the need for construction of additional infrastructure. <p>Indirect impacts:</p> <ol style="list-style-type: none"> 3. Impacts will be as per the previous section. <p>Cumulative impacts:</p> <ol style="list-style-type: none"> 4. Impacts will be as per the previous section. 	<p>Direct impacts:</p> <ol style="list-style-type: none"> 1. Mitigations as per the previous section. 2. Positive impact. <p>Indirect impacts:</p> <ol style="list-style-type: none"> 3. Mitigations as per the previous section. <p>Cumulative impacts:</p> <ol style="list-style-type: none"> 4. Mitigations as per the previous section.

⁵ Eyethu Engineers; Uthungulu District Municipality Upgrading Of Bulk Water Supply And Reticulation To The Middledrift SSA 3 Business Plan 29 October 2010;

OPERATIONAL PHASE

ALTERNATIVE A1: Water for the scheme will be obtained from the Thukela – Mhlathuze transfer scheme and pumped to the Middledrift water treatment works.

Impacts The following lists the potential impacts associated with the operational phase and is applicable to the proposed technology alternatives.

Direct impacts:

1. Impacts as per the operational phase for the site alternative.

Indirect impacts:

2. Impacts as per the operational phase for the site alternative.

Cumulative impacts:

3. Cumulative impact on the water resource providing the water for the Water Supply Scheme.

Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:

Direct impacts:

1. Mitigations as per the operational phase for the site alternative.

Indirect impacts:

2. Mitigations as per the operational phase for the site alternative.

Cumulative impacts:

3. Excessive abstraction from a water resource can lead to a reduction in flow which can impact on the ecological reserve of the water resource and impact on aquatic life. It is therefore important to ensure that cumulative water abstraction from a system does not exceed the ecological reserve of the system. A controlled extraction point will to some extent control informal extraction from the river and will at least enable water use to be managed and monitored. The water for this scheme will be supplied by a new Water Treatment Works which will form part of another project and does not fall within the scope of the current proposal. It is worth noting however that the business plan makes allowance for water conservation and reduction of water usage by :
 - a. Controlling low levels of water losses through better control of water pressures using PRV's, BPT's, intelligent PRV's which will provide high pressure during high demand and low pressure at low demand, where applicable;
 - b. Encouraging the adoption and implementation of proactive O&M procedures such as: rehabilitation of existing network systems; preventative maintenance; passive leakage control, and uniform O&M policies.
 - c. Reduction of low levels of apparent water losses through meter management and replacement, reduce illegal connections, managing zonal bulk meter readings;
 - d. Promoting the efficient use of water by consumers through: consumer awareness

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	<p>campaigns; consumer education campaigns; school education, and the establishment of a consumer forum;</p> <p>e. Regulating and enforcing the wastage of water through the enforcement of water by-laws, and registration of plumbers;</p> <p>f. Promoting the use of alternative water resources and technologies such as: implementing rain harvesting pilot projects; development of local boreholes; investigations into unconventional water resources;</p> <p>g. Conserving water resources by supporting water programmes and the management of ground water resources⁶.</p>
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No-go alternative (compulsory)

<ol style="list-style-type: none"> 1. If the scheme does not go ahead then the existing supply issues will continue to be a problem. 2. The new proposed connections will not be made and large areas of the community will remain without access to potable water. 3. The lack of water service provision will continue to impact on the economic development of the area and on the health and quality of life of the people living there. 4. Without access to potable water the community will continue to place pressure on local rivers and streams for drinking water as well as for washing and cooking which ultimately impacts on the water quality in these rivers. 5. Lack of available clean drinking water can lead to increased risk of water borne diseases and associated health impacts on the population. 6. The no go option in this case will have direct impacts on the community and is not regarded as feasible.
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2.4. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING OR CLOSURE PHASE

a. Site alternatives

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

<p>Impacts The following lists the potential impacts associated with the operational phase and is applicable to the proposed site.</p> <p>Direct impacts:</p> <ol style="list-style-type: none"> 1. Potential contamination of the surrounding environment (streams, properties etc.) with construction rubble and waste. 2. Potential for alien vegetation encroachment into the disturbed area where the pipes were located. 3. Potential generation of noise and dust. 4. Potential erosion around the areas where the pipes are removed. 	<p>Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:</p> <p>Direct impacts:</p> <ol style="list-style-type: none"> 1. All construction rubble and waste would need to be disposed of appropriately at an appropriate land fill site. 2. Alien species would need to be removed and replaced with indigenous species suitable to the area. 3. The noise and dust generated would be a temporary impact during decommissioning only and would be negligible. Significant dust would be
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⁶ Eyethu Engineers; Uthungulu District Municipality Upgrading Of Bulk Water Supply And Reticulation To The Middledrift SSA 3 Business Plan 29 October 2010;

