



DRAFT BASIC ASSESSMENT REPORT:

**PROPOSED UPGRADE AND CONSTRUCTION OF NEW BULK WATER SUPPLY
INFRASTRUCTURE FOR THE TIERKLOOF AND BOSCHDAL RESERVOIRS IN
RUSTENBURG, RUSTENBURG LOCAL MUNICIPALITY, NORTH WEST PROVINCE**

Project No.: [DEDECT REF NO: NWP/EIA/41/2013]

25 October 2013



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the DEDECT

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File Reference Number:
Application Number:
Date Received:

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

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. 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 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.
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.

SECTION A: ACTIVITY INFORMATION

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

If YES, please complete the form entitled "Details of specialist and declaration of interest" for appointment of a specialist 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 detail¹:

Due to the increasing demand for water supply in the Tierkloof and Boschdal area, the Rustenburg Local Municipality proposes to upgrade the existing bulk water supply infrastructure in the area. Aurecon have been appointed by the Rustenburg Local Municipality as the project engineers responsible for the design and implementation of the Boschdal bulk water supply project. In turn, Aurecon have appointed Interdesign Landscape Architects (ILA) to apply for an environmental authorisation on behalf of the Rustenburg Local Municipality for the proposed bulk water supply upgrade.

The existing bulk water supply infrastructure proposed for upgrade is located on private land within the Schoongezigt Estate property, which is located on the Remaining Extent 43 and Portion 71 of the Farm Waterval 306, and Portions 47 and 7 of the Farm Boschdal 309, JQ, Rustenburg Local Municipality, North West Province.

The proposed bulk water supply upgrade entails the following:

- ✚ Construction of DN 315 and DN 250 mm pipelines, approximately 1800 m and 1000 m long, respectively;
- ✚ Construction of a pump station building with access road (To pump water up to new steel tank);
- ✚ Construction of a reinforced concrete valve chamber;
- ✚ Supply and installation of a 1 MI prefabricated steel reservoir;
- ✚ Connection to the existing reticulation network; and
- ✚ General earthworks and concrete work for pump station and steel tank.

The proposed bulk water supply upgrade is required to meet the future growth in water demand and to address the current supply problems related to water shortages and inadequate pressure for the Boschdal area in Rustenburg. Water will be drawn from the existing 100 MI Rand Water reservoir and pumped via a 315mm diameter rising main to a new 1 MI steel tank. The new pump station will be located in close proximity to the existing Rand Water reservoir.

Water will be supplied from the new 1 MI steel tank to the three different pressure supply zones within the Boschdal development. The supply zones are (refer to Drawing 107392-DW-C-004 in

¹ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

Appendix A5):

- ✚ Lower Supply Zone;
- ✚ Upper Supply Zone; and
- ✚ Boosted Upper Supply Zone.

The methodologies for supplying the above listed zones with water from the proposed steel tank are described below.

Lower Supply Zone

A 250mm diameter gravity pipe will convey water from the new steel tank to a new pressure reducing valve (PRV) chamber. The pressure upstream of the PRV chamber will be reduced by the PRV to the same full supply level of the current 0.2 MI Tierkloof reservoir (*Note, the existing Tierkloof reservoir will be demolished once the new scheme is operational*).

Upper Supply Zone

Water for the Upper Supply Zone will also be conveyed in the same 250mm diameter gravity main used for the Lower Supply Zone. Within the PRV chamber, an off-take is located upstream of the PRV, which will supply directly to the upper zone reticulation at the pressure supplied by the new steel tank.

Boosted Upper Supply Zone

Water would be fed from the new steel tank to a future booster pump station (identified as pump station 2) located adjacent to the steel tank. The pump station will boost the pressure in the reticulation system to the required pressure.

Existing Rand Water Reservoir

The existing 100ML Rand Water steel reservoir is located 25°42'59.91" S, 27°13'54.32" E, concealed slightly below ground level at an altitude of 1392 m above mean sea level. It is the main source of water supply



Figure 1: The existing 100 ML Rand Water reservoir

Existing Tierkloof Reservoir

This reservoir is located 25°43'02.12" S, 27°13'37.69" E, further westward, and uphill of the Rand Water reservoir at 1 445m amsl. The reservoir is a square steel tank with 6 panels in length, and 3 panels in height. The panel size is assumed to be 1 220 mm x 1 220 mm (ex Abeco) giving the tank plan dimensions of 7 320 mm X 7 320 mm with a height of about 3 6660 mm, and an internal volume of about 200 m³. The concrete floor slab and upstand beams appear in satisfactory condition with no evidence of visible cracking or corrosion of reinforcing. The steel walls are galvanised panels, which are bolted together and braced internally with steel members.



Figure 2: The existing 200 m³ Tierkloof Reservoir

The existing steel reservoir is to be decommissioned once the proposed Pressure-Reducing Valve (PRV) chamber system is installed and operational.

