BASIC ASSESSMENT REPORT

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File Reference Number:	
Application Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may 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 may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner (EAP).

9. 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.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

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SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? NO

If YES, please complete form XX for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

1. PROJECT TITLE

The proposed construction of the Rosedale Water Treatment Works and associated raw water supply and clear water delivery infrastructure, near +-+Mthatha, King Sabata Dalindyebo (KSD) Local Municipality.

2. PROJECT DESCRIPTION

The OR Tambo District Municipality, as bulk water supplier and Water Service Authority, has identified a need to develop and extend the existing water supply system to cater for Breaking New Ground (BNG) areas in and surrounding the town of Mthatha and also to provide a regional bulk supply to serve the surrounding towns and communities for a radius of up to 40km from central Mthatha. It is envisioned that this proposed project will greatly improve the level of water service delivery, with the aim of assuring water supply and thereby unlocking the economic growth potential of the region.

OR Tambo Municipality, together with Amatola Water as the implementing agent, appointed GIBB Engineering and Architecture to compile a Master Plan for this project. Following this, a number of Environmental Consulting Companies were employed to undertake the Environmental Authorisation processes necessary for the various parts of the proposed development. Terratest (Pty) Ltd has been

appointed to conduct the Environmental Authorisation process for the proposed new Rosedale WTW, a new pump station and associated raw water and clear water pipelines.

The greater project has been classified as a Presidential Intervention Project, therefore requiring urgent implementation. This Basic Assessment Report is for a small portion of the greater project, comprising the installation of a Water Treatment Works (WTW) and its associated raw water supply and clear water delivery infrastructure. This has been named the Rosedale Water Treatment Works (WTW) Project.

The Rosedale project is intended to be established in phases, as described below:

- Phase 1 will supply 50 Mℓ / day of drinking water and is intended to come on line in 2018. This will be sufficient to meet the anticipated demand up to 2033 (design horizon for the KSD Presidential Intervention Bulk Water Project)
- Should further growth in demand warrant it, the works can be extended up to an ultimate of 100 ML/d in one or two stages. Space has been allowed for within the footprint currently proposed to allow this extension.

The proposed Rosedale WTW Project comprises the construction of the following elements:

(i) Raw Water Abstraction and Pumping System

- Rosedale Raw Water Pumpstation No 1 (next to the existing Thornhill WTW raw water pumpstation and abstracting up to 28 ML/d from the existing Mthatha Dam outlet pipeline);
- Weir and abstraction structure (housing low-lift submersible pumps) at end of Mthatha Dam spillway chute, a small balancing tank and Rosedale Raw Water Pumpstation No 2 (initially drawing up to 28 ML/d from the spillway chute below Mthatha Dam and with provision for future upgrading to an ultimate 84 ML/d);

(ii) Raw Water Delivery System

- 2.1km x 600mm steel Rosedale No 1 Raw Water Rising Main from Pumpstation No 1 to Rosedale WTW;
- 2.0km x 600mm steel Rosedale No 2 Raw Water Rising Main from Pumpstation No 2 to Rosedale WTW (one of two options);
- 2 x 12 ML Rosedale Raw Water Balancing Tanks at Rosedale WTW;

In terms of elements (i) and (ii), the infrastructure proposed for immediate construction includes:

- **Rosedale Raw Water Pumpstation No 1**

A new pumpstation building (concrete framed, brick wall panels, concrete roof structure approx 9m x 24m) will be constructed next to an existing pumpstation that delivers water to the Thornhill WTW. The area is currently undeveloped and lies just outside the 1:00 year flood level.

- **Raw Water Rising Main No 1**

A 2km long 600mm diameter continuously-welded steel buried pipeline is proposed for delivering raw water from the above pumpstation to the WTW.

A working width corridor of about 15m wide is required to construct this pipeline. The topsoil will be stripped over this full width, and after excavation of a 1.6 m wide trench of nominal depth 2 m and laying and backfilling of the pipeline, the topsoil will be replaced and smoothed-off and the natural grass of the area re-established.

The pipeline will be laid inside a steel box-truss bridge alongside an existing steel road bridge where it has to cross over the Mthatha Dam spillway channel. This will not, in any way, impact on the chute flow or chute walls. The bridge will comprise a single-span, galvanized mild steel truss box structure, measuring 4 m high, 2 m wide and 25 m in length. This will be fixed onto reinforced concrete buttresses on either side.

Once the new weir, new abstraction works and new pump station have been constructed (during Phase 2) there will be no need to cross the Mthatha River.

Elements proposed for establishment in Phase 2:

- **Weir Abstraction and Rosedale Raw Water Pumpstation No 2**

This involves abstracting from the end of the dam spillway chute. This option will require the construction of a low concrete weir (approx 1.5m high) at or just below the end of the spillway chute. This allows the diversion of some of the water into a reinforced concrete intake structure excavated into the side of the 8m high spillway chute rock wall. The structure will house sluice gates (to isolate the inflow when required) and low-lift submersible pumps (to transfer the water to a small concrete balancing at ground level above the chute. The latter then feeds a high-lift pumpstation (of similar design to the Rosedale Raw Water Pumpstation No 1 described earlier) at the existing ground level immediately above the abstraction structure. The high-lift pumpstation would then deliver water to Rosedale WTW via a 2,0km (or shorter) 600mm diameter continuously-welded steel buried pipeline.

(iii) Rosedale WTW

- 50 ML/d Rosedale WTW (with provision for upgrading to an ultimate 100 ML/d within the footprint currently proposed). The 50Ml/d is the required bulk supply daily volume and includes all downstream reticulation losses.

This plant will initially be constructed in 2 No. x 25 Mℓ/day modules but the Works footprint will be designed to add two further 25 ML/d modules when needed in the long term future (beyond year 2033). The proposed plant will be similar in design and operation to the existing Thornhill WTW which currently supplies drinking water in the area. This is a requirement from the end-user (OR Tambo District Municipality) so that the new plant will have similar operation and maintenance requirements to the existing plant. The proposed WTW will therefore comprise the following:

- 2 No. x 12 Mℓ raw water open-topped reinforced concrete circular reservoirs
- Inlet works (inlet gate valve, flow meter, dosing chambers and a four-way splitter);
- 4 No. clari-flocculation tanks, each measuring 25m in diameter;
- 2 modules of 4 No. rapid gravity sand filters;
- A Chlorination building;
- 2 No. x 5Mℓ enclosed reinforced concrete clear water reservoirs;
- A Treated water pumpstation building (also incorporating electrical transformers and standby generators);
- Sludge dewatering equipment;
- Supernatant and spent backwash water recycle pumpstation drawing from a concrete collection sump; and
- Interconnecting pipelines.

In addition, the following related infrastructure will be installed at the WTW:

- Administration building;
- Control building;
- Guard house;
- Accommodation for operators (single quarters and units for married staff);
- Chemical store area;
- Chlorine building
- Two-lane paved access road;
- A fence around the boundary of the works;

- Highmast lighting; and
- An irrigation system

In terms of sludge management, mechanical dewatering will be employed to obtain a "spadable" consistency. This waste will then be transported to the Mthatha Municipal Landfill Site where it will be utilised as cover material. Alternatively, the possibility of creating a social-upliftment community project to convert the clay into fired clay bricks is being investigated. The sludge comprises almost pure clay, with a small fraction (less than 0,1% by weight) of polyelectrolyte which is added during the flocculation process. Polyelectrolyte is only harmful to humans and the environment in its undiluted original form. In addition, this substance is bound with the solids of the sludge and will not leach out as a contaminant at the landfill. Comment is awaited from the KSD Municipality is regarding the acceptability of this proposed disposal method.

(iv) Clear Water Delivery System

- 2 x 5 ML Rosedale Clearwater Balancing Tanks;
- 50 ML/d Rosedale Clearwater Pumpstation (pumping to Rosedale Command Reservoir and also to Soyini Reservoir);
- 1,7km x 900mm steel Rosedale Clear Water Rising main (from Rosedale Clearwater Pumpstation to Rosedale Command Reservoir);

A 1,7km long 900mm continuously-welded steel pipeline will deliver clear water from the clear water pumpstation in the Rosedale WTW complex to an existing 20 Ml command reservoir overlooking the supply area. The command reservoir and downstream distribution system has been the subject of a separate BAR.
Construction of this pipeline will require a working width and trench excavation as per that described for the raw water rising main.

Drawings of the proposed infrastructure are attached in Appendix C. A flow diagram indicating the processes occurring at the WTW is included as Figure 1 below.

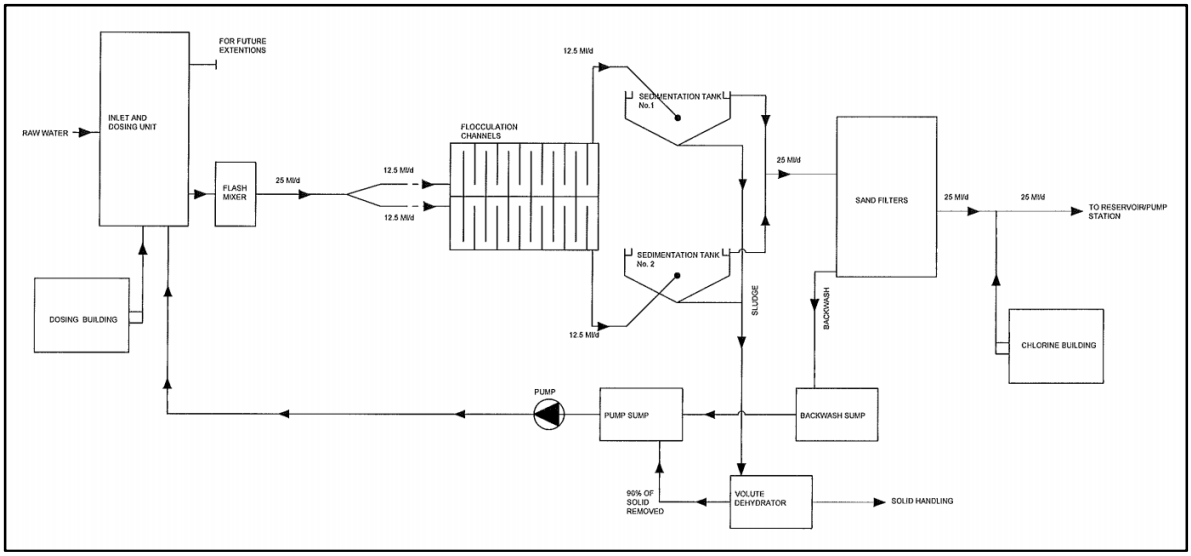

Figure 1: Flow diagram of processes occurring at the proposed WTW.

3. DESCRIPTION OF THE STUDY SITE

The project area is located to the north-west of the town of Mthatha, situated in the King Sabata Dalindyebo (KSD) Local Municipality. This municipality falls under the jurisdiction of the OR Tambo District Municipality, located within the Eastern Cape Province.

The co-ordinates of the centre of the proposed development site are 31° 32' 36.69" S and 28° 45' 12.48" E. A Topographic Map and Aerial Photo indicating the location of the study site are included as Figures 2 and 3, and are also attached in Appendix A).

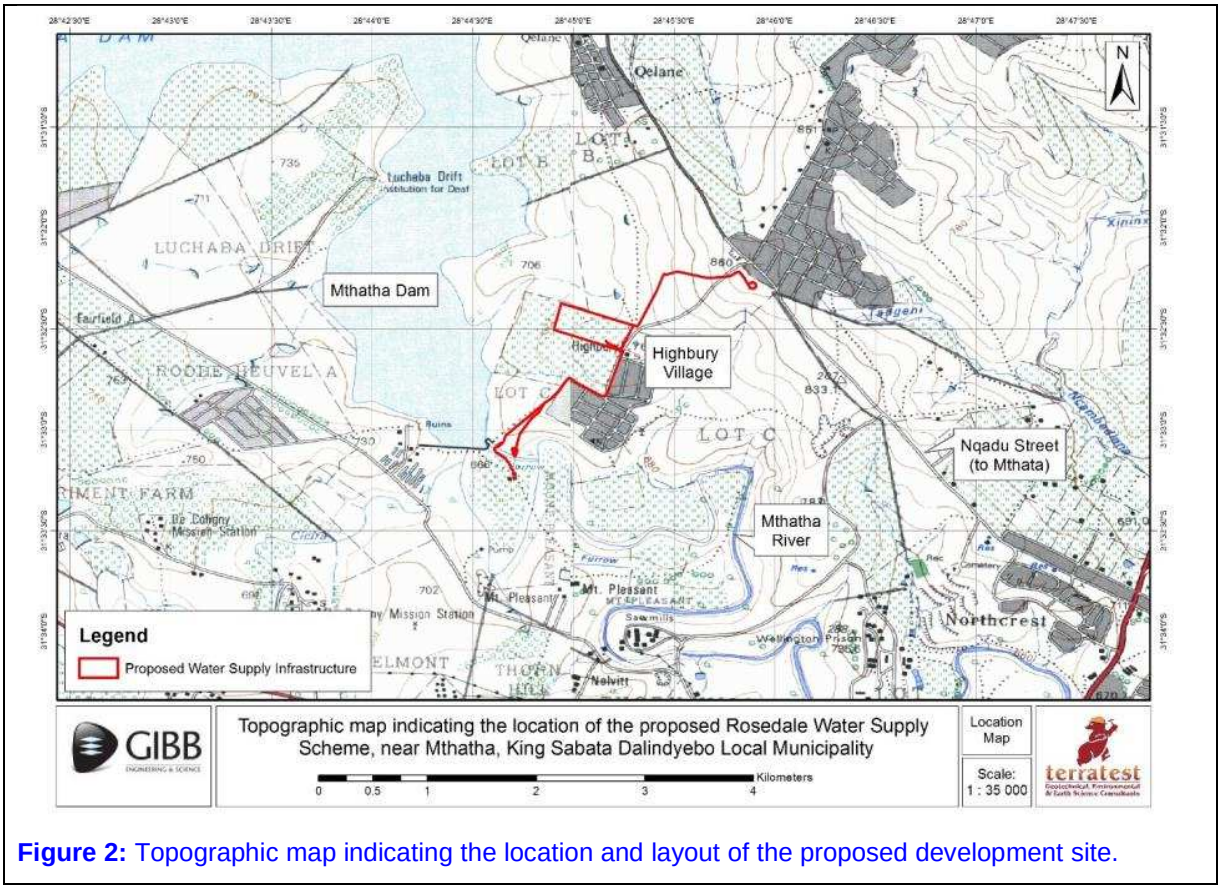

Figure 2: Topographic map indicating the location and layout of the proposed development site.

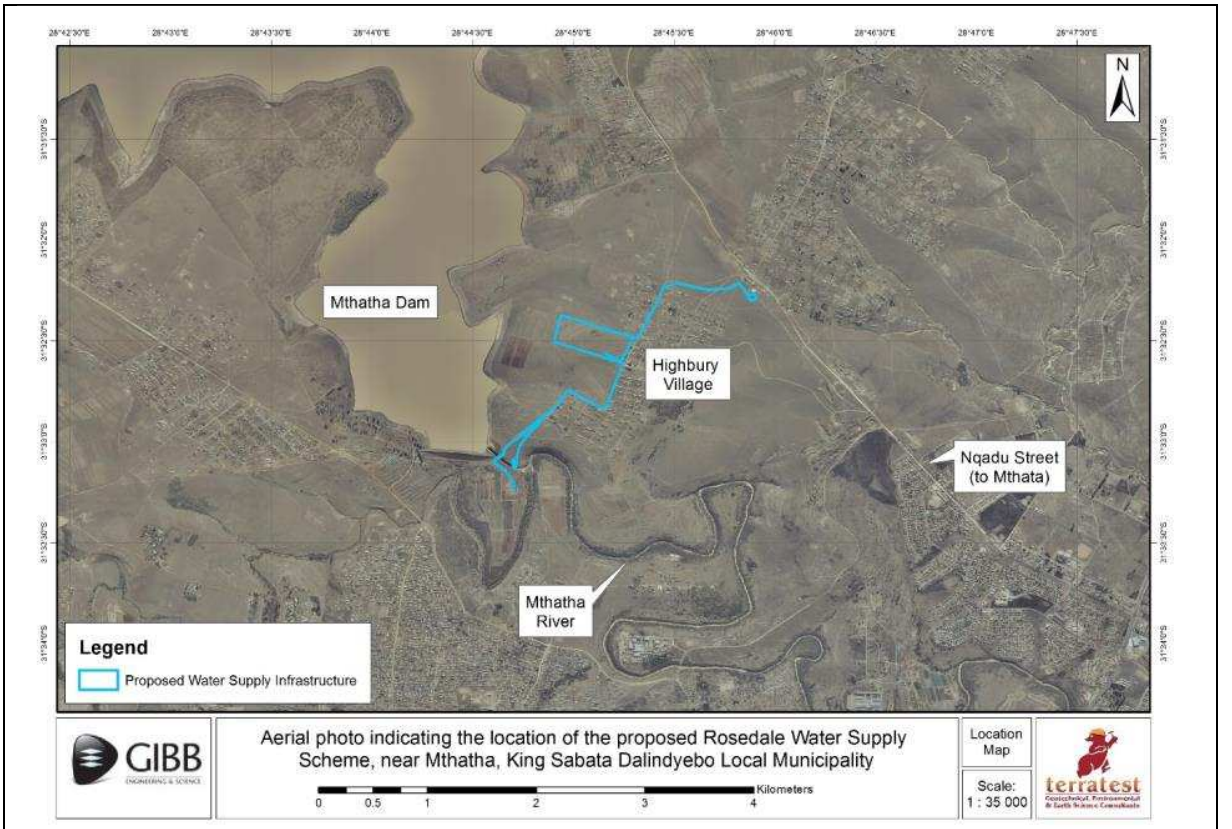

Figure 3: Aerial photo indicating the location and layout of the proposed development site.

3.1 Geology and Soils

The area is underlain by sediments of the Katberg Formation, belonging to the Tarkastad Subgroup of the greater Karoo Supergroup. This geology is characterized by an abundance of sandstone, with some mudstone. The sandstones tend to be fine to medium grained and are often interspersed with calcareous concretions and dolerite intrusions. No faults, folding or lineations are indicted on the 1:250,000 geological map for the Mthatha area.

The specialist Geotechnical Assessment of the site encountered materials which were found to be suitable for use as fill. Some of the materials tested conformed to the compatibility factors and the bedding requirements as stated in the SABS. Furthermore, a low potential expansiveness classification was measured. This all indicates that the underlying geology of the site is suitable for the intended development. No specific engineering recommendations were made by the specialist. A copy of the specialist Geotechnical Report is attached in Appendix D.