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<p>Indirect impacts:</p> <p>5. Potential damage to the water courses.</p> <p>Cumulative impacts:</p> <p>6. Increase in the amount of waste sent to the landfill site.</p>	<p>controlled through the use of a water cart.</p> <p>4. Exposed area would need to be rehabilitated and re-vegetated as soon as possible after decommissioning.</p> <p>Indirect impacts:</p> <p>5. Sensitive areas would need to be protected and all materials and waste would need to be disposed of appropriately to avoid damage on these areas.</p> <p>Cumulative impacts:</p> <p>6. The only material sent to the landfill would be broken concrete and water pipework which would be a negligible amount of waste.</p>
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No-go alternative (compulsory)

The impacts associated with operation of the water supply scheme have been discussed in the above section.

2.5. PROPOSED MONITORING AND AUDITING

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

Alternative S1 (preferred site)	Alternative S2
<p>Construction phase: It is suggested that monitoring be done through monthly construction audits to ensure compliance with the Environmental Management Plan (EMPr).</p>	

Alternative A1 (preferred alternative)	Alternative A2
<p>Construction phase: It is suggested that monitoring be done through monthly construction audits to ensure compliance with the Environmental Management Plan (EMPr).</p>	<p>Construction phase: It is suggested that monitoring be done through monthly construction audits to ensure compliance with the Environmental Management Plan (EMPr).</p>

3. ENVIRONMENTAL IMPACT STATEMENT

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

Site Alternative 1 (Preferred Alternative)

(Proposed pipeline route including 62 water course crossings)

It is the opinion of the EAP that all potential impacts that could potentially occur during the construction and operational phase of the Middledrift Water Scheme which aims to supply Sub Supply Area 3 have been identified and key impacts and their mitigation measures are provided below.

Key Construction Impacts:

Damage to water courses, stream banks and riparian zones

Mitigations

- Placement of the pipework over the water courses will require that contractors work within the riparian zone and stream channels of the identified water course crossings. This could result in mechanical damage to the riparian zone, loss of vegetation, collapse of river banks, erosion and damage to the stream channel and introduction of sediment into these water courses. Therefore operation within these sensitive areas needs to be restricted to the development footprint only and must be controlled.
- The contractor must mark out a single access point for each stream crossing and vehicle access must be restricted. A 32m buffer must then be imposed on all the water courses, except where access is required for the pipe placement.
- No tracked vehicles (i.e. excavators) to be permitted within 32m of the water courses.
- No traffic or vehicles or storage are to be permitted within these designated buffer zones. This will reduce the area at each water course that is affected.
- Vehicle access to each water course must be restricted except to where absolutely necessary for the placement of a pipeline, however, for the most part, trenching and pipework placement should be done by hand in these sensitive areas. This will reduce unnecessary traffic which would exacerbate the risk of damage to the riparian zone.
- No cement mixing may occur within 32m of any water course. No clearing of vegetation may occur except within the construction footprint.

Assessment

These impacts can be mitigated to a large extent if the EMP is followed, however the nature of the work will mean that there may still be some unavoidable damage that will need to be rehabilitated. Therefore the above impacts are rated medium.

Movement of heavy vehicles within the vicinity of the water courses could cause damage and erosion that will impact on these water bodies.

Mitigations

- Existing roads must be used and where additional roads are required, a path for vehicles to follow must be demarcated which should maintain a 32m buffer on the river.
- No ad hoc roads may be created.
- The soil type in the area tends to be shallow and easily eroded therefore particular care must be taken with regards the implementation of erosion measures.
- With regards the riparian zone and banks of each water course, vegetation clearance, even of alien species, should be kept to a minimum as these plants are performing a role in bank stabilization. Where possible alien vegetation should be replaced with indigenous species.