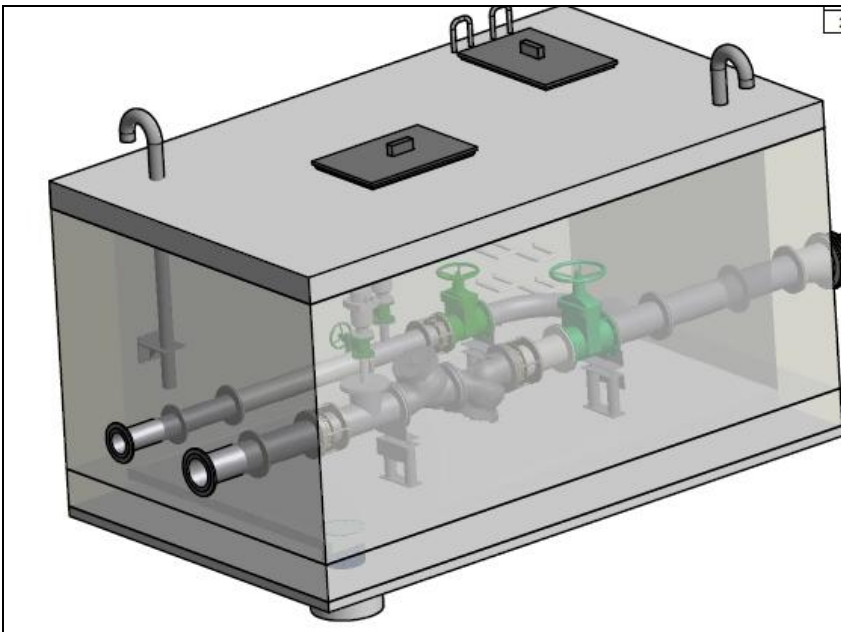


Figure 3: Isometric view of the proposed Pressure-Reducing Valve Chamber (PRV)

Refer to Appendix C3 for detailed drawings of the PRV.

Proposed 1ML Pre-fabricated Steel Reservoir

The proposed water reservoir is a 13.42 x 14.64 x 4.88m rectangular prefabricated steel tank.

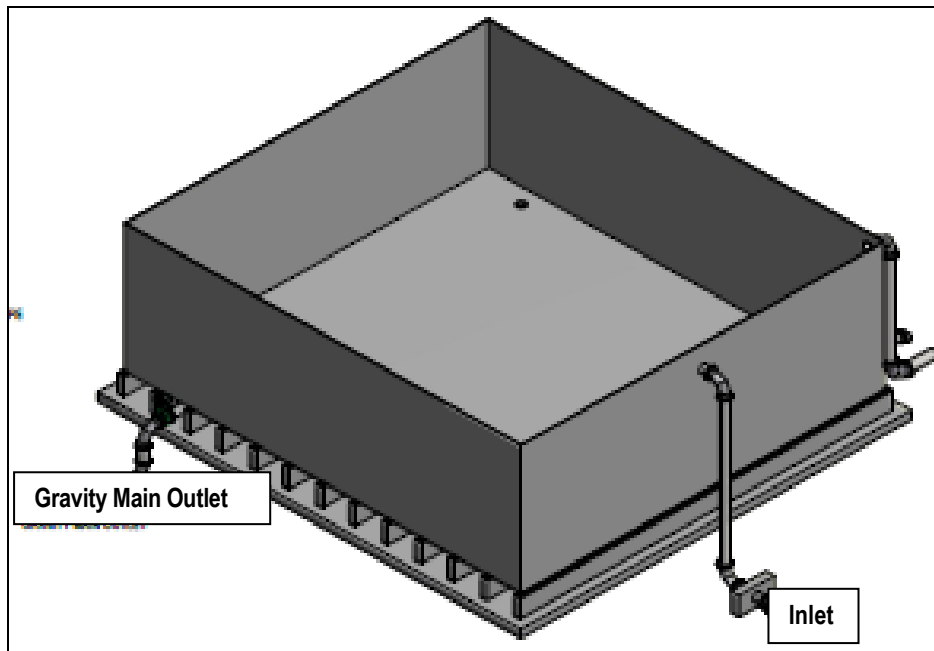


Figure 4: Isometric view of the proposed 1 ML steel reservoir showing the gravity main outlet and inlet

Refer to Appendix C1 for detailed drawings of the reservoir.

Currently there is no access road to the planned site for the 1ML supply reservoir. Therefore, a 2.5 m wide and 130 m long access road is proposed, which links the site with the planned access road reserved for future residential units.

Proposed Booster Pump Station

The proposed booster pump station to supply the 1ML steel reservoir will be located next to the Rand Water Reservoir. A 156.23 m² pump station with separate rooms for the Gen Set, fuel tank, and Motor Control Center (MCC) are proposed. Refer to Appendix C2 for the layout plans and cross sections. The type of pump selected for installation is a multi-stage centrifugal pump with a flow range of between 1 l/s to 125 l/s and a pressure range of between 5 m to 270 m. The selected centrifugal pump's absorbed power is 43 Kw, which means the installation of a 55Kw electrical motor will provide the required mechanical power efficiently. In addition, a Gen Set for the pump is to be installed in case of power failure and the fuel tank will be sized enough to ensure continuous operation for 8 hours during power failure.