3.2 Vegetation

The vegetation of the proposed development site and its surrounds has been classified by Mucina and Rutherford (2006) as a combination of Mthatha Moist Grassland (of the Grassland Biome) and Eastern Valley Bushveld (of the Savanna Biome). The vegetation types are indicated in Figure 4 below (also attached in Appendix A).

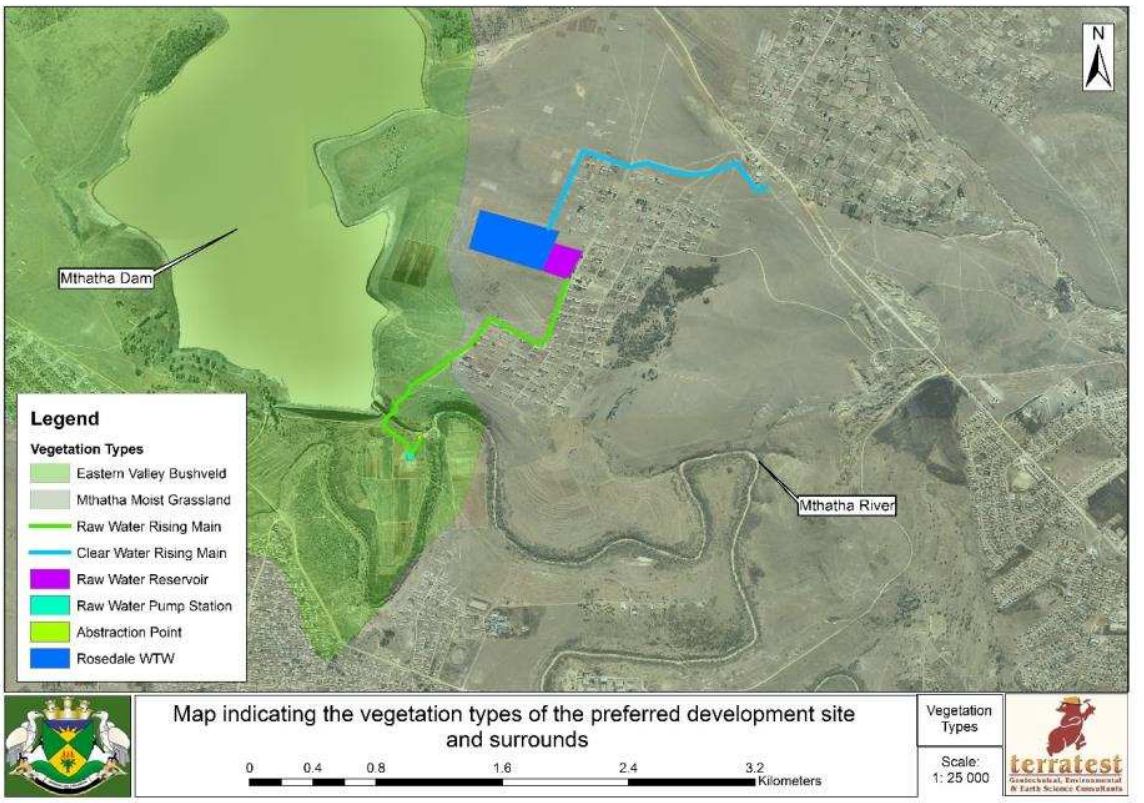

Figure 4: Map indicating the vegetation types occurring on the proposed development site.

Moist Mthatha Grassland is listed as a Threatened Ecosystem in terms of the National Biodiversity Assessment (2004) and has been listed as Vulnerable on the List of Threatened Ecosystems, published in terms of Section 52 of the National Environmental Management Biodiversity Act (Act No. 10 of 2004) (NEMBA).

In addition, much of the landscape has been mapped as a Critical Biodiversity Area (CBA) in terms of the Eastern Cape Biodiversity Conservation Plan (ECBCP), 2007, as indicated in Figure 5 (also attached

in Appendix A). This categorisation is based on the ecosystem status of the site, as derived from the SA Vegetation Map, as well as the inclusion of a portion of the site into one of the ecological corridors mapped at a provincial scale, as part of the Eastern Cape Conservation Assessment.

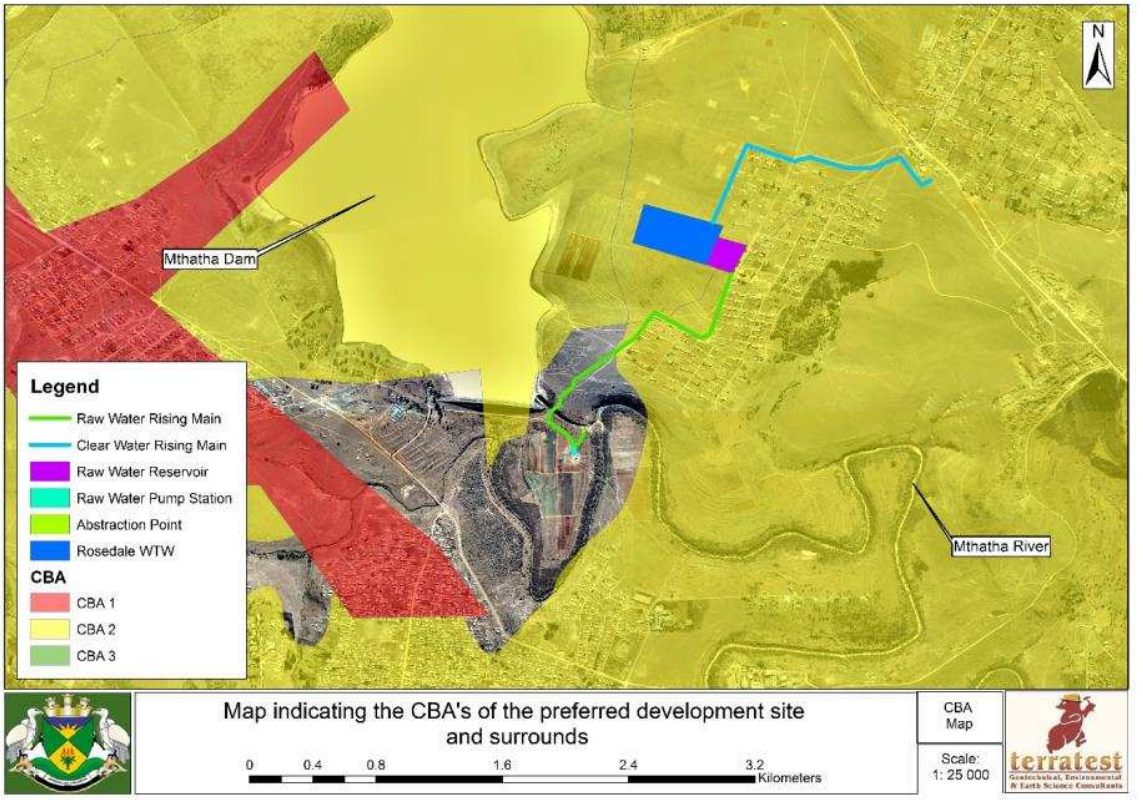

Figure 5: Map indicating the CBA categorisations of the area proposed for development.

The Vegetation Specialist noted, however that the majority of the site comprises degraded grassland in a moderate to poor ecological condition. This is indicated by the high abundance of weed species and a low level of species. This is thought to be as a result of disturbance by cultivation and livestock grazing. Three protected species were encountered along one of the alternate pipeline routes (route option 3).

These were *Gladiolus ecklonii, Gladiolus woodii* and *Xysmalobium* sp.

In terms of aquatic vegetation, the Wetland and Vegetation Specialist Reports noted that Pipeline Options 1 and 2 are routed through a seepage or wetland area (subsequently Pipeline Option 1, which is the preferred option, has been rerouted to avoid the wetland area).
Other elements sited in sensitive aquatic habitats include the abstraction infrastructure and the raw water pump station. The specialists noted however that these areas exhibit high levels of degradation as a result of cultivation and indicated that no riparian habitat would be impacted upon by the proposed development if the proposed mitigation measures are implemented. A copy of the specialist Vegetation and Wetland Assessment Reports are attached in Appendix D.

3.3 Hydrology

A specialist wetland assessment was undertaken for the proposed development site. This assessment identified a seepage wetland area with associated aquatic vegetation. This system was found to be in a largely natural state and is therefore accorded moderate ecological importance and sensitivity.

Anticipated impacts on this system include loss of aquatic vegetation and associated habitat, altered hydrological regime, increased sedimentation and erosion, with possible impacts on water quality and pollution. The specialist recommended a number of mitigations which would reduce the significance of these impacts to negligible or low. These mitigation measures predominantly involve minimizing the footprint of construction activities, rehabilitation and pollutant management.

A copy of the specialist Wetland Assessment Report is attached in Appendix D.

3.4 Heritage

Analysis of the archaeological, cultural heritage, environmental and historic contexts of the study area predicted that archaeological sites (Stone Age and Historic Archaeological), cultural heritage sites, burial grounds or isolated artefacts were likely to be present in the affected landscape. A specialist was

appointed to verify this prediction.

The specialist found that the proposed development will occur exclusively on land which has been previously disturbed and developed therefore having intangible impacts to the sense of a place within the project's receiving environment. The project area was noted, however to be active with multiple contemporary uses. The most common contemporary class of cultural resources are several grave and burial sites associated with homesteads situated along the proposed pipeline servitude.

Overall, the specialist found that the potential heritage impacts associated with the development are of low significance, being limited to potential impacts on the above-mentioned grave sites which are located within the fences of homesteads along the proposed pipeline route. Low impact significance is attributed as it is unlikely that any of these burial sites will be affected upon by construction activities, provided the recommended mitigations are implemented. A map indicating the location of these graves in relation to the preferred layout is indicated in Figure 6 and attached in Appendix A.

A copy of the specialist Heritage Impact Assessment Report is attached in Appendix D.

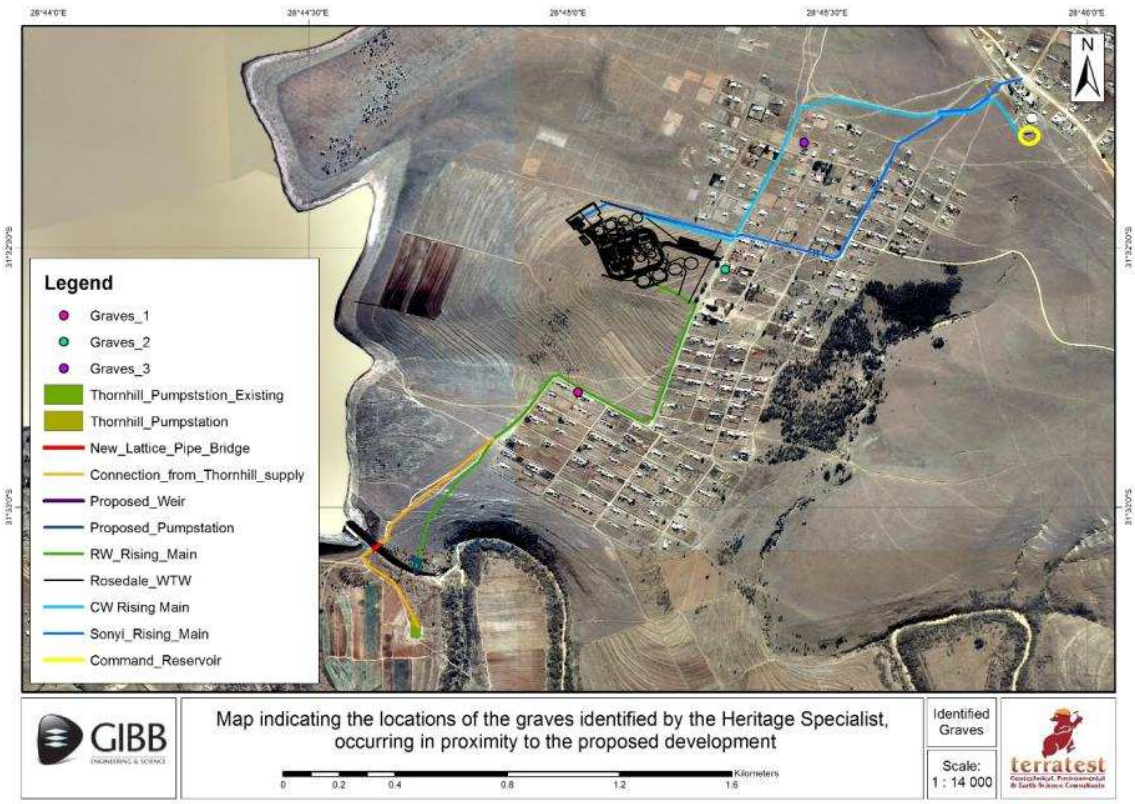

Figure 6: Map indicating the location of the grave sites identified by the specialist in close proximity to the proposed infrastructure.

3.5 Socio Economic Information

The information contained in this section was sourced from the KSD Local Municipality's Integrated Development Plan (2013 - 2014).

3.5.1 Population Information

The KSD Local Municipality has an estimated population of 451 710 people, living in approximately

105 240 households. This translates to an average of 4 people per household.

Approximately 95% of these households are located in rural areas and village settlements. KSD is therefore classified as a rural municipality. Table 1 below provides a breakdown of the population according to race.

Table 1: Population distribution within KSD Local Municipality

	Black	Coloured	Indian/Asian	White	Other	TOTAL
Number	444 770	3 403	1 480	1 356	702	451 710
% of Population	98.4%	0.75%	0.33%	0.3%	0.16%	100%

Source: Stats SA Community Survey 2011

Between 2001 and 2011, the KSD Municipality experienced a net population increase from 416 347 to 451 710, an increase of 7.8%. This is attributed to the presence of Mthatha Town which is a regional service centre, as well as the N2 Freeway which is a major transport route acting as a gateway to a wide range of tourism offerings such as Coffee Bay and Hole in the Wall. The Municipality is also an economic home to two of the largest economic activities in the district, namely forestry and agriculture.

KSD has a very youthful population, with 74% of the population aged between 0 and 35 years of age. This means that the majority of the population are of a school-going age and that dependency levels in the municipality are high. The Municipality has, as a result, prioritised youth and skills development programmes.

3.5.2 Economic Profile

The KSD Municipality is the largest contributor to the O.R. Tambo District Municipality economy. In 2007, the KSD workforce (made up of people aged between 15 and 64 years) was made up of approximately 229 668 people, or 53% of the total population. Of these, 28% (66 158) were employed, whilst only 15% (35 944) fell within the category of "unemployed". The remainder, 57% were classified as "not

economically active".

Varied topographical and climatic conditions in KSD Municipality contribute to diverse agricultural activities including wool, beef and dairy, maize, vegetables, deciduous and tropical fruits, forestry and fishing. The Municipality is also a popular tourism destination. There are, therefore, a number of key contributors to the local economy, including agriculture, forestry, fishing, tourism, construction and property development. Contribution to the local economy by the various commercial sectors is summarised in Table 1 below.

Table 2: Broad Economic Sector Share of Employment (2008)

ECONOMIC SECTOR	PERCENTAGE CONTRIBUTION
Agriculture, Forestry and Fishing	0.8%
Mining	0.3%
Manufacturing	2.1%
Electricity and Water	0.2%
Construction	2.9%
Wholesale and Retail Trade, Catering and Accommodation	7.9%
Transport and Communication	1.5%
Finance and Business Services	9.4%
Community, Social and Other Personal Services	26.8%
Other Government and Social Services	9.4%

Although some measure of warehousing is taking place in KSD urban areas this sector has shown limited growth. Economic decline has been experienced in both the manufacturing and industrial sector, which are generally weak and lack both small and large scale operations which can provide backward and forward economic linkages with other sectors. Poor industrial sectors limit any chances of value adding activities taking place in the area. it is believed that this poor performance can be attributed to poor and unreliable service provision as well as backlogs in appropriate physical bulk infrastructure necessary for investment. In order to address these challenges, it has been proposed that aggressive upgrading of infrastructure be undertaken within the municipal area.

3.5.3 Water Service Delivery and Infrastructure

In terms of Water Services Provisioning, the OR Tambo District Municipality is responsible as both Water Services Authority and Water Service Provider which includes:

- Daily operations of water works inclusive of the daily monitoring and management of plant performance and compliance with the required quality and performance management systems;
- Maintenance of urban and rural infrastructure; and
- Operations, maintenance, upgrade and expansion planning.

Water service backlogs were assessed in 2010/2011. It was discovered that 47.4% of houses within the KSD Municipality do not have access to water. It is believed that this is as a result of:

- Neglect of the area during the Apartheid era;
- Topography in the area which makes it expansive for some areas to be serviced;
- Old infrastructure and a lack of refurbishment resulting in infrastructure being operated beyond its design lifetime;
- Demand exceeding the infrastructure capacity, mainly as a result of rapid and unplanned growth;
- Lack of energy supply which has an effect on the capacity of the infrastructure provided and limits the type of infrastructure which can be provided;
- A shortage of skilled personnel and an inability to attract skilled people to the area due to financial constraints;
- Poor maintenance of existing infrastructure due to low revenue generation; and
- A lack of funds for infrastructure investment planning.

The Bulk Water Infrastructure Presidential Intervention Project, of which this application forms part, is aimed at reducing water service delivery backlogs.

4. WATER SUPPLY

The Mthatha Dam has been measured to have a 1:50 year yield of 145.5 million m^3 of water per year. At present, the dam supplies the Thornhill WTW which provides water for domestic and industrial use to the town of Mthatha. The dam also supplies Eskom for hydropower generation purposes at the First Falls and Second Falls Hydro Power Generation Stations, located along the Mthatha River.

The existing allocations require amendment in order to accommodate the requirements of the proposed Rosedale WTW as well as the expansions proposed for the Thornhill WTW. The table below presents aspirational allocations however these have yet to be approved through the Water Use Licenses process.

Table 3: Proposed use of water from the Mthatha Dam

MTHATHA DAM	ANNUAL DEMAND (Million M^3 / Year)	AVERAGE DAILY DEMAND (Ml/Day)	% ALLOCATION
PRESENT SCENARIO			
Existing Thornhill WTW	21.9	60.0	15.1
Remaining	123.6	338.6	84.9
TOTAL (assured yield)	**145.5**	**398.6**	**100.0**
FUTURE SCENARIOS			
Existing Thornhill WTW	21.9	60.0	15.1
Upgraded Thornhill WTW (currently under construction)	7.4	20.0	5.0
Upgraded Thornhill (future – approx 2019)	12.8	35.0	8.8
Rosedale WTW (phase 1) (future – 2018)	18.2	50.0	12.5
Rosedale WTW (future phases beyond 2033)	18.2	50.0	12.5
Remaining	67.0	183.6	46.1
TOTAL (assured yield)	**145.5**	**398.6**	**100.0**

The existing Thornhill WTW use (registered use) has been licensed by the DWS. Eskom's use for the

hydropower plants is an allocation. An amendment to this license has been applied for to include the expanded Thornhill WTW and the proposed Rosedale WTW. The processing of the licence amendment is currently underway.