Assessment

These impacts can be avoided by operating in a responsible manner and are therefore rated as low.

Work within the stream beds of water courses may damage these areas and impact on water flow and downstream users.

Mitigations

- Work in stream beds should preferably be carried out during winter when flow rates are lower.
- A suitably qualified contractor must be appointed to handle any temporary stream diversion work, so as to ensure that flow rate and stream morphology are taken into account.
- Stream diversion should take place at the widest point of the stream and care

must be taken to manage potential erosion and introduction of sediment into the stream. This can be managed by using appropriate materials for the stream diversion and using sediment traps to capture dislodged sediment.

- Only a portion of the stream may be diverted at a time while the pipeline is laid in sections so as to avoid any risks associated with damming the flow which might lead to localized flooding.
- Soft material gabions will be used instead of concrete encasement (placed just downstream of the pipe) in order to mitigate potential impacts while working in the stream beds.
- Stream diversions must be removed as soon as the work is complete and may not be left in place indefinitely.

Assessment

These measures are covered in the EMPr and provided they are followed, impacts associated with work within these sensitive areas can be mitigated, however if stream diversion takes longer than a few weeks, impacts will be extended over a longer term. These impacts are rated as medium.

Trenches remaining open for long periods of time, causing them to collapse, creating an erosion and safety hazard.

Mitigations

- Trenches must not remain open indefinitely.
- Trench work must be completed in sections and then closed once the pipe has been laid in that section.
- Cleared areas may not be left exposed for long periods of time and must be re vegetated as each stage of pipework is completed.
- Trenches must not remain open during building shut down periods i.e. over Christmas and Easter.
- Trench work must be planned so that trenches are closed before these shut down periods as there is a risk that the trenches will either collapse or fill with water if left unattended and this can create a hazard for children and animals.
- Sections of trench near homes and pedestrian walking areas must be demarcated.

Assessment

These measures are covered in the EMPr and provided they are followed, these impacts can be mitigated. However if trenches are left open indefinitely or not properly closed and rehabilitated they may cause impacts in the long term. These impacts are therefore rated as medium.

Incorrect filling of trenches on completion creating points of erosion, especially on slopes and near water courses.

Mitigations

- Care must be taken to ensure that when closing trenches, soil is compacted sufficiently and left so that the level of the trench is slightly higher than the surrounding land, to allow settling.
- Rehabilitation through replanting of indigenous grass species soon after closure will aid in stabilising soil and preventing erosion and will assist in controlling dust release.

Assessment

These measures are covered in the EMPr and provided they are followed, these impacts can be mitigated. However if trenches are not properly closed and rehabilitated they may cause impacts in the long term. These impacts are rated as medium.

Run off contaminated by sediment or spilled materials polluting the various water courses.

Mitigations

- Spills and stored materials may accidentally enter the water courses. Stockpiled material may also inadvertently enter these water courses during the construction process if not managed appropriately. Therefore the construction camp must be located outside the 32m buffer area of all water courses.
- All hazardous materials must be stored under cover and on hard surfaced bunded areas.
- Any contaminated run off or grey water must be captured and removed from site for disposal either to sewer in the case of grey water or to an appropriate landfill if hazardous.
- No vehicle washing or servicing may be conducted on site.
- Only emergency repairs may be carried out on site. In such cases, the vehicle or equipment must be repaired outside the 32m buffer on the river.
- Non-essential equipment and vehicles are to remain at least 32m from the river banks at all times.
- Materials may not be stored within 32m of any water course.
- Once construction is complete, it must be ensured that no material whatsoever is left in any of the stream channels or near the stream banks where it may be washed into the water courses during a rainfall event. It is recommended this material be removed from site entirely if it is not used in the construction process.

Assessment

These measures will be covered in the EMP and provided they are followed, impacts associated with work within these sensitive areas can be mitigated. These impacts can therefore be rated as medium.