Proposed Rising and Gravity Mains

The preferred pipeline routes that minimise impact on the existing vegetation have already been determined and these are shown in Figure 4. The proposed gravity main is expected to be approximately 1000 m in length, while the proposed Rising Main is expected to be approximately 1800 m long. Both pipeline servitudes are expected to be 10 m wide. Refer to Appendix A4 for other alternative pipeline routes considered.

Kgaswane Mountain Reserve

The proposed development site is located within Schoongezigt Estate, an upmarket private residential development with 384 undeveloped stands covering an area of 39.1 hectares, and 10.9 hectares reserved for roads. The Schoongezigt Estate borders with the Kgaswane Mountain Reserve to the south and west. The nature reserve hosts a varied habitat consisting of quartzite mountain peaks and vleis on the northern slopes of the Magaliesberg Mountains. According to the Ecological Report in Appendix D1, the nature reserve hosts a number of mammalian species with over 800 antelope, including klipspringer, grey duiker, bushbuck, kudu, oribi, mountain reedbuck, impala, red hartebeest, zebra, springbok, steenbok, sable antelope, and waterbuck. The reserve is well known for breeding sable antelopes, which are particularly well suited to the environment. A small number of predators, including caracal, aardwolf, black-backed jackal and leopard also occur. The project area does not form part of the potential expansion areas as identified by the National Protected Areas Expansion Strategy (NPAES).

Environmental Application

An environmental authorisation is required in terms of Sections 24 and 24(D) of the Act, as read with Government Notices R543 (Regulations 21 – 25), R544 and R546 of which a Basic Assessment (BA) is required for the following activities:

1. The construction of facilities or infrastructure exceeding 1 000 metres in length for the bulk transportation of water, sewage or stormwater (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughout of 120 litres per second or more. **[GNR 544, 9]**
2. The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, at the time of the coming into effect of this Schedule such land was zoned open space, conservation or had an equivalent zoning. **[GNR 544, 24]**
3. The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres (c) in North West (ii) outside urban areas (bb) in sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the Competent Authority. **[GNR 546, 2(c)(ii)]**
4. The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetation cover constitutes indigenous vegetation (b) within critical biodiversity areas identified in bioregional plans. **[GNR 546, 12(b)]**
5. The expansion of reservoirs for bulk water supply where the capacity will be increased by more than 250 cubic metres (c) in North West (i) outside urban areas, in (cc) sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority. **[GNR 546, 17(c)(ii)]**



LEGEND

- RISING MAIN
- GRAVITY MAIN
- CADASTRAL BOUNDARY
- ERF/TEN CADASTRAL
- FENCE



CLIENT


RUSTENBERG LOCAL MUNICIPALITY

REV	DATE	REVISION DETAILS	APPROVED

PROJECT
UPGRADING OF BOSCHDAL WATER SUPPLY

TITLE
OVERALL LAYOUT PLAN

DRAWN	DESIGNED	TENDER
M. COMBRADE	J.A. CALITZ	NOT FOR CONSTRUCTION
SKLEYNHANS	SKLEYNHANS	107392
APPROVED	DATE	SCALE
		NOT TO SCALE
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		C-100
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Figure 5: Overall layout plan for the proposed Tierkloof and Boschdal bulk water supply infrastructure