It is anticipated that, in the future (beyond 2033), in order to accommodate the proposed expansions of the regional bulk water supply scheme, the volume of water allocated for hydropower may need to be reduced. This will necessitate negotiations with Eskom and further amendments to the above-mentioned Water Use License.

5. LEGISLATIVE REQUIREMENTS

5.1 EIA Regulations, 2010

The Listed Activities as contained in the Environmental Impact Assessment (EIA) Regulations of 2010 which are triggered by the proposed development, are detailed in Table 4.

Table 4: Listed Activities (2010) triggered by the proposed Rosedale Project

Notice	Activity No	Listed activity as per project description:
GN. R544 18 June 2010	9(i)&(ii)	*The construction of facilities or infrastructure exceeding 1000 meters in length for the bulk transportation of water…* *(i) With an internal diameter of 0.36 meters or more; or* *(ii) With a peak throughput of 120 liters per second or more,* *Excluding where:* *a. Such facilities or infrastructure are for bulk transportation of water…inside a road reserve; or* *b. Where such construction will occur within urban areas but further than 32 meters from a watercourse, measured from the edge of the watercourse.* The proposed development includes the construction of pipelines between the pump station at the abstraction point, the treatment works and the command reservoir. These pipelines will be approximately 3 600 m in length and will have an internal diameter

		of 0.6m and 0,9m respectively. The peak throughput of the pipelines (assuming 100 Mℓ/day abstraction by pumps operating for 20 hours/day) is 1,4 m^3/s. The proposed pipeline is not routed exclusively within road reserve areas, nor does it fall entirely within an urban area.
GN. R544 18 June 2010	11(xi)	*The construction of:* *(xi) infrastructure or structures covering 50 square meters or more* *Where such construction occurs within a watercourse or within 32 meters of a watercourse, measured from the edge of the watercourse, excluding where such development will occur behind the development setback line.* The proposed development requires the construction of a new weir, pipe bridge, pump station and associated pipeline in close proximity to the abstraction works, i.e. within or in 32 m of the Mthatha River. This infrastructure will have a development footprint in excess of 50 m^2. In addition, a section of the clear water rising main will run within 32 m of a wetland, which is included in the definition of a watercourse.
GN. R544 18 June 2010	18(i)	*The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic meters from:* *(i) A watercourse;* *But excluding where such infilling, depositing, dredging, excavation, removal or moving:* *(a) Is for maintenance purposes undertaken in accordance with a management plan agreed to by the competent authority; or* *(b) Occurs behind the development setback line.* The proposed development will require the establishment of a new weir within the Mthatha Dam spillway, as well as a pipe bridge high over the concrete-lined spillway chute (the bridge crosses at an elevation significantly higher than the maximum possible flood

		level). The weir will require excavation activities to be undertaken within the 'watercourse', but that watercourse is a concrete-lined chute excavated in solid rock. . Wetland areas are included in the definition of watercourse. As the preferred route of the clear water rising main pipeline avoids the identified wetland area, this portion of the development does not trigger this Listed Activity.
GN. R544 18 June 2010	37(a)	*The expansion of facilities or infrastructure for the bulk transportation of water…where:* *(a) The facility or infrastructure is expanded by more than 1000 meters in length…* *Excluding where such expansion:* *(i) Relates to transportation of water…within a road reserve, or* *(ii) Where such expansion will occur within urban areas but further than 32 meters from a watercourse, measured from the edge of the watercourse.* The proposed development constitutes the expansion of the existing Thornhill Bulk Water Supply Scheme, by approximately 3 600 m in length. The proposed pipeline is not routed exclusively within road reserve areas, nor does it fall entirely within an urban area.
GN. R544 18 June 2010	39(iv)	*The expansion of:* *(iv) Weirs* *Within a watercourse or within 32 meters of a watercourse, measured from the edge of the watercourse, where such expansion will result in an increased development footprint, but excluding where such development will occur behind the development setback line.* The proposed development will require the expansion of abstraction infrastructure, including a weir, located within a watercourse, namely the Mthatha Dam concrete-lined spillway chute.
GN. R546	2(a)(iii)(dd) & (ff)	*The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic meters*

18 June 2010		*(a) In Eastern Cape…* *(iii) Outside urban areas, in:* *(dd) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(ff) Areas within…5 kilometers from any other protected area identified in terms of NEMPAA…* The proposed development will include the construction of 2 No. raw water reservoirs of capacity of 12 Mℓ (2 x 12 000 m^3 each) and 2 No. clear water reservoirs each of 5 Ml capacity (2 x 5 000 m^3). Both of these reservoirs will be constructed in areas which: (dd) are listed as critical biodiversity areas (CBA 1 & 2) in the Eastern Cape Biodiversity Conservation Plan (2007) which is a systematic biodiversity plan adopted by the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) the Competent Authority for the area; and (ff) are within 5 km of a protected area identified in terms of the National Environmental Management Protected Areas Act (Act No. 57 of 2003) (NEMPAA), namely the Nduli Nature Reserve.
GN. R546 18 June 2010	4(a)(ii)(ee) & (gg)	*The construction of a road wider than 4 meters with a reserve less than 13.5 meters* *(a) In Eastern Cape…* *(ii) Outside urban areas, in:* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(gg) Areas within…5 kilometers from any other protected area identified in terms of NEMPAA…* The proposed development will include the establishment of a two-lane access road, which will be wider than 4 m in width. This road will be constructed: (ee) in an area listed as critical biodiversity areas (CBA 1 & 2) in the Eastern Cape Biodiversity Conservation Plan which is a systematic biodiversity plan adopted by the Eastern Cape

		Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) the Competent Authority for the area; and (gg) in an area located within 5 km of a protected area identified in terms of the National Environmental Management Protected Areas Act (Act No. 57 of 2003) (NEMPAA), namely the Nduli Nature Reserve.
GN. R546 18 June 2010	13(a) and (c)(ii)(ff)	*The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal is required for:* *(1) The undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008), in which case the activity is regarded to be excluded from this list* *(2) The undertaking of a linear activity falling below the thresholds mentioned in Listing Notice 1 in terms of GN No 544 of 2010.* *(a) Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority;* *(c) In Eastern Cape…* *(ii) Outside urban areas, the following:* *(ff) Areas within…5 kilometers from any other protected area identified in terms of NEMPAA…* The proposed development will require the clearance of indigenous vegetation in excess of 1 ha in an area (a) Designated as a Critical Biodiversity area (CBA 1 & 2) in the Eastern Cape Biodiversity Conservation Plan which is a systematic biodiversity plan adopted by the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) the Competent Authority for the area; and (c)(ii)(ff) located within 5 km of a protected area identified in terms of the National Environmental Management Protected Areas Act (Act No. 57 of 2003) (NEMPAA), namely the Nduli Nature Reserve.
GN. R546	16(iv)(a)(ii)(ff)	*The construction of:*

18 June 2010	& (hh)	*(iv) Infrastructure covering 10 square meters or more* *Where such construction occurs within a watercourse or within 32 meters of a watercourse, measured from the edge of the watercourse…* *(a) In Eastern Cape…* *(ii) Outside urban areas, in:* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity conservation plans adopted by the competent authority or in bioregional plans* *(hh) Areas within…5 kilometers of any other protected area identified in terms of NEMPAA…* The proposed development will include the construction of a infrastructure measuring in excess of 10 m^2 in a watercourse (Mthatha River) as well as a section of clear water rising main pipeline within 32 m of a watercourse, within an area (ff) Designated as a Critical Biodiversity area (CBA 1 & 2) in the Eastern Cape Biodiversity Conservation Plan which is a systematic biodiversity plan adopted by the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) the Competent Authority for the area; and (hh) located within 5 km of a protected area identified in terms of the National Environmental Management Protected Areas Act (Act No. 57 of 2003) (NEMPAA), namely the Nduli Nature Reserve.
According to the South African National Biodiversity Institute, the Eastern Cape Biodiversity Conservation Plan, 2007 (ECBCP); as well as the National Biodiversity Assessment, 2011(NBA), and Mucina & Rutherford, 2006, the study area in which the proposed development is to be located, occurs within Aquatic Critical Biodiverse Areas 1 and 2 (ECBCP) due to the Mthatha Dam and respective water courses/drainage lines. Historic and remaining Terrestrial Threatened Critical Biodiverse Areas occur across the study area with ecosystems classified as Vulnerable. According to Mucina & Rutherford (2006) the Mthatha Moist Grassland is distributed within this area and is classified as Endangered (ECBCP), however it has been re-evaluated to Vulnerable in terms of section 52(1)(a) of the National Environmental Management: Biodiversity Act 2004 (Act No. 10 of 2004) – Government Notice 1002 of 9 December 2011 : "a national list of ecosystems that are threatened and in need of protection".		

It must be noted that the Wetland and Vegetation Specialist Assessments found that the areas were significantly degraded and do not therefore reflect the predicted CBA 1 & 2 levels of ecosystem health and value.

5.2 EIA Regulations, 2014

Since the submission of the Application Form for this project, the 2010 EIA Regulations have been repealed and replaced with the 2014 EIA Regulations. In line with the requirements of Regulation 53(3) of GN R982 of 2014, an assessment of the Listed Activities triggered in terms of the 2014 Regulations was made. Table 5 summarises the activities listed in terms of the EIA Regulations, 2014, which are triggered by the proposed development.

Table 5: Listed Activities (2014) triggered by the proposed Rosedale Project

Notice	Activity No	Listed activity as per project description:
GN. R983 4 December 2014	9(i)	*The development of infrastructure exceeding 1 000 meters in length for the bulk transportation of water…-* *(i) With an internal diameter of 0.36 meters or more; or* *(ii) With a peak throughput of 120 liters per second or more;* *Excluding where –* *(a) Such infrastructure is for bulk transportation of water…inside a road reserve; or* *(b) Where such development will occur within an urban area.* The proposed development includes the construction of pipelines for the transport of water between the pump station at the abstraction point, the treatment works and the command reservoir. These pipelines will be approximately 3 600 m in length and will have internal diameters of 0.6 m and 0.9m respectively. The peak throughput of the pipelines (assuming 100 Mℓ/day abstraction by pumps operating for 20 hours/day) is 1,4 m^3/s. The proposed pipeline is not routed exclusively within road reserve areas, nor does it fall entirely within an urban area.

GN. R983 4 December 2014	12(xii)	*The development of –* *(xii) infrastructure or structures with a physical footprint of 100 square meters or more* *Where such development occurs –* *(a) Within a watercourse;* *(c) If no development setback line exists, within 32 meters of a watercourse, measured from the edge of the watercourse,* *Excluding –* *(dd) where such development occurs within an urban area;* *(ee) where such development occurs within existing roads or road reserves.* The proposed development requires the construction of a new weir, pipe bridge, pump station and associated pipeline in close proximity to the abstraction works. The preferred location for this pump station and pipeline is within 32 m of a watercourse. The pump station and pipeline will have a development footprint in excess of 100 m^2.
GN. R983 4 December 2014	19	*The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic meters from –* *(i) A watercourse* *But excluding where such infilling, depositing, dredging, excavation, removal or moving –* *(a) Will occur behind a development setback;* *(b) Is for maintenance purposes undertaken in accordance with a maintenance management plan; or* *(c) Falls within the ambit of activity 21 in this Notice, in which case that activity applies.* The proposed development will require the establishment of a new weir within the Mthatha River, as well as a pipe bridge over the river, which may require the establishment of a supporting plinth within the watercourse. Both of these activities will require excavation activities to be undertaken within the watercourse.

		Wetland areas are included in the definition of watercourse. As the preferred route of the clear water rising main pipeline avoids the identified wetland area, this portion of the development does not trigger this Listed Activity.
GN. R983 4 December 2014	27	*The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for –* *(i) The undertaking of a linear activity; or* *(ii) Maintenance purposes undertaken in accordance with a maintenance management plan.* The proposed development will require the clearance of indigenous vegetation in excess of 1 ha in an area but less than 20 ha. Although elements of the proposed development are linear in nature, other elements are not. The exclusion in part (a) is therefore not applicable in this case.
GN. R983 4 December 2014	45	*The expansion of infrastructure for the bulk transport of water…where the existing infrastructure –* *(i) has an internal diameter of 0.36 meters or more; or* *(ii) Has a peak throughput of 120 litres per second or more; and* *(a) Where the facility or infrastructure is expanded by more than 1 000 meters in length; or* *(b) Where the throughput capacity of the facility or infrastructure will be increased by 10% or more;* *Excluding where such expansion –* *(aa) relates to transportation of water…within a road reserve; or* *(bb) will occur within an urban area.* The proposed development constitutes the expansion of the existing Thornhill Bulk Water Supply Scheme, by approximately 3 600 m in length. The proposed pipeline is not routed exclusively within road reserve areas, nor does it fall entirely within an urban area.
GN. R985 4 December	2(b)(iii)(dd) & (ff)	*The development of reservoirs for bulk water supply with a capacity of more than 250 cubic meters* *(b) In Eastern Cape*

2014		*(iii) Outside urban areas in:* *(dd) Critical biodiversity areas as identified in systematic biodiversity conservation plans adopted by the competent authority or in bioregional plans;* *(ff) Areas within…5 kilometers from any other protected area identified in terms of NEMPAA…* The proposed development will include the construction of 2 No. raw water reservoirs of capacity of 12 Mℓ (2 x 12 000 m^3 each) and 2 No. clear water reservoirs each of 5 Ml capacity (2 x 5 000 m^3). Both of these reservoirs will be constructed in areas which: (dd) are listed as critical biodiversity areas (CBA 1 & 2) in the Eastern Cape Biodiversity Conservation Plan (2007) which is a systematic biodiversity plan adopted by the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) the Competent Authority for the area; and (ff) are within 5 km of a protected area identified in terms of the National Environmental Management Protected Areas Act (Act No. 57 of 2003) (NEMPAA), namely the Nduli Nature Reserve.
GN. R985 4 December 2014	4(b)(ii)(ee) & (gg)	*The development of a road wider than 4 meters with a reserve less than 13.5 meters* *(b) In Eastern Cape* *(ii) Outside urban areas, in:* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(gg) Areas within…5 kilometers of any other protected area identified in terms of NEMPAA…* The proposed development will include the establishment of a two-lane access road, which will be wider than 4 m in width. This road will be constructed: (ee) in an area listed as critical biodiversity areas (CBA 1 & 2) in the Eastern Cape Biodiversity Conservation Plan (2007) which is a systematic biodiversity plan adopted by the Eastern Cape Department of Economic Development,

		Environmental Affairs and Tourism (DEDEAT) the Competent Authority for the area; and (gg) in an area located within 5 km of a protected area identified in terms of the National Environmental Management Protected Areas Act (Act No. 57 of 2003) (NEMPAA), namely the Nduli Nature Reserve.
GN. R985 4 December 2014	14(xii)(c)(ii)(ff) & (hh)	*The development of –* *(xii) infrastructure or structures with a physical footprint of 10 square meters or more,* *(c) In Eastern Cape* *(ii) Outside urban areas, in:* *(ff) Critical biodiversity areas or ecosystem service areas identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(hh) Areas within…5 kilometers from any other protected area identified in terms of NEMPAA…* The proposed development will include the construction of a infrastructure measuring in excess of 10 m^2 in a watercourse (Mthatha Dam Spillway chute) as well as a section of clear water rising main pipeline within 32 m of a watercourse, within an area (ff) Designated as a Critical Biodiversity area (CBA 1 & 2) in the Eastern Cape Biodiversity Conservation Plan which is a systematic biodiversity plan adopted by the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) the Competent Authority for the area; and (hh) located within 5 km of a protected area identified in terms of the National Environmental Management Protected Areas Act (Act No. 57 of 2003) (NEMPAA), namely the Nduli Nature Reserve.

5.3 Comparison of Previous and Current EIA Regulations

A comparison of the 2010 and 2014 Listed Activities triggered by the proposed development is presented

in Table 6.

Table 6: Comparison of 2010 and 2014 Listed Activities triggered by the proposed Rosedale Project

2010 Regulation	Similarly Listed in 2014 Regulations?	Implications of Regulation 53(3) in GN R982 of 2014
GN R544 Activity 9	**YES** - GN R983 Activity 9	Still triggered
GN R544 Activity 11	**YES** - GN R983 Activity 12	Still triggered
GN R544 Activity 18	**YES** - GN R983 Activity 19	Still triggered
GN R544 Activity 37	**YES** - GN R983 Activity 45	Still triggered
GN R544 Activity 39	**YES** - GN R983 Activities 48 and 49	No longer exceeds threshold – no longer triggered
GN R546 Activity 2	**YES** - GN R985 Activity 2	Still triggered
GN R546 Activity 4	**YES** - GN R985 Activity 4	Still triggered
GN R546 Activity 13	**YES** - GN R983 Activity 27	Still triggered
GN R546 Activity 16	**YES** - GN R985 Activity 14	Still triggered

Based on this assessment, no additional activities, which were not triggered in terms of the 2010 Regulations, are triggered in terms of the 2014 regulations.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

Three alternate sites have been considered for the siting of the WTW. These options are indicated below as well as in Appendix A.