Los of vegetation due to clearing and subsequent impact on biodiversity; Impact of trenching; Construction of water course crossings within 5kms of a Reserve

Mitigations

- Only the minimum area required for the trench may be cleared. Trench size should not need to be more than 1m wide at most, therefore the most suitably sized equipment must be used to excavate the trench.
- In more heavily vegetated areas, loss of vegetation can be reduced by clearing only the area required to lay the trench and where indicated, using local labour to dig the trenches by hand.
- Areas where particular caution must be exercised are the areas around and including RCs 42-44 and RCs 47-50 as well as RCs 54 and 55, 59 and 60 which are situated in difficult to access areas which are steeper and densely vegetated.
- Given the nature of the proposal and distance from the reserve, it is not anticipated that there will be any impacts on the reserve itself, especially as the areas in questions, will be treated more sensitively and construction will be carried out by hand i.e. RCs 47,48,49,50,61,62.
- The pipeline route follows the road reserve of existing roads in most places.
- The relatively small trench size will only result in the loss of a small strip of grassed area which will be re-grassed on completion.
- The vegetation type is identified as a mixture of Eastern Valley Bushveld and Ngongoni veld which is listed as vulnerable but is not endangered with areas near the road tending to be more disturbed and invaded by alien species.
- Therefore where possible, the route should follow close to the road (providing this is permitted by the authority administering the road i.e. DOT and municipality).
- The contractor must ensure that invasive species do not gain a foothold along the cleared route until the indigenous vegetation has had time to re-establish itself.

- At most of the water courses being crossed, there is already an existing road or track therefore disturbance of the vegetation should be minimal as the areas are already transformed and cleared.
- Where clearing of riparian vegetation is required it should be kept to a minimum due to the small size of the pipe and associated trench, which where possible will be dug by hand reducing the area of impact.

Key Operational Impacts:

Erosion around water course and damage to banks and water courses (soil compaction, erosion) where pipes have been laid and placement of pipes in the beds of water courses impacting on the flow regime of the river.

Mitigations

- Gabions will be strategically placed along the stream banks to protect the pipeline and stabilize the banks and prevent erosion.
- It must also be ensured that trench rehabilitation has been effectively carried out before contractors leave the site, especially where approaching the water course crossings and on steeper hills.
- Soil in the trenches must be compacted effectively to the same level or slightly higher than the surrounding land to prevent settling which could create depressions for water to travel along, creating erosion funnels and exposing the pipeline.
- It must be ensured that indigenous vegetation is replanted after the soil has been compacted and that this vegetation has taken successfully before contractors leave the site.
- Streams have been avoided where possible with only essential crossings being made. Once the pipe has been laid it will be below ground and there should not be any associated ongoing impact.
- In the drainage lines the pipework will be laid flush with the bedrock or the stream bed so as not to create a point for erosion. The pipe will be further protected by concrete casing or gabions.
- On the remaining sections, the area of disturbance will be minimal due to the small pipe and trench size and vegetation will be able to re grow over the trenches once these have been closed.

Assessment

Provided the necessary engineering measures are put in place, this impact can be mitigated and is therefore rated as low.

Long term impact on vegetation and biodiversity.

Mitigations

- Trenches must be properly rehabilitated i.e. soil properly compacted to avoid creating depressions and cleared areas re vegetated as soon as possible after completion.
- The cleared areas should be minimal and once the pipelines are in the ground and the vegetation has regrown there should be no further impacts.

Further to the above mitigation methods, an EMPr (Appendix G) has been developed to manage and control potential impacts. The EMPr should be implemented through monthly construction audits during which time recommendations within the EMPr should be enforced. If the EMPr is implemented correctly and the mitigation measures listed in this report are adhered to then the potential impacts associated with construction can be rated as low. It is thus the opinion of the EAP that there are no significant environmental impacts associated with the proposal which cannot be mitigated.

Layout Alternative 2 (Original Route) Versus Layout Alternative 2 (Preferred Alternative)

RC61 and RC62: In this section of the scheme, the original route requires an additional two water course crossings, RC61 and RC62. The preferred route alternative adjusts the route so that these two crossings are replaced by one crossing.

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The preferred alternative (Alternative 2) will ensure that with the adjustments to the route there will only be one water course crossing in this section of pipeline as opposed to two. This as opposed to the original layout (Alternative 1) which requires that two crossings be made at RC61 and RC62. Given the steep nature of the area it is recommended that where another alternative exists that allows a water course crossing to be avoided, it should be taken. Therefore Layout Alternative 2 is recommended as the preferred alternative.