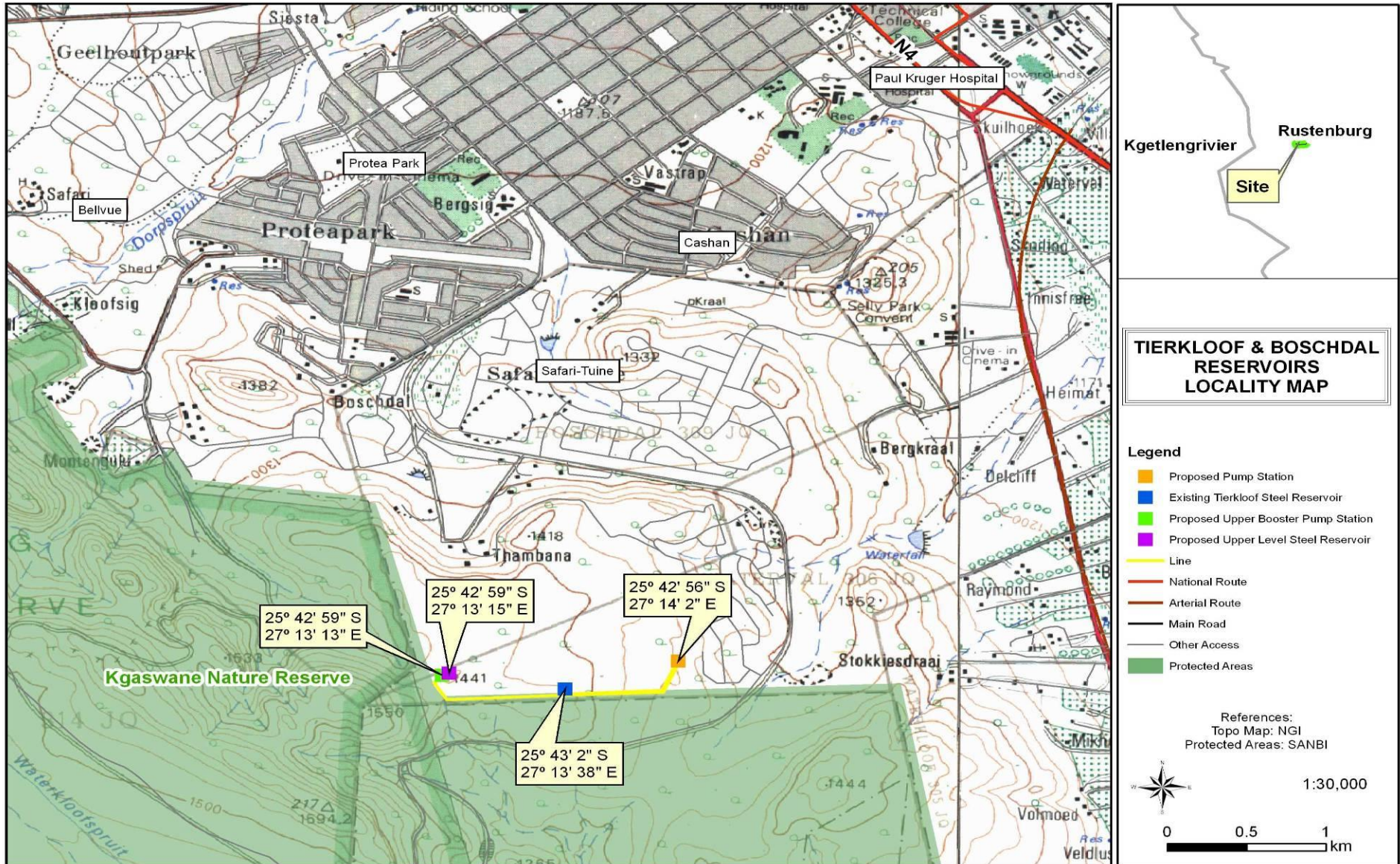


Figure 6: Topographical map showing the periphery of the Kgwasane Nature Reserve in relation to the proposed development footprint

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;

No location alternatives for the proposed water reservoir and pump station were considered due to the limited space for development as a result of the Kgwasane Nature Reserve and the Schoongezigt Estate planned residential development.

However, alternative pipeline routes as indicated on the map in Appendix A4, were considered.

Motivation for the preferred pipeline route

- ❖ Preferred option avoids any future infrastructure development within Schoongezigt Estate.
- ❖ Easy to register pipeline servitude with proposed route as it follows the existing boundary.
- ❖ Optimal use of cadastral plot. Pipelines are located far from development to increase potential space for development.
- ❖ The pipeline route is shorter and less energy is required to pump the water up to the steel tank. Less capital layout for the pump station and long-term power savings.
- ❖ Shorter pipe route for the rising and accompanied gravity main will affect savings on project cost due to shorter trenching, less concrete chambers and reduced pipe material.

(b) the type of activity to be undertaken;

The proposed activity is an essential service required in the area and therefore cannot be evaluated with other activities suitable in the area.

(c) the design or layout of the activity;

The following alternative schematic layouts were investigated:

Preferred Layout 1 – 107392-DW-C-005 (Refer to Appendix A1)

Alternative Layout 2 – 107392-DW-C-006 (Refer to Appendix A2)

Alternative Layout 3 - 107392-DW-C-007 (Refer to Appendix A3)

Motivation for preferred layout

- ❖ Both alternative options include a proposed steel tank located within a current Nature Reserve. To avoid any disturbance to the Nature Reserve area, these alternatives were not considered any further. The preferred option is based on locating the steel tank within the Schoongezigt Estate.
- ❖ Access to the proposed steel tank for the alternative options is more difficult due to the steepness of the terrain. The preferred option is close to proposed infrastructure and therefore not problematic.
- ❖ Longer pipelines will be required to supply the alternative options compared to the pipeline length of the preferred option.

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

1. Water Reservoir Technology

The preferred water reservoir is a 13.42 x 14.64 x 4.88 m rectangular prefabricated steel tank. The advantages and disadvantages of this option including alternatives are listed below.