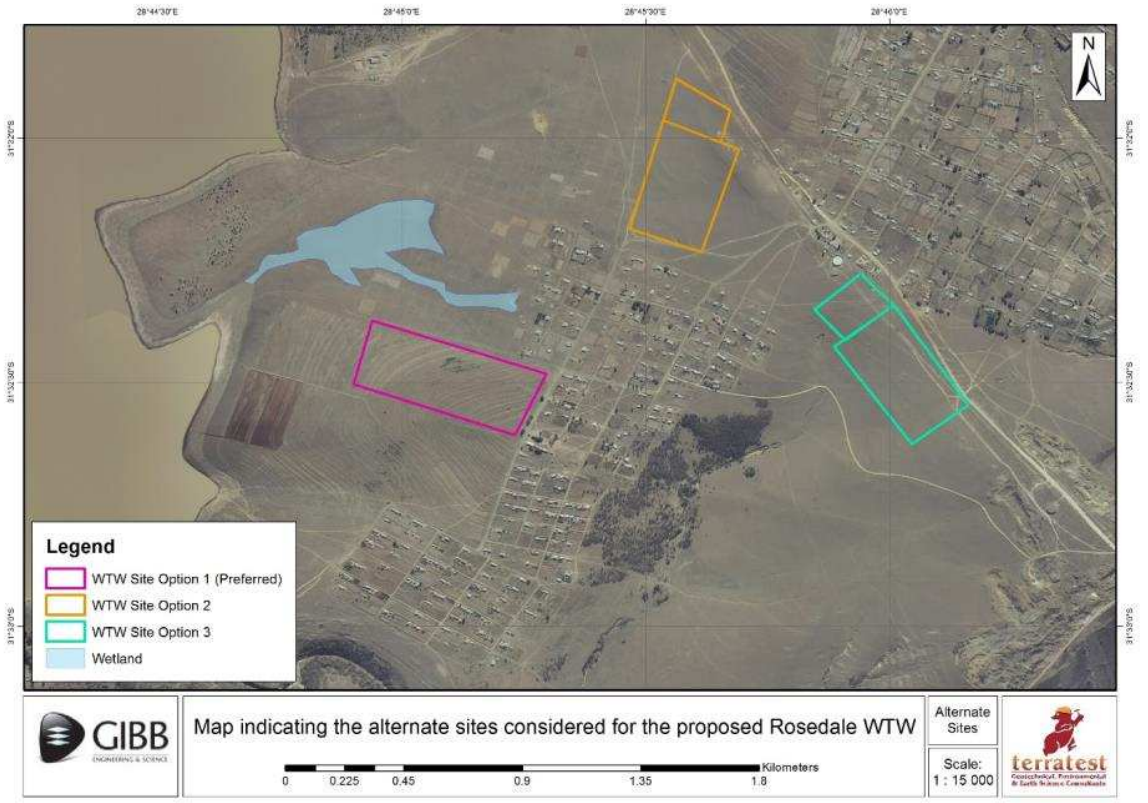

Figure 7: Map indicating the three alternate sites under consideration for the proposed WTW.

Site Option 1 is being pursued as the preferred site as, following extensive consultations with the leadership of the area, Site Options 2 and 3 were determined to be not viable. This is because these sites have been earmarked for future housing development. The leadership of the local community indicated that the establishment of the WTW on Site Option 1 was acceptable.

(b) the type of activity to be undertaken;

The preferred activity comprises the construction of the Rosedale WTW, which will have a total treatment capacity of 100 Mℓ on completion, together with associated infrastructure, comprising a pumps station, raw water rising main pipeline, raw water reservoir and clear water rising main.

No alternate activity types have been identified or investigated for the project. A need has been identified within the KSD Local Municipality to expand and improve bulk water service provision, particularly to the peri-urban areas which currently make use of other, unreliable, sources of water. Predictions of the 2033 population, as calculated in the Master Plan Report (2013) indicate that the proposed Rosedale WTW will ultimately supply potable water to approximately 8 800 households, equating to a population of approximately 70 000 people.

The preferred activity represents the most economically feasible and reasonable method of meeting this need. Should an alternate development type or activity be pursued instead, the need for bulk water supply in the KSD Municipality would not be met.

(c) the ~~design or~~ layout of the activity;

1. Layout Option 1

Layout Option 1 for the proposed Rosedale WTW comprises 2 iterations, namely Option 1a (initial layout) and 1b (preferred layout). These layouts are indicated in Figures 8 and 9 below (also attached in Appendix A).

The co-ordinates of the various components of the development in Layout Option 1a and 1b are summarised in Appendix G.

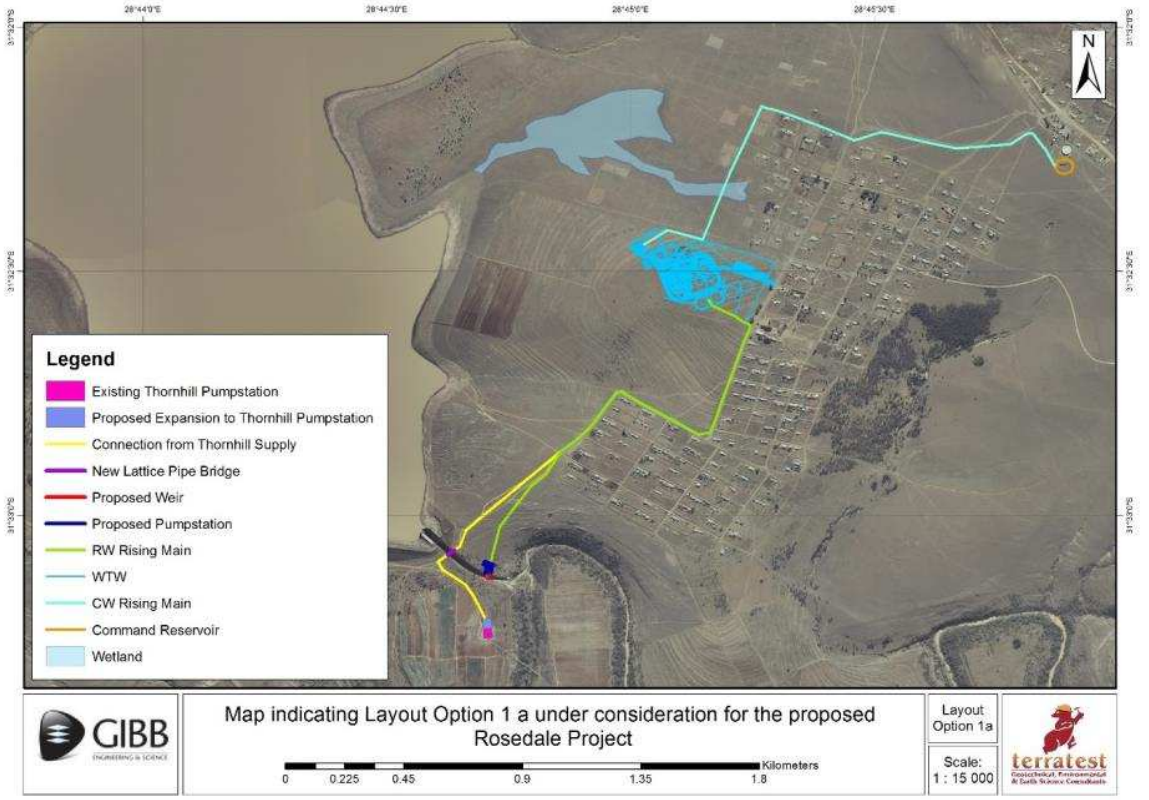

Figure 8: Map indicating the Layout Option 1a for the proposed Rosedale WTW and associated infrastructure.

Figure 9: Map indicating Layout Option 1b for the proposed Rosedale WTW and associated infrastructure.

Layout Option 1a was initially selected by the Project Engineers as the preferred layout for development, for the following reasons:

- The area proposed for the establishment of the WTW and raw water reservoir is relatively flat as compared to the surrounding landscape, minimising the need for cut and fill during construction, with the resultant minimization of construction costs and environmental impacts.
- The site of the WTW is acceptable to the leadership of the local community as it has not been identified for future housing development.

- The pumping of dirt-laden raw water is minimised.
- The natural slopes which the pipelines will have to overcome are far less than those associated with Layout Options 2 and 3, meaning that costs and overall head loss through the works (wasted energy), is minimised.

An assessment of layout Option 1a by the Wetland Specialist, however, revealed that a section of the Clear Water Rising Main Pipeline runs through a wetland area. Based on this information, the Project Engineers amended the route of this pipeline to avoid the wetland area. This resulted in the development of Layout Option 1b, which is being pursued as the preferred layout for development. The only difference between options 1a and 1b is that 1b avoids the wetland area.

2. Layout Option 2

Layout Option 2 for the proposed Rosedale WTW and associated infrastructure is indicated in Figure 10 (also attached in Appendix A).

Figure 10: Map indicating Layout Option 2 for the Rosedale WTW and associated infrastructure.

The reasons this alternate layout is not being pursued as the preferred layout are:

- The sites proposed for the establishment of the raw water reservoir and WTW are on fairly steep slopes and would therefore require fairly extensive cut and fill during the construction phase. This would have significant implications for the cost of construction as well as erosion, sedimentation and water quality impacts;
- The raw water reservoir is located a greater distance from the pumpstation (over twice the distance compared to that in the preferred layout). This would necessitate the installation of a larger and stronger pump at the raw water pumpstation, with associated cost implications;

- The location of the WTW would limit planned, future housing developments.
- The natural slopes which the pipelines will have to overcome are much steeper that those associated with Layout Option 1, meaning that costs and overall head loss through the works (wasted energy), is much higher for this option as compared to Option 1.

3. Layout Option 3

Layout Option 3 for the proposed Rosedale WTW and associated infrastructure is indicated in Figure 11 (also attached in Appendix A).

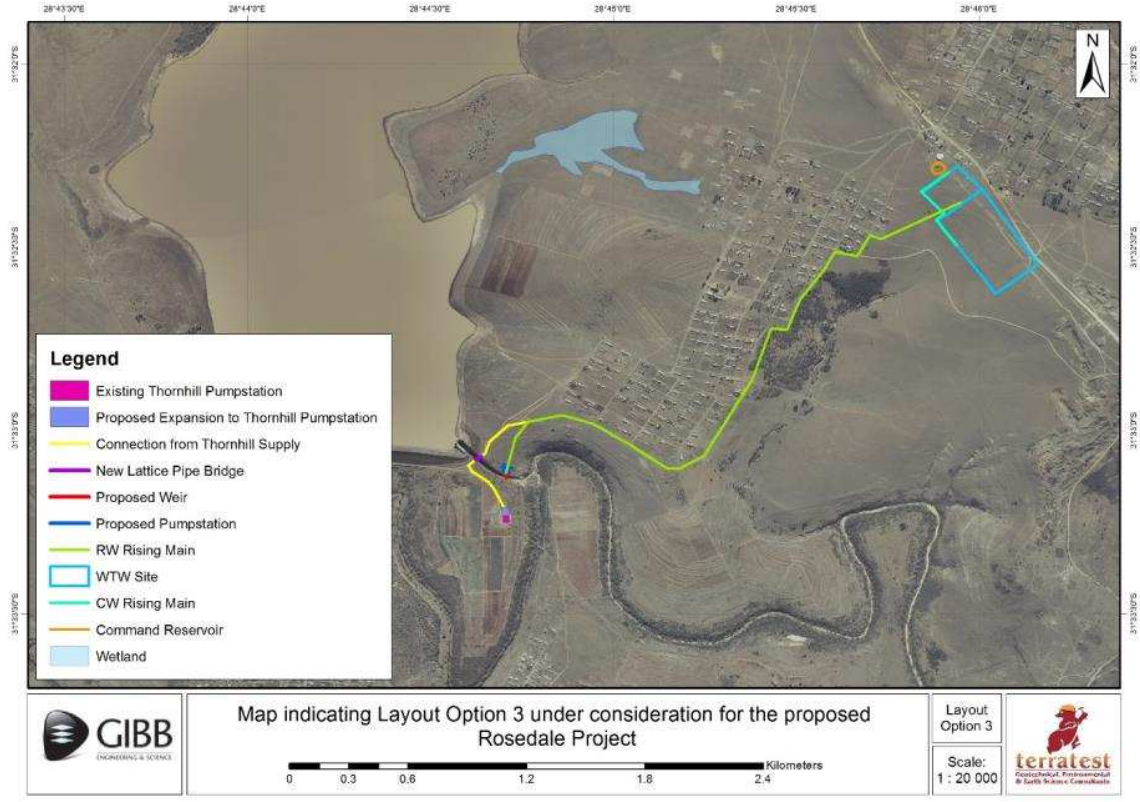

Figure 11: Map indicating Layout Option 3 for the Rosedale WTW and associated infrastructure.

The reasons this alternate layout is not being pursued as the preferred layout are:

- The sites proposed for the establishment of the raw water reservoir and WTW are on fairly steep slopes and would therefore require fairly extensive cut and fill during the construction phase. This would have significant implications for the cost of construction as well as erosion, sedimentation and water quality impacts;
- The raw water reservoir is located a great distance from the pumpstation (over twice the distance compared to that in the preferred layout). This would necessitate the installation of a larger and stronger pump at the raw water pumpstation, with associated cost implications;
- The location of the WTW would limit planned, future housing developments.
- The natural slopes which the pipelines will have to overcome are much steeper that those associated with Layout Option 1, meaning that costs and overall head loss through the works (wasted energy), is much higher for this option as compared to Option 1.
- The Vegetation Specialist noted that the raw water rising main and WTW positions associated with Layout Option 3 intersect the locations of protected plan species, including *Xysmalobium orbiculare, Gladiolus ecklonii* and *Gladiolus woodii* (see Figure 12 and specialist vegetation report attached in Appendix D).

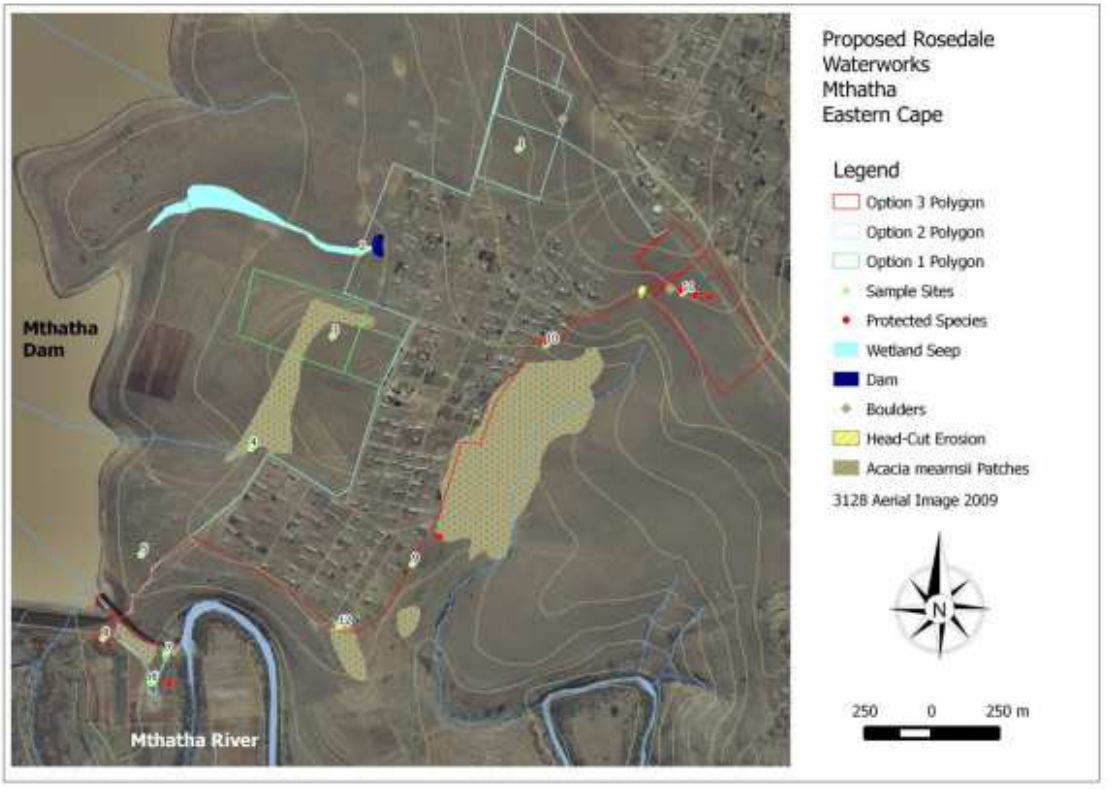

Figure 12: Map indicating the location of protected plant species in proximity to Layout Option 3 (red) (Source: Vegetation Specialist Report).

- A section of the raw water pipeline was noted to intersect an area of headcut erosion (indicated in Figure 13). Construction in this area would severely compromise the stability of this area, resulting in further erosion and potential future damage to the water supply infrastructure.

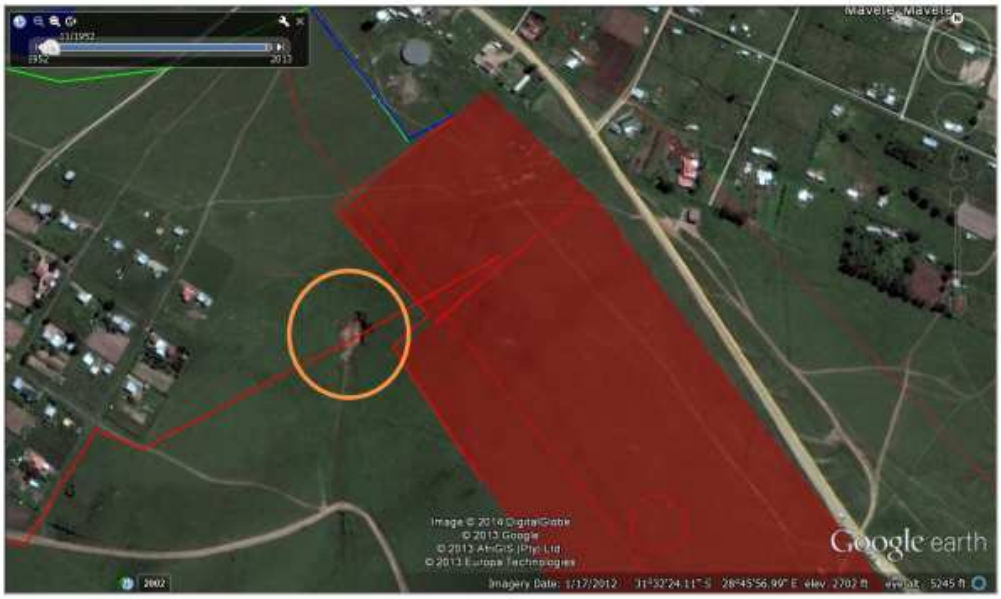

Figure 13: Image indicating the intersection of the raw water pipeline in Layout Option 3 with an area of erosion (Source: Vegetation Specialist Report).

(d) the technology to be used in the activity;

No alternatives in terms of technology have been considered. The reason for this is that the OR Tambo District Municipality, who will ultimately take responsibility for the operation and maintenance of the project, has requested the Design Engineers to make the new facility as similar as possible to the existing Thornhill WTW. This will ensure that the Municipality has the necessary in-house skills and expertise to properly operate and maintain the facility, without the need to spend large amounts of money on training or the employment of a subcontractor to perform this function.

(e) the operational aspects of the activity; and

No alternate operational activities have been considered for this project.

The preferred operational activity comprises of the Rosedale WTW, which will have a total treatment capacity of 100 Mℓ / day on completion, together with associated infrastructure, comprising pumpstations, raw water rising main pipelines, raw water reservoirs and a clear water rising main.

No alternate activity types have been identified or investigated for the project. A need has been identified within the KSD Local Municipality to expand and improve bulk water service provision. The preferred activity represents the most economically feasible and reasonable method of meeting this need. Should an alternate development type or activity be pursued instead, the need for bulk water supply in the KSD Municipality would not be met.