1. If the scheme does not go ahead then the existing supply issues will continue to be a problem.
2. The new proposed connections will not be made and large areas will remain without water.
3. The lack of water service provision will continue to impact on the economic development of the area and on the health and quality of life of the people living there.
4. Without access o potable water the community will continue to place pressure on local rivers and streams for drinking water and for washing and cooking which will ultimately impact on the water quality in these rivers.
5. Lack of available clean drinking water can lead to increased risk of water borne diseases and associated health impacts on the population.
6. The no go option in this case will have direct impacts on the community and is not regarded as feasible.

SECTION F. RECOMMENDATION OF EAP

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

YES x	NO
NA	

If "NO", please contact the KZN Department of Agriculture, Environmental Affairs and Rural Development regarding the further requirements for your report.

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

The EAP recommends that the preferred option to construct the water supply scheme across 62 water course crossings, including some crossings (RCs 47,48,49,50,61,62) which are within 5kms of a Reserve, be approved and that Layout Alternative 2 with respect to crossings RC61 and RC62 be approved, provided that the following recommendations and the requirements of the EMPr are followed.

Construction Impacts

Stakeholders, Properties & Services

1. Surrounding land owners and stakeholders should be notified prior to disruptive activities during construction. The contractor must liaise with designated community leaders.
2. As standard construction practice the engineer and contractor should identify all existing services that may be affected prior to construction.

Traffic & Construction Vehicles

3. All construction vehicles should be fitted with the appropriate silencers and exhausts.
4. Speed limits must be obeyed.
5. Existing roads must be used and where additional roads are required, a path for vehicles to follow must be demarcated which should maintain a 32m buffer on the water courses.
6. No ad hoc roads may be created.

Housekeeping, waste management, storage and materials handling

7. Littering must not be permitted on site.
8. All hazardous materials and substances should be stored within a secured area in the construction camp. The storage area should be a hard surfaced, bunded and covered area.
9. Cement mixing must be done on a hard surface that is protected from storm water runoff.
10. Contractors to dispose of construction rubble at an appropriate landfill site. Delivery notes and safe disposal certificates to prove appropriate disposal should available.
11. Appropriate and sufficient toilet facilities must be provided by the contractor.
12. Toilet facilities must be provided by a registered company and all sewage must be disposed of at an appropriate facility. Safe disposal certificates must be kept on record. Toilets must be stored more than 32m away from any water course.

Dust and erosion control

13. A water cart should be used to dampen dusty surfaces and suppress dust.
14. Exposed areas should be rehabilitated and re-vegetated as soon as possible during construction.
15. Areas exposed to erosion must be protected through the use of sand bags, berms and efficient construction processes i.e.: limiting the extent (footprint) and duration period that areas are exposed.
16. Additional precautions to protect against erosion to be undertaken as the soils are shallow and highly erodible in this area.

Stormwater management and protection of water courses

17. The engineer/contractor must ensure that only clean storm water runoff enters the water courses and the environment. Any contaminated run off must be collected and disposed of.
18. No vehicle washing or servicing may be conducted on site. Only emergency repairs may be carried out on site. In such cases, the vehicle or equipment must be repaired outside the 32m buffer on the water courses.
19. Only the area directly in the path of construction may be cleared and excavated.
20. The contractor must mark out a single access point for each water course and vehicle access must be restricted to this area only.
21. A 32m buffer should then be imposed on the remainder of the watercourses with no traffic or vehicles or storage permitted within this buffer zone.
22. Heavy vehicles should avoid working near the water courses as much as possible.
23. No tracked vehicles (i.e. excavators) should be permitted within 32m of the water courses.
24. No excavated material or fill material may be stored within the water courses o within 32m of the watercourses.
25. Once construction is complete, it must be ensured that no material whatsoever is left in the stream channels or near the banks where it may be washed into the water courses in a high flood event. It is recommended this material be removed from site entirely if it is not used in the construction process.
26. Vegetation clearance on the banks of the water courses, even of alien species, should be kept to a minimum as this cover is performing a role in bank stabilization. Where possible vegetation should be replaced with indigenous species.
27. Work in stream beds should preferably be carried out during winter when flow rates are lower.
28. A suitably qualified contractor must be appointed to handle any temporary stream diversion work.
29. Care must be taken to manage potential erosion and introduction of sediment into the stream. This can be managed by using appropriate materials for the stream diversion and using sediment traps to capture dislodged sediment.
30. Use of earth berms to temporarily divert the river is not suggested as this would erode and increase the sediment load in the river. Gabion baskets or appropriate geotextile structures should be used to temporarily divert the flow.
31. Details of methods to control downstream sedimentation must be provided by the

contractor.