Rectangular steel tank

Advantages:

Quick and easy to constructed on site

Manufacturing quality control takes place at the factory

Easy to repair and maintain

Disadvantages:

Marginally more expensive compared to a concrete reservoir

If not painted to blend in with surroundings, can create a visual nuisance

Concrete Reservoir (Alternative 1)

Advantages:

Economies of scale when reservoir is large

Reservoir material is long lasting and durable (i.e. no need for future maintenance of a steel structure)

Increased job creation for local labour

Disadvantages:

Takes a long time to construct, which is a security concern for Schoongezigt Estate

More complicated structure to construct and more dependent on quality of workmanship

Large number of construction vehicles required to deliver concrete to site

Elevated steel tank

Advantages:

Quick and easy to constructed on site

Manufacturing quality control takes place at the factory

Supply pressure at elevated level, no need for Booster pump station

Disadvantages:

More expensive than grounded steel tanks

Creates a visual impact as tank would be located 12 – 14 m above the ground

Tank is difficult to repair and maintain due to elevation above ground level

2. Pipe material

The preferred pipe material is uPVC (Unplasticized polyvinyl chloride), but two other alternatives were also considered, namely Ductile Iron and GRP (Glass reinforced plastic).

Motivation for preferred option

- ❖ Preferred option is cheaper and more readily available compared to alternatives.
- ❖ Pipe is very light, which makes it easier to transport, handle and lay, when compared to Ductile Iron.
- ❖ uPVC pipe does not need additional corrosion protection compared to Ductile Iron.
- ❖ uPVC is more robust in respect to laying of pipe compared to GRP which is sensitive to impact damage when not properly handled and installed.

- ❖ All pipe materials considered have flexible pipe connections, but uPVC is lighter to handle than Ductile Iron and less sensitive to pipe breakages when compared to GRP.
- ❖ The municipality, who will be responsible for maintenance of the pipeline, is very familiar with uPVC, which would minimise downtime during pipe repairs.

(e) the operational aspects of the activity; and

No feasible, alternative operational aspects were identified for investigation.

(f) the option of not implementing the activity.

The Rustenburg Local Municipality is currently faced with a serious challenge in terms of meeting demand for water supply in urban areas due to an expanding urban population. The situation is much more serious in high lying areas where additional capacity in water supply infrastructure is required to meet the recommended residual pressure.

The proposed bulk water system is required to meet the future growth in water demand and to address the current supply problems related to water shortages and inadequate pressure for the high and low lying areas of Boschdal, Rustenburg. The none upgrading of the water supply system would therefore limit future residential development in the area and increase water shortages in places of demand. Water supply is an essential and basic service for any existing or planned township development, hence the need for the proposed water supply infrastructure.

Conversely, the no development option would result in the existing status quo being maintained with no vegetation clearance and other impacts associated with the construction phase.

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.

Proposed 1ML Steel Reservoir

Alternative:	Latitude (S):			Longitude (E):		
Alternative S1 ² Layout 1 – 107392-DW-C-005 (preferred)	25°	42'	57.64"	27°	13'	14.91"
Alternative S2 Layout 2 – 107392-DW-C-006	25°	43'	05.68"	27°	13'	07.12"
Alternative S3 Layout 3 - 107392-DW-C-007	25°	43'	05.68"	27°	13'	07.12"

Proposed Pressure Control Valve Chamber

Alternative:	Latitude (S):			Longitude (E):		
Alternative S1 ³ (Only Site for all Layouts)	25°	43'	0.26"	27°	13'	38.85"

Proposed Pump Station 1

Alternative:	Latitude (S):			Longitude (E):		
Alternative S1 ⁴ Layout 1 – 107392-DW-C-005 (preferred)	25°	42'	55.33"	27°	14'	1.55"
Alternative S2 Layout 2 – 107392-DW-C-006	25°	42'	55.33"	27°	14'	1.55"
Alternative S3 Layout 3 - 107392-DW-C-007	25°	42'	55.33"	27°	14'	1.55"

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

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

⁴ "Alternative S.." refer to site alternatives.

Proposed future Pump Station 2

Alternative:

Latitude (S):

Longitude (E):

Alternative S1⁵ (Only Site for Layout 1)

25°	42'	57.64"	27°	13'	14.04"
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Proposed Rising Main: DN 315

Refer to Appendix A4

Alternative:

Latitude (S):

Longitude (E):

Alternative S1 (preferred or only route alternative)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

25°	42'	57.64"	27°	13'	14.91"
25°	43'	03.88"	27°	13'	35.70"
25°	43'	55.33"	27°	14'	01.55"

Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

25°	42'	57.00"	27°	13'	14.67"
25°	42'	53.38"	27°	13'	36.74"
25°	42'	54.97"	27°	14'	01.54"

Alternative S3 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

25°	42'	57.00"	27°	13'	14.67"
25°	42'	57.90"	27°	13'	38.17"
25°	43'	55.33"	27°	14'	01.55"

Proposed Gravity Main: DN 250

Refer to Appendix A4

Alternative:

Latitude (S):

Longitude (E):

Alternative S1 (preferred or only route alternative)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

25°	42'	57.75"	27°	13'	15.26"
25°	43'	04.61"	27°	13'	18.80"
25°	43'	0.26"	27°	13'	38.85"

⁵ "Alternative S.." refer to site alternatives.