(f) the option of not implementing the activity.

The 'No Go' alternative means that the proposed WTW will not be constructed and the water service provision status quo will remain with the town of Mthatha and surrounding peri-urban areas being provided with only a limited level of water supply which on occasion is unreliable, especially during periods of droughts. Furthermore, without the proposed WTW it is most likely that future water requirements will not be met.

Describe alternatives that are considered in this application. 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.

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

3. 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 and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.
List alternative sites if applicable.

The alternate layouts under consideration are indicated in Figures 8, 9, 10 and 11 (also attached in Appendix A).

(i) Abstraction Point (Pumpstation 1) – is existing

(ii) Abstraction Point (Pumpstation 2) - Proposed Weir

Alternative:	Latitude (S):		Longitude (E):	
Alternative S1[1] **(Preferred (1b), Option 2 & Option 3)**	-31°	.552'	28°	.745'
Alternative S2				
Alternative S3				

(iii) Raw Water Pump Station (Pumpstation 1) - Proposed Expansion to Thornhill Pumpstation 1

Alternative:	Latitude (S):		Longitude (E):	
Alternative S1[2] **(Preferred (1b), Option 2 & Option 3)**	-31°	.554'	28°	.745'
Alternative S2				
Alternative S3				

[1] "Alternative S.." refer to site alternatives.
[2] "Alternative S.." refer to site alternatives.

(iv) Raw Water Pump Station (Pumpstation 2) - Proposed new pumpstation

Alternative:	Latitude (S):		Longitude (E):	
Alternative S1[3] **(Preferred (1b), Option 2 & Option 3)**	-31°	.551'	28°	.745'
Alternative S2				
Alternative S3				

(v) Rosedale WTW

Alternative:	Latitude (S):		Longitude (E):	
Alternative S1[4] **(Preferred (1b))**	-31°	.541'	28°	.751'
Alternative S2 (**Option 2**)	-31°	.534'	28°	.760'
Alternative S3 (**Option 3**)	-31°	.541'	28°	.766'

In the case of linear activities:

1. Raw Water Pipeline - Connection between existing Thornhill Infrastructure (Pumpstation 1) and new Rosedale WTW

Alternative:

Alternative S1 **(Preferred (1b))**	Latitude (S):		Longitude (E):	
• Starting point of the activity (Thornhill PS)	-31°	.554'	28°	.745'
• Middle point of the activity	-31°	.546'	28°	.750'
• End point of the activity (WTW)	-31°	.541'	28°	.751'

Alternative S2 (if any) **(Option 2)**				
• Starting point of the activity (Thornhill PS)	-31°	.554'	28°	.745'
• Middle point of the activity	-31°	.543'	28°	.754'
• End point of the activity (WTW)	-31°	.534'	28°	.760'

Alternative S3 (if any)) **(Option 3)**				
• Starting point of the activity (Thornhill PS)	-31°	.554'	28°	.745'

[3] "Alternative S.." refer to site alternatives.
[4] "Alternative S.." refer to site alternatives.

• Middle point of the activity	-31°	.545'	28°	.758'
• End point of the activity (WTW)	-31°	.541'	28°	.766'

2. Raw Water Pipeline – Connection between new Pumpstation 2 (including new weir) and RW pipeline

Alternative:

Alternative S1 **(Preferred (1b))**	**Latitude (S):**		**Longitude (E):**	
• Starting point of the activity (Weir)	-31°	.552'	28°	.745'
• Middle point of the activity	-31°	.546'	28°	.750'
• End point of the activity (WTW)	-31°	.541'	28°	.751'

Alternative S2 (if any) **(Option 2)**				
• Starting point of the activity (Weir)	-31°	.552'	28°	.745'
• Middle point of the activity	-31°	.543'	28°	.754'
• End point of the activity (WTW)	-31°	.534'	28°	.760'

Alternative S3 (if any)) **(Option 3)**				
• Starting point of the activity (Weir)	-31°	.552'	28°	.745'
• Middle point of the activity	-31°	.545'	28°	.758'
• End point of the activity (WTW)	-31°	.541'	28°	.766'

3. Clear Water Pipeline

Alternative:	**Latitude (S):**		**Longitude (E):**	
Alternative S1 **(Preferred (1b))**				
• Starting point of the activity (WTW)	-31°	.541'	28°	.751'
• Middle point of the activity	-31°	.537'	28°	.758'
• End point of the activity (Command Res)	-31°	.538'	28°	.765'

Alternative S2 (if any) **(Option 2)**				
• Starting point of the activity (WTW)	-31°	.534'	28°	.760'
• Middle point of the activity	-31°	.536'	28°	.763'
• End point of the activity (Command Res)	-31°	.538'	28°	.765'

Alternative S3 (if any) **(Option 3)**

• Starting point of the activity(WTW)	-31°	.541'	28°	.766'
• Middle point of the activity	-31°	.540'	28°	.765'
• End point of the activity (Command Res)	-31°	.538'	28°	.765'

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment. (See Appendix G for a full list of co-ordinates).

4. PHYSICAL SIZE OF THE ACTIVITY

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

Abstraction structure + Pump Station (1 + 2) + Pipe Bridge + WTW:

Alternative:	**Size of the activity:**
Alternative A1[5] (**Preferred (1b)** activity alternative)	14 730 m^2
Alternative A2 (**Option 2**)	14 730 m^2
Alternative A3 (**Option 3**)	14 730 m^2

or, for linear activities:

Raw Water Pipelines (from pump stations 1 and 2) + Clear Water Pipeline:

Alternative:	**Length of the activity:**
Alternative A1 (**Preferred (1b)** activity alternative)	3 570 m
Alternative A2 (**Option 2**)	5 093 m

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

Alternative A3 (**Option 3**)	3 975 m

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

Alternative:	**Size of the site/servitude:**
Alternative A1 (**Preferred (1b)**)	5 712 m^2
Alternative A2 (**Option 2**)	8 148.8 m^2
Alternative A3 (**Option 3**)	6 360 m^2

5. SITE ACCESS

Does ready access to the site exist?	**NO**
If NO, what is the distance over which a new access road will be built	30 m

Describe the type of access road planned:

Access to the site will be gained from an existing gravel road. A new, surfaced access road will be constructed between the intersection with the existing gravel road and the proposed WTW. This road will measure 30 m in length and will be 8 m wide.

Within the fence of the WTW, a surfaced road will be established around the outside of the facility. This road will measure approximately 40 m in length and will be 5 m wide.

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.

The access road is indicated in the facility drawings included in Appendix C.

6. 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 document.

A detailed site plan for each of the layout alternatives under consideration is attached in Appendix A. Please note the comments on each of the blow listed requirements for this map.

The site or route plans must indicate the following:

6.1 the scale of the plan which must be at least a scale of 1:500;

This requirement cannot be complied with as the extent of the area to be indicated in the map is too great to be captured at the required scale. In order to accommodate the entire development on a single map, a scale of 1: 20 000 has been utilised.

6.2 the property boundaries and numbers of all the properties within 50 metres of the site;

This has been provided.

6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;

The area indicated on the map falls outside the town planning scheme of Mththa and is therefore not zoned. The land is currently utilised for a combination of residential and agricultural purposes. This information has not been indicated on the map.

6.4 the exact position of each element of the application as well as any other structures on the site;

The positions of each of the elements proposed for establishment (as per the preferred layout) has been indicated. The existing infrastructure (which comprises a pumpstation), is also indicated.

Existing residential, road and water supply infrastructure (a reservoir) can be seen on the aerial imagery and has not therefore been mapped separately.

6.5 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;

No information in this regard is available as no as-built drawings, service drawings or way leaves have been provided. There is no evidence of any service infrastructure on the proposed development site which might be impacted upon by the proposed Rosedale WTW and associated infrastructure.

Prior to the commencement of construction and earth works, the engineers and contractor will engage with the Municipality regarding the position of any existing service infrastructure.

6.6 all trees and shrubs taller than 1.8 metres;

No trees taller than 1.8 m will be affected by the proposed development. No trees have therefore been indicated on the map.

6.7 walls and fencing including details of the height and construction material;

No walls or fences will be impacted upon by the proposed development. No walls or fences have therefore been indicated on the map.

6.8 servitudes indicating the purpose of the servitude;

As far as Terratest (Pty) Ltd is aware, no servitudes occur on or in proximity to the development site. No servitudes have therefore been indicated.

6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):

- rivers;

The Mththa River, Circa River and an unnamed tributary are indicated. In addition, a seepage wetland identified by the Wetland Specialist, is indicated.

- the 1:100 year flood line (where available or where it is required by DWA);

All the infrastructure is outside the 1:100 year flood level (the 1:100 year flood level just reaches the existing Thornhill Raw Water Pumpstation, the site of the proposed Rosedale Pumpstation No. 1)..

- ridges;

Contours (with a contour interval of 20 m) are included on the map. These indicate the high-lying and low-lying areas, as well as the gradient of the slopes in-between.

- cultural and historical features;

The three grave locations identified by the Heritage Specialist have been indicated.

- areas with indigenous vegetation (even if it is degraded or invested with alien species);

The entire, untransformed area comprises indigenous vegetation. The vegetation of the site is discussed in Section A, part 3.2 of this Report. It is not useful to highlight the entire area for the presence of indigenous vegetation. This has not therefore been included on the map.

6.9 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

The use of 1 m contours would make the map impossible to read as the scale of the map is too low to accommodate this. In the interests of providing a legible map, 20 m contours have been provided.

6.10 the positions from where photographs of the site were taken.

This information is provided in a separate map which has been included in Appendix B.

7. 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 form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

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

activity. The illustration must give a representative view of the activity.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 448 947 395
What is the expected yearly income that will be generated by or as a result of the activity?	Approx. 10 million m^3 water per year sold to consumers (approx. R20m pa potential income)
Will the activity contribute to service infrastructure?	**YES**
Is the activity a public amenity?	**YES**
How many new employment opportunities will be created in the development phase of the activity?	Approx. 200 over 2 years.
What is the expected value of the employment opportunities during the development phase?	Approx. R20million over 2 years.
What percentage of this will accrue to previously disadvantaged individuals?	100%
How many permanent new employment opportunities will be created during the operational phase of the activity?	10
What is the expected current value of the employment opportunities during the first 10 years?	Approx. R1million pa = R10million
What percentage of this will accrue to previously disadvantaged individuals?	100%

9(b) Need and desirability of the activity

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

The justification for the proposed project is that it will vastly improve the greater Mthatha and surrounding areas' long term level of service and assurance of water supply and thereby increasing the economic growth potential of this region. In particular, it is expected to greatly uplift the economic development of towns thus reducing the trend of concentrated growth in Mthatha at the expense of the surrounding areas. Furthermore, health and hygiene will be

made available to a greater portion of the community due to the availability of clean, potable water.

As such, the proposed development is in line with the objectives set in the OR Tambo Integrated Development Plan (IDP) as well as with the objectives of the various policies and programmes which inform the IDP, including the Electoral Mandate, the New Economic Growth Path, the National Development Plan, the Eastern Cape Provincial Growth and Development Plan and the Provincial Strategic Framework. The objectives of these policies and programmes include (amongst others):

- Improved rural access to services;
- Investment in infrastructure as a driver of job creation across the economy;
- The building of the local supplier industry though the local manufacture of components;
- Transformation of rural spaces;
- Improvement in the quality of life for the poorest people in the province; and
- Poverty eradication.

In addition, at the Water Services Summit held in October 2006, a strategic framework for the delivery of sustainable water services was developed. One of the main aims of this framework is accelerated water service delivery as a vehicle for Local Economic Development. The OR Tambo District Municipality has subsequently partnered with the DWS, Amatola Water and Umgeni Water to identify and implement bulk water supply systems which should be improved to facilitate the achievement of the objectives set in the above-mentioned framework. The Southern Scheme was identified which has the target of ensuring optimal utilisation of the Mthatha Dam for domestic consumption. This proposed Rosedale Project is in line with this target.

Although many of the villages surrounding Mthatha have some sort of water supply, these are generally of a basic level of service and are unreliable (especially in times of drought). With a large yield of high assurance available from the Mthatha Dam, the opportunity exists to create a regional scheme that can both raise the level of service and provide water at a high level of assurance. In looking to extend Mthatha's bulk supply network to encompass as many communities as possible within reach of the Mthatha Dam, it is therefore proposed to construct the Rosedale WTW, as well as associated raw water supply infrastructure.

The plant will be constructed to a capacity which will address future increases in demand which will grow as the population increases.

The project engineers have calculated the future water demand of the area (for a 2033 population) and based the design of the Rosedale facility on these predictions. The proposed project will therefore provide reliable and clean water in the long term, meeting basic human need as well as unlocking the economic growth potential of this region.

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

- Job opportunities will be created during the construction phase;
- Improved health and hygiene of the regional population, with a resultant increase in overall health, through access to clean drinking water;
- Economic empowerment of the construction workers;
- Economic benefits for local building material suppliers;
- Economic stimulation of the region by the influx of construction workers, contractors and engineers for the construction phase which is anticipated to run for a number of years;
- Increased investment and economic growth in the region as a result of improved service delivery, with a resultant increase in job creation;
- Poverty alleviation; and
- Institutional empowerment.

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

- Job opportunities will be created during the construction phase;
- Improved health and hygiene of the regional population, with a resultant increase in overall health, through access to clean drinking water;
- Economic empowerment of the construction workers;
- Increased investment and economic growth in the region as a result of improved service delivery, with a resultant increase in job creation; and
- Poverty alleviation.

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (No. 107 of 1998) (NEMA)	Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)	1998
National Water Act (No. 37 of 1998) (NWA)	Department of Water and Sanitation (DWS)	1998
National Heritage Resources Act (No 25 of 1999) (NHRA)	Eastern Cape Provincial Heritage Resources Authority (ECPHRA)	1999
National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA)	DEDEAT	2004
National Environmental Management: Protected Areas Act (Act No. 57 of 2003) (NEMPAA)	DEDEAT	2003
NEMA: Public Participation Guideline	Department of Environmental Affairs (DEA)	2012
Integrated Environmental Management Guideline Series 9: Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010	DEA	2014

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	**YES**
If yes, what estimated quantity will be produced per month?	Unknown

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

General solid construction waste will be deposited into bins lined with plastic bags, located at various locations on the construction site. At the end of each day, these bags will be collected and removed to the Contractors Camp, for storage in a skip, located in a designated waste storage area. General waste will be removed from site on a weekly basis, for disposal at the local permitted municipal landfill site (Mthatha Municipal Landfill Site). This removal will either be undertaken by the Contractor or provided by a private service provider. The necessary service agreements will be organised by the OR Tambo District Municipality or the appointed contractor and will be in place prior to the commencement of construction activities.

Should any hazardous solid waste be generated during the construction phase, this will be stored in a designated, access controlled, sign posted and bunded storage area. This waste will be collected as and when necessary by an appropriate service provider and will be transported to a permitted Hazardous Waste Landfill Site for disposal. Certificates of safe disposal will be maintained in the Environmental File in the Contractors Camp.

The EMPr makes provision for monitoring of the construction site and the solid wastes generated, to ensure that construction solid waste is never allowed to accumulate in volumes which may impact negatively on the environment.

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

- General solid waste will be disposed of at the nearest permitted municipal landfill site (likely to be located in Qumbu and run by the Mhlontlo Municipality.
- Hazardous solid wastes will be disposed of at a permitted hazardous waste landfill site.

Will the activity produce solid waste during its operational phase?	**YES**
If yes, what estimated quantity will be produced per month?	Unknown

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

General and domestic type solid wastes will be generated during the operational phase through maintenance and repair activities on site as well as by office / administration activities and domestic activities. These general wastes will be stored in bins until they are collected by a Waste Removal Service Provider who will transport the waste to the Mthatha Landfill Site for disposal.

Sludge will be generated through the water treatment process. This will be mechanically dried on the site, with water being returned to the works and dried sludge being directed to the municipal landfill site. Dried sludge will be stockpiled in a suitably-designed holding area protected from the effects of rain and wind in terms of runoff. Waste removal will be either be undertaken by a designated service provider or made available to local SMME entrepreneurs to manufacture bricks (the dewatered sludge is essentially pure clay). The frequency of removal will be negotiated between the service provider and the District Municipality. It is likely that the municipality will be able to make use of this sludge (which will comprise predominantly silt / soil), as a cover material.

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

N/A

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	**NO**
If yes, inform the competent authority and request a change to an application for scoping and EIA.	
Is the activity that is being applied for a solid waste handling or treatment facility?	**NO**

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

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?		NO
If yes, what estimated quantity will be produced per month?	m^3	
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	

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

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

If yes, provide the particulars of the facility:

Facility name:			
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:

All filter washwater and sludge withdrawn from the sedimentation tanks of the works will be diverted to sludge holding tanks from where the overflow will be recycled back to the head of the works. The plant has therefore been designed to have zero liquid effluent.

11(c) Emissions into the atmosphere

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

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

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

11(d) Generation of noise

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

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the noise in terms of type and level:

Noise will be generated during the construction period, mainly from construction vehicles and equipment, and will be controlled during the implementation of the EMPr.

Some noise will be generated during the operational phase by the various pumps and mechanical equipment in use at the facility. This noise will not be of significant volume and will be contained within the building of the WTW.

12. WATER USE

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

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

Construction water will be sourced from the existing take off points. Once operational, water will be abstracted from the Mthatha Dam for treatment at the proposed works and to supply the greater Mthatha area.

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:

100 000 000 liters

Phase 1: 50 Mℓ / day = 50 000 000 liters / day = 1 500 000 000 liters / month = 1 500 Mℓ / month

Subsequent phases: 100 Mℓ / day = 100 000 000 liters / day = 3 000 000 000 liters / month = 3 000 Mℓ / month.

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

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

The application for the amendment of the Water Use License to allow for the alteration in the allocations of water abstracted from the Mthatha Dam is being handled under a separate application process by Amatola Water.

13. ENERGY EFFICIENCY

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

Construction Phase:

- It is recommended that, during the construction phase, the contractor transport construction materials to the site at the same time, where possible, and that the

collection of waste materials be conducted simultaneously with other activities, in order to reduce fuel usage for such transportation.

Operational Phase:

- Pumps with the highest efficiency have been selected for installation to ensure optimum use of energy.
- All lighting will be provided by LED / energy saving light bulbs.

Solar PV panels should be considered for office use.

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

Alternative power sources are currently not feasible for water treatment works owing to high costs and the reliability of supply. As such, no alternative energy sources have been considered.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

Section C Copy No. (e.g. A):	1

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

As the three layouts under consideration all require the establishment of infrastructure in the same localised area, and as the environmental conditions are relatively homogenous across the entire area under consideration, this section has only been completed once. The information contained herein is applicable to all three layout options.