32. Soft material gabions to be used instead of concrete encasement (placed just downstream of the pipe) in order to mitigate potential impacts while working in the stream beds.
33. Stream diversions are to be temporary and may not remain in place for a protracted period of time.

Protection of biodiversity

34. The route should follow close to the road (providing this is permitted by the authority administering the road i.e. DOT and municipality).
35. Trench size to be restricted to that required for laying the pipe i.e. a maximum of 1m in width should be cleared for the trench work and these must be dug by hand in the sensitive areas indicated i.e. RCs 42-44 and RCs 47-50 as well as RCs 54 and 55, 59 and 60.
36. Where possible trenches to be dug by hand to reduce areas cleared.
37. The contractor must ensure that invasive species do not gain a foothold along the cleared route until the indigenous vegetation has had time to re-establish itself.
38. Areas around water courses where birds may be nesting must be disturbed as little as possible.

Protection of Heritage Resources

39. Five archaeological sites and five modern grave sites were identified. The HIA report suggests a buffer zone of at least 100m be maintained around these sites. Should any development occur within 100m of these sites, a heritage specialist should be appointed to monitor development.
40. Five modern grave sites occur within 25m of the Water Supply Scheme and the report suggests that a buffer of at least 10m be maintained around each grave.
41. Attention is drawn to the South African Heritage Resources Act, 1999 (Act No. 25 of 1999) and the KwaZulu-Natal Heritage Act (Act no 4 of 2008) which, requires that operations that expose archaeological or historical remains should cease immediately, pending evaluation by the provincial heritage agency.

Trenching

42. Only the minimum area required for the trench may be cleared. The most suitably sized equipment must be used to excavate the trench. In sensitive areas which are difficult to access or where the area is particularly steep, the trenches will need to be dug by hand.
43. Trenches must not remain open indefinitely.
44. Trench work must be completed in sections and then closed once the pipe has been laid in that section.
45. Cleared areas may not be left exposed for long periods of time and must be re vegetated as each stage of pipework is completed.
46. Trenches must not remain open during building shut down periods i.e. over Christmas and Easter.
47. Trench work must be planned so that trenches are closed before these shut down periods as there is a risk that the trenches will either collapse or fill with water if left unattended and this can create a hazard for children and animals.
48. Sections of trench near homes and pedestrian walking areas must be demarcated.

Further Site Specific Mitigations

49. Pipework to be strapped to existing structures but where this is not possible, it must be laid in the river bed flush with the bedrock or the stream bed so as not to create a point for erosion. The pipe will be further protected by concrete casing or gabions.
50. Vegetation disturbance must be kept to a minimum.
51. Where possible, trenches should be dug by hand to reduce disturbance.
52. Access / haulage roads must be designed to minimise material loss and adequate stormwater infrastructure must be implemented.

SECTION G: APPENDICES

The following appendices must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Public Participation

- Comments & Response report & Comments
- Proof of Notification of I A&Ps:
 - Notice boards
 - Adverts
 - Notification and communications with I &APS
 - Meetings with Community Representatives (Meeting Minutes, Attendance Registers, Signed Agreement to Notify Community)
 - Registered I&APS

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Public Participation

Comments & Response Report & Comments Received

Basic Assessment Report

Proof of Notification of I A&Ps

Notice boards

1. The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—
2. (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
3. (i) the site where the activity to which the application relates is or is to be undertaken; and
4. (ii) any alternative site mentioned in the application;

Basic Assessment Report

Adverts

- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

Basic Assessment Report

Notification and communications with I & APS

- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the local and district municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity (as identified in the application form for the environmental authorization of this project); and
 - (vii) any other party as required by the competent authority;

Basic Assessment Report

Meetings with Community Representatives (Meeting Minutes, Attendance Registers, Signed Agreement to Notify Community)

Registered I &APs

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information