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.

4. PHYSICAL SIZE OF THE ACTIVITY

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

Proposed 1ML Steel Reservoir

Alternative:

Size of the activity:

Alternative A1⁶ Layout 1 – 107392-DW-C-005
 (Preferred)

800 m ²
400 m ²
800 m ²

Alternative A2 Layout 2 – 107392-DW-C-006

Alternative A3 Layout 3 - 107392-DW-C-007

or, for linear activities:

Proposed Pressure Control Valve Chamber

Alternative:

Size of the activity:

Alternative A1⁷ Layout 1 – 107392-DW-C-005
 (Only preferred option)

100 m ²

Proposed Pump Station 1

Alternative:

Size of the activity:

Alternative A1⁸ Layout 1 – 107392-DW-C-005
 (Preferred)

300 m ²
300 m ²
300 m ²

Alternative A2 Layout 2 – 107392-DW-C-006

Alternative A3 Layout 3 - 107392-DW-C-007

Proposed Pump Station 2

⁶ "Alternative A.." refer to activity, process, technology or other alternatives.

⁷ "Alternative A.." refer to activity, process, technology or other alternatives.

⁸ "Alternative A.." refer to activity, process, technology or other alternatives.

Alternative:

Size of the activity:

Alternative A1⁹ Layout 1 – 107392-DW-C-005
 (Preferred)

250 m ²
250 m ²
250 m ²

Alternative A2 Layout 2 – 107392-DW-C-006

Alternative A3 Layout 3 - 107392-DW-C-007

or, for linear activities:

Rising Main

Alternative:	Length of the activity:
Alternative A1 (preferred activity alternative)	1 800 m
Alternative A2 (if any)	1 760 m
Alternative A3 (if any)	1 780 m

Gravity Main

Alternative:	Length of the activity:
Alternative A1 (Only preferred option)	1 000 m

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

The sizes of the above proposed development footprint includes the servitude area.

Rising Main

Alternative:

Size of the site/servitude:

Alternative A1 (preferred activity alternative)	10 m
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Gravity Main

Alternative:

Size of the site/servitude:

⁹ "Alternative A.." refer to activity, process, technology or other alternatives.

Alternative A1 (preferred activity alternative)		10 m
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5. SITE ACCESS

Does ready access to the site exist?

YES	<input type="checkbox"/>
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However, a new 2.5 m wide access road is planned for the future, which links the 1ML Reservoir with the planned access road for the residential units. Refer to Appendix A6.

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

130 m

Describe the type of access road planned:

The planned access road, as shown in Appendix A6, will be built during the servicing of the Schoongezigt Estate residential stands already pegged on the western side of the property, adjacent to the proposed 1ML reservoir. The main reason for this access road is to provide a direct link and easy access to the proposed reservoir and pump station for future maintenance purposes. Linking it with the planned residential access roads in the area is justifiable, from an integrated road network planning perspective.

The planned access road is for use by maintenance personnel during the operational phase of the proposed 1ML Reservoir and pump station. Current access to the proposed reservoir and pump station development site is from an existing narrow gravel road, and this will be used by contractors during the construction phase. This narrow gravel road is within the planned area for residential stands and therefore will not be accessible in future.

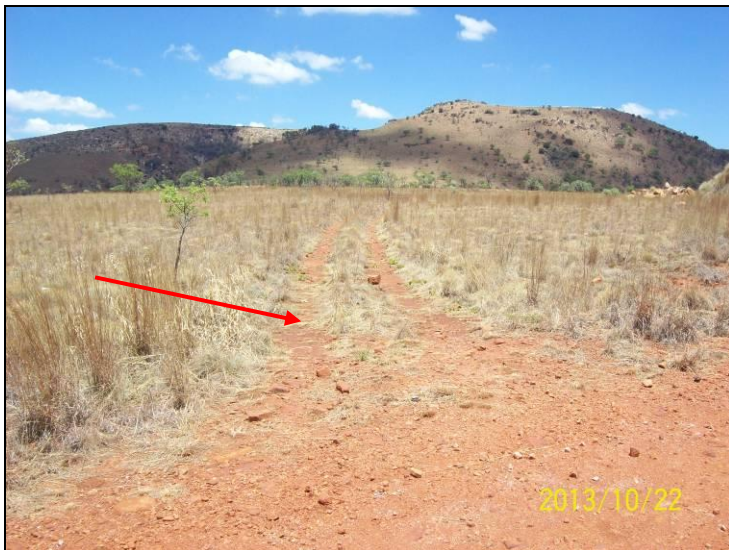


Figure 7: The existing narrow access gravel road to the proposed 1ML Reservoir and pump station development site

All the other proposed development sites are accessible through the already existing gravel road network.

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. Refer to Appendix A6 for the position of the planned access road.