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

YES	

If YES, please complete form XX for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		**Alternative S2 (if any):**		**Alternative S3 (if any):**	
Shallow water table (less than 1.5m deep)		**NO**		**NO**		**NO**
Dolomite, sinkhole or doline areas		**NO**		**NO**		**NO**
Seasonally wet soils (often close to water bodies)	**YES**		**YES**			**NO**

Unstable rocky slopes or steep slopes with loose soil		NO		NO		NO
Dispersive soils (soils that dissolve in water)		NO		NO		NO
Soils with high clay content (clay fraction more than 40%)		NO		NO		NO
Any other unstable soil or geological feature		NO		NO		NO
An area sensitive to erosion		NO		NO		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).

A specialist was engaged to undertake a wetland identification and delineation exercise. The findings of the specialist are summarised below:

- A wetland area with associated aquatic vegetation was noted, sited along the route of the raw water rising main pipeline in the initially preferred layout option (1a) (see Figures 16 and 17). Subsequently, the route of this pipeline has been amended to allow for the avoidance of this system. The new preferred layout is designated as Layout Option 1b.

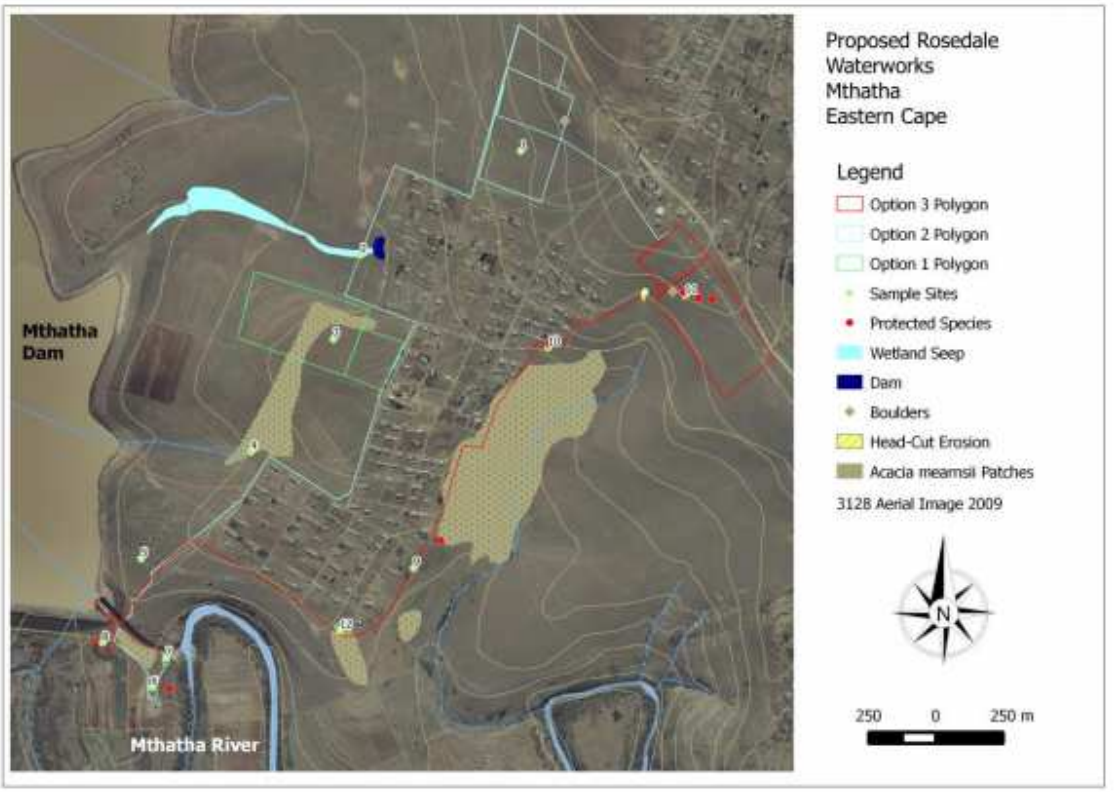

Figure 16: Map indicating the intersection of the raw water pipeline of Layout Option 1 with a wetland area.

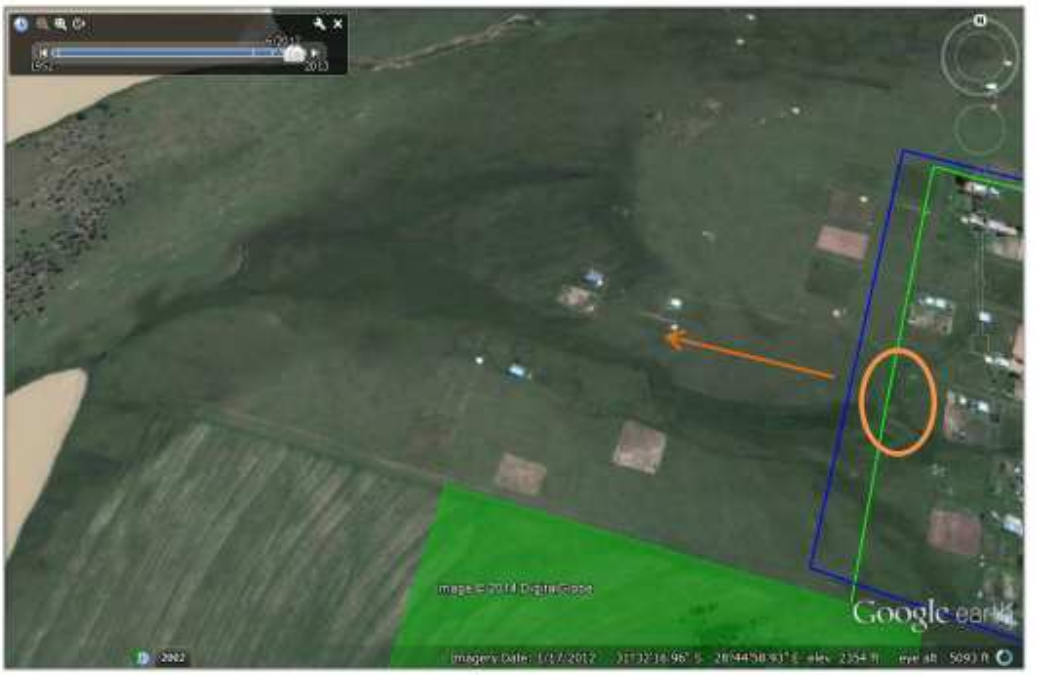

Figure 17: Image indicating a close-up view of the intersection between the raw water pipeline of Layout Option 1 and the wetland area.

- The wetland is a natural seep wetland, originating from a number of separate groundwater seep positions.
- The wetland vegetation was found to be degraded due to grazing by livestock. The system is considered to be of moderate ecological importance and sensitivity and is in a largely natural state.
- Four potential impacts on this wetland system were identified. These are all associated with the construction phase:

  (i) Loss of aquatic vegetation and associated habitat;

  (ii) Altered hydrological regime;

(iii) Increase in sedimentation and erosion, with possible impacts on water quality; and

(iv) Pollution.

- In order to address these impacts, the specialists made a number of recommendations for mitigation. These essentially relate to minimising the extent of the construction footprint, rehabilitation of the wetland system and appropriate pollution management. These recommended mitigations have been included as recommendations of the report as well as into the EMPr for the construction phase.
- The specialist concluded that no wetland impacts would occur for Layout Options 2 and 3.

Based on the findings of the specialist report, the layout of Layout Option 1 has been amended to avoid this system (1b).

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

~~4.1 Natural veld – good condition~~ E
4.2 Natural veld – scattered aliens E
~~4.3 Natural veld with heavy alien infestation~~ E
~~4.4 Veld dominated by alien species~~ E
~~4.5 Gardens~~
~~4.6 Sport field~~
4.7 Cultivated land
~~4.8 Paved surface~~
~~4.9 Building or other structure~~
4.10 Bare soil

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).
This has been done – protected plant species have been indicated on the site plans contained in Appendix A.

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

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

5.1 Natural area
~~5.2 Low density residential~~
5.3 Medium density residential
~~5.4 High density residential~~
5.5 Informal residential
~~5.6 Retail commercial & warehousing~~
~~5.7 Light industrial~~
~~5.8 Medium industrial[AN]~~
~~5.9 Heavy industrial[AN]~~
~~5.10 Power station~~
~~5.11 Office/consulting room~~
~~5.12 Military or police base/station/compound~~
~~5.13 Spoil heap or slimes dam[A]~~
~~5.14 Quarry, sand or borrow pit~~
5.15 Dam or reservoir
~~5.16 Hospital/medical centre~~
5.17 School
~~5.18 Tertiary education facility~~
~~5.19 Church~~
~~5.20 Old age home~~
~~5.21 Sewage treatment plant[A]~~
~~5.22 Train station or shunting yard[N]~~

~~5.23 Railway line~~ ~~N~~
~~5.24 Major road (4 lanes or more)~~ ~~N~~
~~5.25 Airport~~ ~~N~~
~~5.26 Harbour~~
~~5.27 Sport facilities~~
~~5.28 Golf course~~
~~5.29 Polo fields~~
~~5.30 Filling station~~ ~~H~~
~~5.31 Landfill or waste treatment site~~
~~5.32 Plantation~~
5.33 Agriculture
5.34 River, stream or wetland
~~5.35 Nature conservation area~~
~~5.36 Mountain, koppie or ridge~~
~~5.37 Museum~~
~~5.38 Historical building~~
~~5.39 Protected Area~~
~~5.40 Graveyard~~
~~5.41 Archaeological site~~
~~5.42 Other land uses (describe)~~

If any of the boxes marked with an "N "are ticked, how will this impact / be impacted upon by the proposed activity.
N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity.
If YES, specify and explain:
If YES, specify:
N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.
If YES, specify and explain:
If YES, specify:
N/A

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 close (within 20m) to the site?	**YES**	
If YES, explain:	A Phase 1 Archaeological and Heritage Impact Assessment was conducted on the site. Analysis of the archaeological, cultural heritage, environmental and historic contexts of the area predicted that archaeological sites (Stone Age and Historic Archaeological), cultural heritage sites, burial grounds or isolated artefacts were likely to be present on the affected landscape. The field assessment revealed that the study area has been previously disturbed and built up. The proposed development therefore comprises an *in situ* development and as such, is anticipated to have limited impact on the sense of place. The most common contemporary class of cultural resources occurring in the study area are several grave and burial sites associated with the homesteads situated along the proposed pipeline servitude. This evidenced by the recording of three burial grounds and grave sites at different locations along the pipeline route (see Figure 18, also contained in Appendix A).	

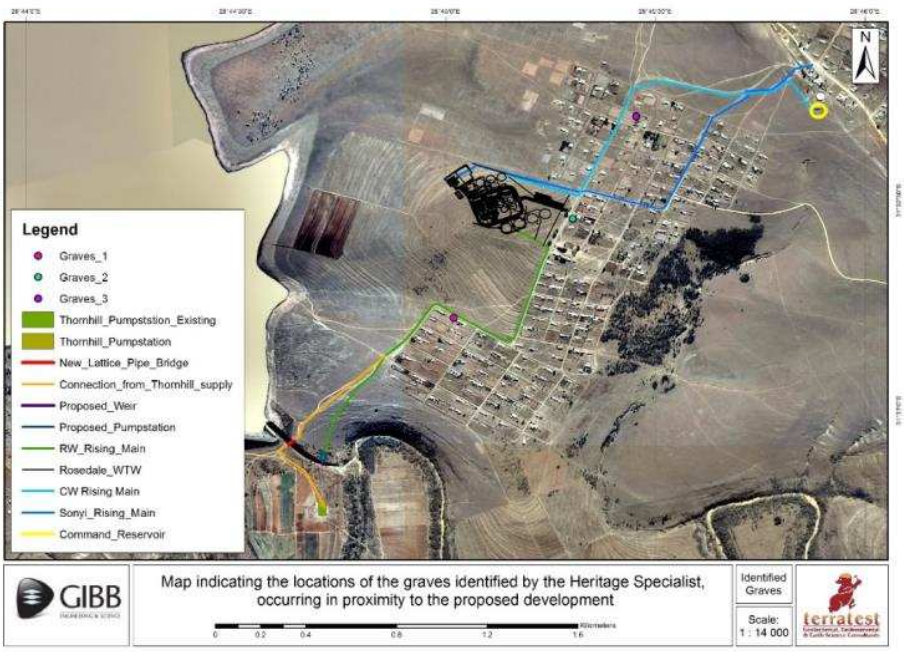

Figure 18: Map indicating the locations of the three gravesites identified by the Heritage Specialist as occurring in close proximity to the proposed development.

The specialist assessment rated the area as having low to medium cultural heritage significance. It further concludes that the impacts to heritage resources will not be significant, provided the recommended mitigation measures are implemented.

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

Briefly explain the findings of the specialist:

- No archaeological finds were recorded on the proposed development sites;
- No historical features, structures, sites or relics were recorded in the study area;

• In general, the local community was noted to bury their deceased within fenced homesteads. As such the location of burial sites are known and protected from any development. The possibility of encountering previously unidentified burial sites is therefore low. • The study did record three (3) burial sites on properties in close proximity to the raw water pipeline route. These burial sites are located within homesteads and are marked by cement plaster and inscribed headstones. These burial sites were recorded 10 m to 40 m from the proposed pipeline servitude, which means they fall within the impact zone. • There are currently no places within the proposed Rosedale pipeline servitude that are listed on the National Heritage List. • The proposed development is an in situ development, adding to existing developments within the area. Therefore any possible visual impacts to the project area is less significant and would be of reduced concern given the observation that this concern is already overridden by existing impact

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

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

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

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;

(b) giving written notice to—
  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the municipality which has jurisdiction in the area;
  (vi) any organ of state having jurisdiction in respect of any aspect of the activity; 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 local 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 the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
  (ii) whether basic assessment or scoping procedures are beingapplied to the application, in the case of an application for environmental authorisation;
  (iii) the nature and location of the activity to which the application relates;
  (iv) where further information on the application or activity 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 MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. 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 the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

The Comments and Responses Report attached in Appendix E contains copies of the Advertisement and Notices, as evidence of compliance with all of the above requirements. In addition, this report contains the comments received to date, the responses to these comments, a record of the Public Meeting held for the project and a list of registered IAPs on the project.

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

- Department of Water Affairs
- King Sabata Dalindyebo Local Municipality
- Ward Councillors

- OR Tambo District Municipality
- Eastern Cape Provincial Heritage Resources Authority
- South African Heritage Resources Authority
- Department of Rural Development and Land Reform

Eskom

List of authorities from whom comments have been received:

No comments have been received to date

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

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 at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders? **YES**

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

A public Meeting, facilitated by the Public Participation Consultants, Phumelele Consultants, was held at 10:00 on Saturday 18 October 2014 at the sub-headman's home. The meeting was attended by 72 members of the local community. A copy of the attendance register as well as the information presented, is attached in Appendix E. The meeting was organised through consultation with and notification by the Chief, ward councillor, sub-headman and the ward committees. Information about the proposed development and the Environmental Authorisation process was verbally presented to meeting attendees, in Xhosa, by a social facilitator.

The following questions, and the responses given, are summarised below:

1. **How long will the environmental assessment take?**

The ISD responded by stating that the duration of the assessment will depend on a number of factors. It is anticipated that the assessment will be completed in March 2015.

2. **What benefits the farm owners will get?**

A separate meeting will be arranged with the farm owners and the Municipality in order to discuss this.

3. **Can the Municipality assist in the changing of the name given to the project? As these people are the residents of Highbury, not Rosedale.**

This request will be communicated to the relevant people.

SECTION D: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

- Timeframe of the Environmental Authorisation process.
- Benefits for landowners affected by the proposed development.
- Changing the name of the project to reflect the name of the local community.

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 to this report):

- It is anticipated that the assessment will be completed by in the last half of 2015.
- A separate meeting for affected landowners will be held to discuss the issue of fair remuneration.
- The request for a change in name of the problem will be put to the relevant parties.

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

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

1. IMPACT IDENTIFICATION, DESCRIPTION AND ASSESSMENT

Likely impacts associated with the proposed development have been identified through the undertaking of site visits, consultation of published information and independent assessment by the Environmental Project Team. Impacts have also been identified by the specialist assessments undertaken.

(i) Methodology

Impacts identified were assessed according to the criteria outlined below. Each impact was ranked according to extent, duration, magnitude and probability. These criteria are based on the Department of Environmental Affairs and Tourism (DEAT) (now the Department of Environmental Affairs) Guideline Document to the EIA Regulations (1998). A significance rating was calculated as per the methodology outlined below. Where possible, mitigatory measures were recommended for the impacts identified.

(a) Status of the Impact

The impacts were assessed as having either a:

- Negative effect (i.e. at a cost to the environment);
- Positive effect (i.e. a benefit to the environment); or
- Neutral effect on the environment.

(b) Extent of the Impact

The extent of each impact was rated as being one of the following:

- (1) Site - within the boundaries of the development site;
- (2) Local - the area within 5 km of the site;
- (3) Municipal - the King Sabata Dalindyebo Local Municipality;
- (4) Regional - The Eastern Cape Province;

- (5) National – South Africa; or
- (6) International – Southern Africa.

(c) Duration of the Impact

The duration of each impact was rated as being one of the following:

- (1) Immediate - > 1 year;
- (2) Short term – 1 – 5 years;
- (3) Medium term – 6 – 15 years;
- (4) Long Term – the impact will cease when the operation stops; and
- (5) Permanent – no mitigation measure will reduce the impact after construction.

(d) Magnitude of the Impact

The intensity or severity of each impact was rated as being one of the following:

- (0) None – where the aspect will have no impact on the environment'
- (2) Minor – where the impact affects the environment in such a way that natural, cultural and social functions / processes are not affected;
- (4) Low – where the impact affects the environment in such a way that the natural, cultural and social functions / processes are slightly affected;
- (6) Moderate – where the affected environment is altered but natural, cultural and social functions / processes continue, albeit in a modified way;
- (8) High – natural, cultural or social functions / processes are altered to the extent that they will temporarily cease; or

- (10) Very high / unknown – natural, cultural or social functions / processes are altered to the extent that they will permanently cease.

(e) Probability of Occurrence

The likelihood of the impact actually occurring is indicated as either:

- (0) None – the impact will not occur;
- (1) Improbable – the possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate corrective actions;
- (2) Low – there is a probability that the impact will occur;
- (3) Medium – the impact may occur;
- (4) High – it is most likely that the impact will occur; or
- (5) Definite / unknown – the impact will occur regardless of the implementation of any prevention or corrective actions, or it is not known what the probability will be, based on a lack of published information.