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.

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;
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 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;
- 6.6 all trees and shrubs taller than 1.8 metres;
- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;
- 6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
 - rivers;
 - the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 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
- 6.11 the positions from where photographs of the site were taken.

Refer to Appendices A1, A2, A3, A4, and A6.

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.

Refer to Appendices B for the site photographs.

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.

Refer to Appendices C1, C2, and C3.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

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

R 8 Million

What is the expected yearly income that will be generated by or as a result of the activity?	Unknown, revenue will be linked to water sold to consumers	
Will the activity contribute to service infrastructure?	YES	
Is the activity a public amenity?		NO
How many new employment opportunities will be created in the development phase of the activity?	6 – 10	
What is the expected value of the employment opportunities during the development phase?	10% of the contract value will be spend on SMME's and local labour	
What percentage of this will accrue to previously disadvantaged individuals?	10% of the contract value will be spend on SMME's and local labour	
How many permanent new employment opportunities will be created during the operational phase of the activity?	0 as this scheme is an upgrade of the existing scheme and the current personnel will continue to management the new infrastructure	
What is the expected current value of the employment opportunities during the first 10 years?	R 0 as no additional staff will be employed	
What percentage of this will accrue to previously disadvantaged individuals?	0 %	

9(b) Need and desirability of the activity

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

NEED:			
1.	Was the relevant provincial planning department involved in the application?	YES	
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES	
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		
	N/A		

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES	
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES	

3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation: N/A		
5.	Will the proposed land use / development impact on the sense of place?	YES	
6.	Will the proposed land use / development set a precedent?	YES	
7.	Will any person's rights be affected by the proposed land use / development?		NO
8.	Will the proposed land use / development compromise the "urban edge"?		NO
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation. <i>The proposed 1 ML Steel Reservoir and pump station is located on relatively high ground in relation to the surrounding topography and is likely to be visually intrusive if not blended with the existing biophysical environment.</i>		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES	
2.	Explain: <i>The proposed development will ensure the provision of adequate and reliable water supply to the existing and planned residential developments in the area.</i>		
3.	Will the land use / development have any benefits for the local communities where it will be located?		NO
4.	Explain: <i>There no any existing local communities in the area as the proposed development site is located on private land reserved for an upmarket residential estate.</i>		

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, 1998 (Act No.107 of 1998) (as amended)	National Department of Environmental Affairs	1998
Environmental Impact Regulations published in Government Notice R543 in Government Gazette No. 33306 of 18 June 2010. In terms of Sections 24 and 24(D) of the Act, as read with Government Notices R543 (Regulations 21 – 25), R544 and R546 a Basic Assessment (BA) is required for the following activities: GNR 544 9 The construction of facilities or	National Department of Environmental Affairs and North West Department of Economic Development,	2010

18 June 2010		infrastructure exceeding 1 000 metres in length for the bulk transportation of water, sewage or stormwater (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughout of 120 litres per second or more.	Environment and Tourism	
GNR 544 18 June 2010	24	The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, at the time of the coming into effect of this Schedule such land was zoned open space, conservation or had an equivalent zoning.		
GNR 546 18 June 2010	2(c)(ii)	The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres (c) in North West (ii) outside urban areas (bb) in sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the Competent Authority.		
GNR 546 18 June 2010	12(b)	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetation cover constitutes indigenous vegetation (b) within critical biodiversity areas identified in bioregional plans.		
GNR 546 18 June 2010	17(c)(i)	The expansion of reservoirs for bulk water supply where the capacity will be increased by more than 250 cubic metres (c) in North West (i) outside urban areas, in (cc) sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act an as adopted by the competent authority.		
National Water Act, 1998 (Act No. 36 of 1998), in terms of Section 21			Department of Water Affairs	1998
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)			National and provincial Department of Environmental Affairs	2004
National Environmental Management: Protected Areas Act, 2003 (Act No.57 of 2003) (as amended)			National and provincial Department of Environmental Affairs	2003
National Environmental Management: Protected Areas Amendment Act, 2009 (Act No.15 of 2009)			National and provincial Department of Environmental Affairs	2009
North West Biodiversity Conservation Assessment, 2009			North West Department of	2009

	Economic Development, Environment and Tourism	
Guideline on the implementation of the Environmental Impact Assessment Regulations, 2010 (October 2012)	National and provincial Department of Environmental Affairs	2012
Guideline on Public Participation, October 2012	National and provincial Department of Environmental Affairs	2012
Technical Guidelines for the Development of Water and Sanitation Infrastructure: 2 nd Edition, 2004	National and provincial Department of Water Affairs	2004
Environmental Management Framework for Rustenburg Local Municipality, 2010	Rustenburg Local Municipality and the North West Department of Economic Development, Environment and Tourism	2010
Rustenburg Local Municipality Water Supply and Wastewater By-Laws No.2 of 2006	Rustenburg Local Municipality	2006
Rustenburg Local Municipality Revised By-Laws for Directorate: Community Development, 2005	Rustenburg Local Municipality	2005
Construction Regulations, 2003 promulgated in terms of the Occupational Health and Safety Act, 1993 (Act No.85 of 1993)	Department of Labour	2003

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?