(f) Significance of the Impact

Based on the information contained in the points above, the potential impacts have been assigned a significance weighting (**S**). This weighting is formulated by adding the sum of the numbers assigned to extent (**E**), duration (**D**) and magnitude (M) and multiplying this sum by the probability (**P**) of the impact.

S = (E+D+M)*P

The significance weightings are:

- (< 30) **Low** – the impact would not have a direct influence on the decision to develop in the area;

- (30 – 60) **Medium** – the impact could influence the decision to develop in the area unless it is effectively managed / mitigated; and
- (> 60) **High** - the impact must have an influence on the decision-making process for development in the area.

In accordance with the EIA Regulations, cumulative impacts, reversibility and potential for irreplaceable loss of resources (PILR) have also been identified and assessed.

It must be noted that in identifying and describing the potential impacts of the development, as well as in determining the significance ratings for the impacts, a team of specialist sub-consultants were consulted and appointed to undertake individual specialist studies. These studies informed the findings of this report and are appended in Appendix D.

2. PLANNING AND DESIGN PHASE

(i) Summary of Impacts

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Job creation	All	None required	Positive	3	2	2	5	35	Medium

(ii) Impacts Identified

Alternative 1 (Layout Option 1b (Preferred Layout); Layout Option 2 & Layout Option 3)

The planning and design phase impacts for each of the three layouts under consideration are the same. They have therefore been combined in this single table.

Direct impacts:

- Employment opportunities for design and assessment-related services, such as engineers and environmental consultants. In addition, input would be required from the regional and national authorities responsible for reviewing the applications made in terms of the relevant legislation.

Indirect impacts:

- None

Cumulative impacts:

- None

No Go Alternative

Direct impacts:

- The communities residing in the peri-urban areas surrounding Mthatha will not be serviced to a greater level as required and existing infrastructure will continue to serve the community at a substandard level.
- Limited opportunities for investment and development will exist in the peri-urban areas surrounding Mthatha

Indirect impacts:

- The government standard for water services provision will be not be met.
- The Municipality will not meet the mandates of its IDP.
- Economic development in the areas surrounding Mthatha will remain stunted
- A denial of basic human rights as provided by the Constitution of South Africa's Bill of Rights, will endure throughout the region that is proposed to be serviced.

Cumulative impacts:

- Potential health implications for communities denied access to clean drinking water

(iii) Proposed Mitigation

Alternative 1	No Go Alternative
There are no foreseeable negative impacts, therefore no mitigation measures are necessary.	The no go alternative should not be pursued.

3. CONSTRUCTION PHASE

(i) Summary of Impacts

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	E	D	M	P		
Soil disturbances	All	Yes	Negative	1	2	2	2	10	Low
Soil erosion	All (especially 3)	Yes	Negative	1	2	4	2	14	Low
Loss of terrestrial vegetation	All	Yes	Negative	1	4	6	5	55	Medium
Clearing of a Vulnerable vegetation type	All	Yes	Negative	1	4	6	5	55	Medium
Clearing of vegetation in a CBA	All	Yes	Negative	1	4	6	5	55	Medium
Clearing of protected plant species	3	Yes	Negative	1	4	6	5	55	Medium
Contamination of Mthatha River and/ or nearby wetland	All	Yes	Negative	2	2	6	1	10	Low
Increased traffic volumes	All	Yes	Negative	2	2	6	4	40	Medium
Damage of sub-surface heritage resources	All	Yes	Negative	1	5	10	2	32	Medium
Noise impacts	All	Yes	Negative	2	2	4	4	32	Medium
Dust generation	All	Yes	Negative	2	2	4	4	32	Medium
Job creation	All	None required	Positive	3	2	2	5	35	Medium
Spread of alien vegetation	All	Yes	Negative	1	3	6	4	40	Medium
Altered hydrological regime	All	Yes	Negative	2	4	6	3	36	Medium
Increased sedimentation of local watercourses / systems	All	Yes	Negative	2	2	6	2	20	Low

Fragmentation and disturbance of ecological processes	All	Yes	Negative	2	5	6	3	39	Medium
Improved livelihood of the local community	All	None required	Positive	3	2	2	5	35	Medium

(ii) Impacts Identified

Alternative 1 (Layout Option 1b (Preferred Layout))

Direct impacts:

Soils

- Potential disturbances on the soil include compaction, physical removal and potential pollution by hydrocarbons.
- Furthermore, if standard stormwater control measures are not implemented during the construction phase, soil erosion and subsequent removal of vegetation may occur.

Vegetation

- Loss of terrestrial (Eastern Valley Bushveld & Mthatha Moist Grassland) vegetation and associated habitat.
- Moist Mthatha Grassland is listed as Vulnerable in terms of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) and as a Critical Biodiversity Area (CBA) in terms of the Eastern Cape Biodiversity Conservation Plan (ECBCP), 2007. The vegetation specialist noted, however that vegetation on the development site is degraded, transformed, fragmented and is in a moderate to poor ecological condition, with a high abundance of weedy species.
- The specialist noted that no riparian vegetation will be impacted upon as vegetation in riparian areas is already significantly degraded.

Surface water

- Construction activities will occur in close proximity to the Mthatha River and a wetland area. This

may result in contamination impacts on these system, particularly as a result of contaminated stormwater runoff, spillages and leaks of pollutants and unauthorised washing of machinery and equipment on the site

Traffic

- The construction phase will result in additional traffic on the local roads. This traffic will be large and slow moving, in general. This may result in traffic jams and deterioration of the road surfaces.

Archaeology / Palaeontology

- There is a risk of sub-surface archaeological and/or paleontological resources being impacted upon and damaged during excavation activities associated with construction activities.

Noise

- Construction activities on the site, such as excavation, earthworks and the use of machinery will generate noise impacts which will affect the local community residing in close proximity to the construction site.

Dust

- Excavation activities and increased traffic volumes on the gravel roads will result in increased dust generation and impact on the local community residing in the area.

Job creation

- Construction will result in the creation of skilled, semi-skilled and unskilled jobs. The use of local labour is recommended as this would have a positive impact on the local economy.
- Skills transfer will be promoted.
- The influx of workers to the site will result in increased expenditure, for food, accommodation and entertainment, within the local economy, generating economic growth in the region.
- Suppliers of construction materials to the site will also experience the benefits of economic growth and increased income as a result of the construction phase.

Indirect impacts:

- Spread of alien invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities.
- Altered hydrological regime as a result of artificial hardening of the soil surface, cut and fill activities and compaction of soils on the site.
- Increase in sedimentation and erosion, with possible impacts on water quality in the Mthatha River and the nearby wetland area.
- Economic empowerment of the construction workers.
- Economic benefits for local building material suppliers and the building of the local supplier industry though the local manufacture of components.
- Economic stimulation of the region by the influx of construction workers, contractors and engineers for the construction phase which is anticipated to run for a number of years.

Cumulative impacts:

- Fragmentation of habitat and disturbance of ecological process areas.
- Job creation may lead to an improvement in the livelihoods of the local people resulting from income generation and skills transfer. This would enable them to better provide for themselves and enable them to take advantage of opportunities for work which may arise in the future.

Alternative 2 (Layout Option 2)

Direct impacts:

Soils

- Potential disturbances on the soil include compaction, physical removal and potential pollution by hydrocarbons.

- Furthermore, if standard stormwater control measures are not implemented during the construction phase, soil erosion and subsequent removal of vegetation may occur.

Vegetation

- Loss of terrestrial (Eastern Valley Bushveld & Mthatha Moist Grassland) vegetation and aquatic vegetation and associated habitat.
- Moist Mthatha Grassland is listed as Vulnerable in terms of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) and as a Critical Biodiversity Area (CBA) in terms of the Eastern Cape Biodiversity Conservation Plan (ECBCP), 2007. The vegetation specialist noted, however that vegetation on the development site is degraded, transformed, fragmented and is in a moderate to poor ecological condition, with a high abundance of weedy species.
- The specialist noted that no riparian vegetation will be impacted upon as vegetation in riparian areas is already significantly degraded.

Surface water

- Construction activities will occur in close proximity to the Mthatha River and a wetland area. This may result in contamination impacts on this system, particularly as a result of contaminated stormwater runoff, spillages and leaks of pollutants and unauthorised washing of machinery and equipment on the site

Traffic

- The construction phase will result in additional traffic on the local roads. This traffic will be large and slow moving, in general. This may result in traffic jams and deterioration of the road surfaces.

Archaeology / Palaeontology

- There is a risk of sub-surface archaeological and/or paleontological resources being impacted upon and damaged during excavation activities associated with construction activities.

Noise

- Construction activities on the site, such as excavation, earthworks and the use of machinery will generate noise impacts which will affect the local community residing in close proximity to the construction site.

Dust

- Excavation activities and increased traffic volumes on the gravel roads will result in increased dust generation and impact on the local community residing in the area.

Job creation

- Construction will result in the creation of skilled, semi-skilled and unskilled jobs. The use of local labour is recommended as this would have a positive impact on the local economy.
- Skills transfer will be promoted.
- The influx of workers to the site will result in increased expenditure, for food, accommodation and entertainment, within the local economy, generating economic growth in the region.
- Suppliers of construction materials to the site will also experience the benefits of economic growth and increased income as a result of the construction phase.

Indirect impacts:

- Spread of alien invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities.
- Altered hydrological regime as a result of artificial hardening of the soil surface, cut and fill activities and compaction of soils on the site.
- Increase in sedimentation and erosion, with possible impacts on water quality in the Mthatha River and local wetland system.
- Economic empowerment of the construction workers.

- Economic benefits for local building material suppliers and the building of the local supplier industry though the local manufacture of components.
- Economic stimulation of the region by the influx of construction workers, contractors and engineers for the construction phase which is anticipated to run for a number of years.

Cumulative impacts:

- Fragmentation of habitat and disturbance of ecological process areas.
- Job creation may lead to an improvement in the livelihoods of the local people resulting from income generation and skills transfer. This would enable them to better provide for themselves and enable them to take advantage of opportunities for work which may arise in the future.

Alternative 3 (Layout Option 3)

Direct impacts:

Soils

- A head-cut / gully erosion site (although not part of a stream channel) was observed where the proposed pipeline alignment of Option 3 joins the reservoir and raw water treatment site. The head-cut is located upslope of the non-perennial watercourse, a tributary of the Mthatha River. The head-cut did not support aquatic vegetation or a wetland habitat. However, the pipeline should avoid this site as it may exacerbate erosion, which may in turn impact on the watercourse further downslope.
- Potential disturbances on the soil include compaction, physical removal and potential pollution by hydrocarbons.
- Furthermore, if standard stormwater control measures are not implemented during the construction phase, soil erosion and subsequent removal of vegetation may occur.

Vegetation

- Loss of terrestrial (Eastern Valley Bushveld & Mthatha Moist Grassland) vegetation and aquatic vegetation and associated habitat.
- Moist Mthatha Grassland is listed as Vulnerable in terms of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) and as a Critical Biodiversity Area (CBA) in terms of the Eastern Cape Biodiversity Conservation Plan (ECBCP), 2007. The vegetation specialist noted, however that vegetation on the development site is degraded, transformed, fragmented and is in a moderate to poor ecological condition, with a high abundance of weedy species.
- Three protected species were recorded along this alignment, namely *Gladioulus ecklonii*, *Gladioulus woodii* and *Xysmalobium* (possibly *orbiclare*). These will require a permit for their removal.
- The specialist noted that no riparian vegetation will be impacted upon as vegetation in riparian areas is already significantly degraded.

Surface water

- Construction activities will occur in close proximity to the Mthatha River. This may result in contamination impacts on this system, particularly as a result of contaminated stormwater runoff, spillages and leaks of pollutants and unauthorised washing of machinery and equipment on the site

Traffic

- The construction phase will result in additional traffic on the local roads. This traffic will be large and slow moving, in general. This may result in traffic jams and deterioration of the road surfaces.

Archaeology / Palaeontology

- There is a risk of sub-surface archaeological and/or paleontological resources being impacted upon and damaged during excavation activities associated with construction activities.

Noise

- Construction activities on the site, such as excavation, earthworks and the use of machinery will generate noise impacts which will affect the local community residing in close proximity to the construction site.

Dust

- Excavation activities and increased traffic volumes on the gravel roads will result in increased dust generation and impact on the local community residing in the area.

Job creation

- Construction will result in the creation of skilled, semi-skilled and unskilled jobs. The use of local labour is recommended as this would have a positive impact on the local economy.
- Skills transfer will be promoted.
- The influx of workers to the site will result in increased expenditure, for food, accommodation and entertainment, within the local economy, generating economic growth in the region.
- Suppliers of construction materials to the site will also experience the benefits of economic growth and increased income as a result of the construction phase.

Indirect impacts:

- Spread of alien invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities.
- Altered hydrological regime as a result of artificial hardening of the soil surface, cut and fill activities and compaction of soils on the site.
- Increase in sedimentation and erosion, with possible impacts on water quality in the Mthatha River.
- Economic empowerment of the construction workers.
- Economic benefits for local building material suppliers and the building of the local supplier

industry though the local manufacture of components.

- Economic stimulation of the region by the influx of construction workers, contractors and engineers for the construction phase which is anticipated to run for a number of years.

Cumulative impacts:

- Fragmentation of habitat and disturbance of ecological process areas.
- Job creation may lead to an improvement in the livelihoods of the local people resulting from income generation and skills transfer. This would enable them to better provide for themselves and enable them to take advantage of opportunities for work which may arise in the future.

No Go Alternative

Direct impacts:

- No disturbance of the soil on the site, no potential for contamination or an increase in erosion off the site.
- No loss of terrestrial vegetation and associated habitat.
- No risk to protected plant species occurring in the area.
- No potential surface water quality impacts.
- No additional traffic volumes or associated impacts.
- No risk presented to heritage resources on the site.
- No noise impacts.
- No dust generation.

Indirect impacts:

- The government standard for water services provision will be not be met.

- The Municipality will not meet the mandates of its IDP.
- Economic development in the areas surrounding Mthatha will remain stunted
- A denial of basic human rights as provided by the Constitution of South Africa's Bill of Rights, will endure throughout the region that is proposed to be serviced.

Cumulative impacts:

- Potential health implications for communities denied access to clean drinking water.

(iii) Proposed Mitigation

As the potential impacts are very similar across all three layout options under consideration, the recommended mitigation measures have been combined:

Alternative (Layout Options 1b, 2 and 3)

Soil Impacts:

- The head-cut erosion / gully noted as being intersected by Layout Option 3 should be avoided as a site for development. A minimum buffer of 32 meters should be applied. Strict erosion and stormwater control measures will need to be implemented in this area during construction; and the area must be rehabilitated immediately after the pipeline has been buried.
- The head-cut / gully erosion site could be used as a donga filling site, if excess soil is created post construction.
- An erosion or stormwater control plan must be implemented across the entire development site to prevent and control erosion impacts.

Vegetation Impacts:

- The extent of the development footprint and working servitude area must be limited as much as possible.

- Limit vegetation removal to the construction footprint only. Retain natural vegetation as much as possible.
- The alignment of pipelines with existing roads and/or human settlement, as shown in the proposed layouts must be complied with.
- Re-vegetate disturbed areas as soon as construction activities have been completed.
- Rehabilitate the construction footprint with indigenous grasses by means of in-situ grass sods and hydro-seeding (indigenous species).
- With regards to the protected species located within the development footprint of Layout Option 3, the following specifications are recommended: Submit an application to the DEDEAT for the removal of protected species, to include the rehabilitation specifications.
- Rehabilitate this construction footprint with protected species as follows: For every 500 m of pipeline plant 2 of each species (therefore 6 plants per 500 m). For example: 4 500 m of pipeline will require 54 plants to be planted (18 X *Gladioulus ecklonii*, 18 X Gladi*oulus wooddii*, 18 X *Xysmalobium* (possibly *orbiclare*). Species should be planted in areas that will not be transformed in the future (e.g. fenced in areas).
- Alien plants must be removed by the Contractor, where these plants establish in the construction footprint during the construction period.
- Construction areas must be rehabilitates as soon as construction is complete along a particular stretch of the pipeline.

<u>Surface Water Impacts:</u>

- To prevent contamination of surface water resources due to oil and fuel leakages and accidental spillages, vehicles and construction equipment should not undergo maintenance procedures on site, and should not occur within 100 m of the Mthatha River and watercourse areas.
- Maintenance procedures should only take place at a designated Construction Camp, within urban settlement, or alternatively at a Workshop in Mthatha.
- Potentially hazardous materials used during the construction phase (including cement and solvents) must be housed under cover (where practical) and utilising bunded areas, where necessary.

- All reasonable efforts must be made to prevent potential spills of these substances.
- Accidental oil and fuel spillages to be cleaned up immediately by the Contractor, placed in sealed containers and disposed of at a licensed waste disposal site. Spill kits must be made available and the correct procedures followed during the clean-up of spills.

Traffic Impacts:

- A detailed Traffic Management Plan should be compiled by the Contractor to ensure that traffic on the local roads is disrupted as little as possible.
- This plan should include measures for the optimization of the amount of travel on the local roads, thereby reducing impact.
- The delivery of construction equipment and material should be limited to hours outside peak traffic times (including weekends).
- Where obvious damage to the road infrastructure has occurred as a result of the project, repairs should be undertaken in accordance with the Local Municipality's specifications and requirements.

Heritage Impacts:

- If not already located behind a fence, the grave sites identified in the HIA Report must be fenced off and protected for the duration of the construction phase.
- Should sub-surface archaeological resources or artefacts be uncovered during construction, activity must be halted and the relevant Heritage Authority informed.

Noise Impacts:

- Construction activities should be limited to normal working hours (08:00 – 17:00).

Dust Impacts:

- Dust minimisation and control measures should be implemented on the construction site at regular intervals. This could include irrigation by water tankers.

- The frequency of implementation of dust suppression measures should be increased when it is expected that high wind conditions will develop.
- Vegetation clearing should only take place immediately prior to the commencement of construction activities in an area, in order to minimise the amount of exposed soil on the site.

An Environmental Control Officer must be appointed to oversee the implementation of the Environmental Management Programme for the duration of the construction phase.

No Go Alternative

The no go alternative should not be pursued.

4. OPERATIONAL PHASE

(i) Summary of Impacts

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	E	D	M	P		
Increased energy demand	All (particularly 2 &3)	Limited	Negative	5	4	4	3	39	Medium
Decreased availability of water to other water users	All	No	Negative	3	4	6	5	65	High
Modification of the flow regime in the Mthatha River, downstream of the dam	All	Limited	Negative	3	4	6	4	52	Medium
Spread of alien invasive plant species	All	Yes	Negative	1	3	4	4	32	Medium
Environmental contamination as a result of spillage of chemicals stored and utilised in the treatment process	All	Yes	Negative	1	4	4	2	18	Low
Generation of a waste requiring appropriate storage, handling and disposal	All	Yes	Negative	3	4	4	5	55	Medium

Increased access to clean drinking water for the residents who will be connected to this water supply system	All	None required	Positive	3	4	6	5	65	High
Improved water service delivery by the Water Services Authority	All	None required	Positive	3	4	6	5	65	High
Increased financial investment in the area, based on improved levels of basic service delivery	All	None required	Positive	3	4	6	4	52	Medium
Increased human hygiene and health levels	All	None required	Positive	3	4	6	4	52	Medium

(ii) Impacts Identified

The operational phase impacts for each of the three layouts under consideration are the same. They have therefore been combined in this single table.

Alternative 1 (Preferred Layout; Alternate Layout 1; Alternate Layout 2)

Direct impacts:

- The operation of the proposed development will result in an increase in the amount of energy required from the National Grid, at a time when this is a limited resource. This could contribute to the threat of power cuts. Layout Options 2 & 3 would require more energy input as compared to Layout Option 1b, due to the need to pump raw water over a greater distance and up slopes with a steeper gradient.
- The operational works will result in an increase in the volume of water abstracted from the Mthatha Dam. This has implications for current water users, such as Eskom, who will have access to less water as a direct result. This issue of securing the appropriate reserve for downstream users is being addressed through the Water Use Licensing process.
- The abstraction of significant volumes of water from the Mthatha Dam would result in a modification of the hydrological regime within the Mthatha River, downstream of the dam. This would decrease in the availability of water for downstream water users and ecosystems, potentially resulting in harm to these.

- There is a potential for the pipeline servitudes to provide a suitable habitat for weedy and invasive plant species.
- The treatment process will involve the additional of various chemical substances to the raw water. These would include flocculation agents and chlorine. These chemicals, if spilled, could impact detrimentally on the environment.
- The treatment process will result in the generation of a dried sludge waste. This waste material will need to be disposed appropriately to ensure that it does not cause harm to the environment.
- The proposed project is that it will vastly improve the greater Mthatha and surrounding areas' long term level of service and assurance of water supply.
- The availability of a reliable water supply will attract investment to and allow for increased local economic development within the peri-urban areas surrounding the town of Mthatha, thus reducing the trend of concentrated growth in Mthatha at the expense of the surrounding areas.
- Improved human health and hygiene levels associated with greater availability of clean, potable water.
- The proposed development will enable the OR Tambo District Municipality to meet the objectives set in its Integrated Development Plan (IDP), as well as to comply with the objectives of the various policies and programmes which inform the IDP, including the Electoral Mandate, the New Economic Growth Path, the National Development Plan, the Eastern Cape Provincial Growth and Development Plan and the Provincial Strategic Framework.

Indirect impacts:

- Improved rural access to services.
- Investment in infrastructure as a driver of job creation across the economy.
- Transformation of rural spaces.
- Increased economic growth potential of the region.

Cumulative impacts:

- Increased investment and economic growth in the region as a result of improved service delivery, with a resultant increase in job creation, i.e. unlocking the economic growth potential of this region.
- Poverty alleviation and eradication.
- Institutional empowerment.
- Improvement in the quality of life for the poorest people in the region.

No Go Alternative

Direct impacts:

- No increase in energy usage.
- No alteration in the volumes of water being abstracted from the Mthatha Dam, meaning that current water users will not be impacted upon.
- No alteration in the flow regime of the Mthatha River below the Dam.
- No invasion of the site by alien plan species.
- No risk of environmental contamination.
- No generation of a waste substance requiring appropriate storage, handling and disposal.
- No improvement in the greater Mthatha and surrounding areas' long term level of service and assurance of water supply.
- No increase in reliability in the availability of water supply and therefore, no attraction of investment to the area. There will therefore be no increase in local economic development within the peri-urban areas surrounding the town of Mthatha, meaning that the trend of concentrated growth in Mthatha at the expense of the surrounding areas will continue.
- No improvement in human health and hygiene levels associated with greater availability of clean, potable water.
- The OR Tambo District Municipality will not meet the objectives set in its Integrated Development Plan (IDP), or the various policies and programmes which inform the IDP.
- No new job opportunities will be created.

Indirect impacts:

- No improvement in rural access to services.
- No increase in investment in infrastructure and therefore, no associated job creation.
- Transformation of rural spaces will not be achieved.
- No increase in the economic growth potential of the region.

Cumulative impacts:

- No potential for unlocking the economic growth potential of this region.
- No poverty alleviation and eradication.
- No institutional empowerment.
- No improvement in the quality of life for the poorest people in the region.

(iii) Proposed Mitigation

Alternative 1 (Preferred Layout; Alternate Layout 1; Alternate Layout 2)

- The design engineers should investigate options for energy efficiency which can be incorporated into the design of the WTW.
- Application must be made to the Department of Water and Sanitation to amend the Water Use License for the abstraction of water from the Mthatha Dam. This would require engagement of and negotiation with existing water users, such as Eskom, to ensure that all users get sufficient water to meet their needs (it is understood that this process has already commenced). This process has commenced.
- When making the application to DWS regarding abstraction of water, an assessment of the impacts on downstream users and ecosystems must be made in determining whether to grant the license or not.
- Alien vegetation must be removed for the duration of the operational phase.
- Chemical substances utilised in the treatment process must be housed under cover and utilising bunded areas, where necessary.

- All reasonable efforts must be made to prevent potential spills of these substances.
- Accidental spillages to be cleaned up immediately and disposed of at a licensed waste disposal site. Spill kits must be made available and the correct procedures followed during the clean-up of spills.
- A waste management plan aimed at enhancing the minimisation, reuse and recycling of wastes over disposal of wastes, should be compiled and implemented for the duration of the operational phase. this plan should be reviewed periodically to ensure that it is making use of the best available techniques.

No Go Alternative

The no go alternative should not be pursued.

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.

PREFERRED ALTERNATIVE – LAYOUT OPTION 1B:

The preferred layout of the proposed development is Layout Option 1b. This has been selected as the preferred layout as it has a number of advantages over the other layout options under consideration. These include:

- The area proposed for the establishment of the WTW and raw water reservoir is relatively flat as compared to the surrounding landscape, minimising the need for cut and fill during construction, with the resultant minimization of construction costs and environmental impacts.

- The site of the WTW is acceptable to the leadership of the local community as it has not been identified for future housing development.
- The pumping of dirt-laden raw water is minimised, minimising electricity costs for pumping activities.
- The natural slopes which the pipelines will have to overcome are far less than those associated with Layout Options 2 and 3, meaning that costs and overall head loss through the works (wasted energy), is minimised.
- The route of the raw water rising main avoids the wetland area identified by the Wetland Specialist.
- The majority of the pipeline has been routed in areas which have been previously disturbed (i.e. along the edges of roads and residential areas), minimising disturbance of the indigenous vegetation, which has been predicted to comprise Moist Mthatha Grasslands, which are categorised in terms of the NEMBA, 2004, as Vulnerable.
- The route avoids the disturbance of heritage resources / graves which were identified through the HIA; and
- The route avoids the disturbance of protected plant species identified by the Vegetation Specialist.
- The route avoids an area of significant erosion, minimising the risk of worsening the state of this area.

Detrimental environmental impacts associated with the preferred layout are predominantly limited to the construction phase. These impacts were identified and investigated by a Wetland Specialist, a Vegetation Specialist and a Heritage Specialist. Significant findings include:

- Soils in the area are at risk of compaction, physical removal and potential pollution by hydrocarbons. Furthermore, if adequate stormwater control measures are not implemented

during the construction phase, soil erosion and subsequent removal of vegetation may occur. The specialists recommended mitigation measures, which have been included into the EMPr and concluded that the post-mitigation significance of these impacts would be negligible.

- Loss of terrestrial vegetation of the Eastern Valley Bushveld and Mthatha Moist Grassland types, as well as associated habitat. Moist Mthatha Grassland is listed as Vulnerable in terms of the National Environmental Management Biodiversity Act, 2004 (NEMBA) and the area is highlighted as a Critical Biodiversity Area (CBA) in terms of the Eastern Cape Biodiversity Conservation Plan (ECBCP). The vegetation specialist noted, however that vegetation on the development site is degraded, transformed, fragmented and is in a moderate to poor ecological condition, with a high abundance of weedy species. The specialists recommended mitigation measures, which have been included into the EMPr and concluded that the post-mitigation significance of these impacts would be negligible to low.
- The specialist noted that no riparian vegetation will be impacted upon as vegetation in riparian areas is already significantly degraded.
- No significant heritage impacts were identified by the Heritage Specialist, provided the recommendations for the protection of identified graves were implemented.

The operational facility is anticipated to have a number of social and economic benefits. No significant detrimental environmental impacts have been identified associated with the operational phase.

It is recommended that the **Preferred Layout (Option 1b) be authorised** as:

- No fatal flaws were identified as associated with either the construction or operational phases of the proposed development. Environmental impacts which are anticipated to arise have been found not to be significant. In addition, it is possible to mitigate these impacts successfully;
- It will result in significant social and economic benefits;

- It is designed to meet future water requirements of the area; and
- It has taken into consideration and aimed to minimise construction costs, maintenance costs and operational electricity requirements.

LAYOUT OPTION 1a:

Layout Option 1a is the initial layout considered for the proposed development. The reason this layout is not recognised as the preferred layout is predominantly related to the fact that the Wetland Specialist identified a seepage wetland on the site. He noted further that a section of the raw water rising main pipeline was routed through this seepage wetland area.

While the Wetland Specialist did make recommendations for the mitigation of the impacts associated with constructing in wetlands, and while he also noted that the significance of these impacts would be low (if properly mitigated), the Design Engineers are of the opinion that the wetland area, which is a sensitive system (if degraded and poorly functional) which should be avoided.

LAYOUT OPTION 2:

Layout Option 2 has been deemed to be a non-viable option by the Design Engineers. The reasons for this include:

- The sites proposed for the establishment of the raw water reservoir and WTW are on fairly steep slopes and would therefore require fairly extensive cut and fill during the construction phase. This would have significant implications for the cost of construction as well as erosion, sedimentation and water quality impacts;
- The raw water reservoir is located a great distance from the pumpstation (over twice the distance compared to that in the preferred layout). This would necessitate the installation of a larger and stronger pump at the raw water pumpstation, with associated cost implications;

- The location of the WTW would limit planned, future housing developments. The local leadership has indicated that the site proposed in Layout Option 2 is not supported.
- The natural slopes which the pipelines will have to overcome are much steeper that those associated with Layout Option 1, meaning that costs and overall head loss through the works (wasted energy), is much higher for this option as compared to Option 1.

Based on these explanations, Layout Option 2 is **not recommended for authorisation**.

LAYOUT OPTION 3:

Layout Option 3 has been deemed to be a non-viable option by the Design Engineers. The reasons for this include:

- The sites proposed for the establishment of the raw water reservoir and WTW are on fairly steep slopes and would therefore require fairly extensive cut and fill during the construction phase. This would have significant implications for the cost of construction as well as erosion, sedimentation and water quality impacts;
- The raw water reservoir is located a great distance from the pumpstation (over twice the distance compared to that in the preferred layout). This would necessitate the installation of a larger and stronger pump at the raw water pumpstation, with associated cost implications;
- The location of the WTW would limit planned, future housing developments. The local leadership has indicated that the site proposed in Layout Option 2 is not supported.
- The natural slopes which the pipelines will have to overcome are much steeper that those associated with Layout Option 1, meaning that costs and overall head loss through the works (wasted energy), is much higher for this option as compared to Option 1.

- The Vegetation Specialist noted that the raw water rising main and WTW positions associated with Layout Option 3 intersect the locations of protected plan species, including *Xysmalobium orbiculare, Gladiolus ecklonii* and *Gladiolus woodii.*
- A section of the raw water pipeline was noted to intersect an area of headcut erosion. Construction in this area would severely compromise the stability of this area, resulting in further erosion and potential future damage to the water supply infrastructure.

Based on these explanations, Layout Option 3 is **not recommended for authorisation**.

No-go alternative (compulsory)

The no go alternative would retain the status quo in terms of both the state of the environment and the socio-economic situation in Mthatha and its surrounding peri-urban areas.

This alternative would result in no loss of vegetation. This is not, however, deemed to be a significant benefit as the wetland and vegetation specialists both found that the proposed development site, its vegetation and the seepage wetland, are highly transformed and have a low to medium ecological value.

In addition, this alternative would result in the loss of significant social and economic benefits such as improved access to water and increased economic growth potential for the region.

The no go option is **not recommended for authorisation** as it would result in insignificant environmental benefits and significant social and economic impacts (loss of significant benefits).

SECTION E. RECOMMENDATIONS OF PRACTITIONER

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

The EMPr must be attached as Appendix F.

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

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

Vegetation Recommendations and Mitigations:

- The extent of the development footprint and working servitude area must be limited as much as possible.
- Limit vegetation removal to the construction footprint only. Retain natural vegetation as much as possible.
- The alignment of pipelines with existing roads and/or human settlement, as shown in the proposed layouts must be complied with.
- Re-vegetate disturbed areas as soon as construction activities have been completed. A Horticultural Landscaper should be employed to assist with the rehabilitation process, in particular where seed collection, nursery propagation and subsequent planting of protected species is required.
- Rehabilitate the construction footprint with indigenous grasses by means of in-situ grass sods

and hydro-seeding (indigenous species).

- With regards to the protected species located within the development footprint of Layout Option 3, the following specifications are recommended: Submit an application to the DEDEAT for the removal of protected species, to include the rehabilitation specifications.
- Rehabilitate this construction footprint with protected species as follows: For every 500 m of pipeline plant 2 of each species (therefore 6 plants per 500 m). For example: 4 500 m of pipeline will require 54 plants to be planted (18 X *Gladioulus ecklonii*, 18 X Gladi*oulus wooddii*, 18 X *Xysmalobium* (possibly *orbiclare*). Species should be planted in areas that will not be transformed in the future (e.g. fenced in areas).
- Alien plants must be removed by the Contractor, where these plants establish in the construction footprint during the construction period.
- Construction areas must be rehabilitated as soon as construction is complete along a particular stretch of the pipeline.
- Topsoil should be stockpiled to be re-used during rehabilitation, and measures implemented to prevent erosion of stockpiles (e.g. covers).
- Watering will be required to ensure establishment of plants, unless sufficient rainfall is experienced during the rehabilitation period.
- The maintenance period shall not be less than 6 months to 1 year duration from the time a specific stretch of corridor is rehabilitated.
- Acceptable Cover: 80 % indigenous plant cover and 80 % survival rate of protected species planted out should be ensured, and if such cover (or survival rate) is not secured the maintenance period shall be extended.

Archaeological Recommendations and Mitigations:

- When the removal of topsoil and subsoil on the site earmarked for the pipeline and pressure and storage tank development commences, the site should be monitored by an archaeologist

for subsurface archaeological materials.

- Should chance archaeological materials or human burials remains be exposed during subsurface construction work on any section of the bulk water pipeline servitude laydown sites, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the PHRA and NHRA regulations.
- The construction monitoring process must ensure that should any archaeological or human remains be disturbed during subsurface construction work at the Sites of Interest, immediate remedial rescue and salvage work be actioned without delay.

Other Recommendations and Mitigations:

Soil Impacts:

- The head-cut erosion / gully noted as being intersected by Layout Option 3 should be avoided as a site for development. A minimum buffer of 32 meters should be applied. Strict erosion and stormwater control measures will need to be implemented in this area during construction; and the area must be rehabilitated immediately after the pipeline has been buried.
- The head-cut / gully erosion site could be used as a donga filling site, if excess soil is created post construction.
- An erosion or stormwater control plan must be implemented across the entire development site to prevent and control erosion impacts.

Surface Water Impacts:

- To prevent contamination of surface water resources due to oil and fuel leakages and accidental spillages, vehicles and construction equipment should not undergo maintenance procedures on site, and should not occur within 100 m of the Mthatha River and watercourse areas.
- Maintenance procedures should only take place at a designated Construction Camp, within urban settlement, or alternatively at a Workshop in Mthatha.
- Potentially hazardous materials used during the construction phase (including cement and solvents) must be housed under cover (where practical) and utilising bunded areas, where necessary.
- All reasonable efforts must be made to prevent potential spills of these substances.
- Accidental oil and fuel spillages to be cleaned up immediately by the Contractor, placed in sealed containers and disposed of at a licensed waste disposal site. Spill kits must be made available and the correct procedures followed during the clean-up of spills.

Traffic Impacts:

- A detailed Traffic Management Plan should be compiled by the Contractor to ensure that traffic on the local roads is disrupted as little as possible.
- This plan should include measures for the optimization of the amount of travel on the local roads, thereby reducing impact.
- The delivery of construction equipment and material should be limited to hours outside peak traffic times (including weekends).
- Where obvious damage to the road infrastructure has occurred as a result of the project, repairs should be undertaken in accordance with the Local Municipality's specifications and requirements.

Noise Impacts:

- Construction activities should be limited to normal working hours (08:00 – 17:00).

Dust Impacts:

- Dust minimisation and control measures should be implemented on the construction site at regular intervals. This could include irrigation by water tankers.
- The frequency of implementation of dust suppression measures should be increased when it is expected that high wind conditions will develop.
- Vegetation clearing should only take place immediately prior to the commencement of construction activities in an area, in order to minimise the amount of exposed soil on the site.

Operational Phase Impacts:

- The design engineers should investigate options for energy efficiency which can be incorporated into the design of the WTW.
- Application must be made to the Department of Water and Sanitation to amend the Water Use License for the abstraction of water from the Mthatha Dam. This would require engagement of and negotiation with existing water users, such as Eskom, to ensure that all users get sufficient water to meet their needs (it is understood that this process has already commenced).
- When making the application to DWS regarding abstraction of water, an assessment of the impacts on downstream users and ecosystems must be made in determining whether to grant the license or not.
- Alien vegetation must be removed for the duration of the operational phase.
- Chemical substances utilised in the treatment process must be housed under cover and utilising bunded areas, where necessary.
- All reasonable efforts must be made to prevent potential spills of these substances.

- Accidental spillages to be cleaned up immediately and disposed of at a licensed waste disposal site. Spill kits must be made available and the correct procedures followed during the clean-up of spills.
- A waste management plan aimed at enhancing the minimisation, reuse and recycling of wastes over disposal of wastes, should be compiled and implemented for the duration of the operational phase. this plan should be reviewed periodically to ensure that it is making use of the best available techniques.

An Environmental Control Officer must be appointed to oversee the implementation of the Environmental Management Programme for the duration of the construction phase.

SECTION F: APPENDICES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information