10 m ³

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

The construction rubble will be reused wherever possible and any surplus supplied to the local Schoongezigt Estate contractors for reuse as backfill material in construction of the houses or roads. Any rubble that cannot be reused will be disposed at a registered landfill.

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

It will be disposed at a nearby registered landfill site.

Will the activity produce solid waste during its operational phase?

	NO
--	-----------

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

N/A m ³

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

N/A

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

N/A

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

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

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:

E-mail:

	Cell: <input type="checkbox"/>	
		Fax: <input type="checkbox"/>

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

No effluent or wastewater will be produced during the operational phases. However, any wastewater produced during the mixing of cement or concrete on site is to be channelled in retention ponds for reuse.

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere? 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 emissions in terms of type and concentration:

Dust and noise emissions during construction are negligible and can be sufficiently minimised through mitigation measures. Noise and exhaust emissions from the Gen Set are variable and intermittent, as the proposed generators are configured to operate only in the event of an electricity cut-off.

11(d) Generation of noise

Will the activity generate noise?

YES	
	NO

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

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 to be emitted from blasting activities and operation of machinery during the construction phase. However, there no nearby sensitive noise receptors and the level of noise emitted is likely to be of low magnitude. The Gen Set will be equipped with silencers to minimise noise when operational.

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
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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:

Litres	N/A
YES	

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

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted. ***The main source for the bulk water supply is from the existing 100ML Rand Water Reservoir of which Rand Water is licenced in terms of the National Water Act. The Rustenburg Local Municipality is therefore in the process of obtaining the licence form Rand Water. This will be included in the Final BAR.***

13. ENERGY EFFICIENCY

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

Both pump stations will be equipped with two pumpsets, i.e. one duty, one standby. This is necessary due to the difference in elevation between these reservoirs and the length of the rising mains. The selected pumpset for the proposed Pump Station 1 is as follows:

- *The hydraulic efficiency of the pump is 74.6%. Generally, a hydraulic efficiency of 70% or higher is recommended.*
- *The net positive suction head (NPSH) is only 2.57 m, which is acceptable; and*
- *The absorbed power is 45.9 Kw, meaning that 55 Kw motors would in all likelihood be installed.*

The selected pumpset for Pump Station 2, to be located next to the 1ML Reservoir, is as follows:

- *The hydraulic efficiency of the pump is higher than 85%. Generally, a hydraulic efficiency of 70% or higher is recommended;*
- *The net positive suction head (NPSH) is only 2.73m, which is acceptable; and*
- *The absorbed power is 30.1 kW, meaning that 37.5 kW motors would in all likelihood be installed.*

It should be noted that these pump selections would need to be refined as part of the preliminary and detailed design phases.

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

A single generator will be installed for all the pumpsets. It is further proposed that the generator's fuel tank be sized to ensure continuous operation for 8 hours during a power failure event.

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):

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

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

	NO
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If YES, please complete the form entitled "Details of specialist and declaration of interest"

for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Property description/physical address:

Remaining Extent 43 and Portion 71 of the Farm Waterval 306, and Portions 47 and 7 of the Farm Boschdal 309, JQ, Rustenburg Local Municipality (Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.
--

N/A

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:

<i>Private Residential</i>

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

Is a change of land-use or a consent use application required?

Must a building plan be submitted to the local authority?

	NO
YES	

Locality map:

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

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

Refer to Appendix A for the Locality Maps.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

1.1 Proposed 1ML Steel Reservoir

Alternative S1: Layout 1 – 107392-DW-C-005

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
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Alternative S2: Alternative S1: Layout 2 – 107392-DW-C-006

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
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Alternative S3: Layout 3 - 107392-DW-C-007

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
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1.2 Proposed Pressure Control Valve Chamber

Alternative S1: Layout 1 – 107392-DW-C-005

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
------	-------------	-------------------------	----------------	--------------	-------------	---------------------

1.3 Proposed Pump Station 1

Alternative S1: Layout 1 – 107392-DW-C-005

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
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Alternative S2: Alternative S1: Layout 2 – 107392-DW-C-006

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: Layout 3 - 107392-DW-C-007

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
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1.4 Proposed Pump Station 2

Alternative S1: Layout 1 – 107392-DW-C-005

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
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2. LOCATION IN LANDSCAPE

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

NB: Indicate by highlighting/ticking

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)	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO
Dolomite, sinkhole or doline areas	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO
Seasonally wet soils (often close to water bodies)	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO
Unstable rocky slopes or steep slopes with loose soil	YES	<input type="checkbox"/>	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO
Dispersive soils (soils that dissolve in water)	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO
Soils with high clay content (clay fraction more than 40%)	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO
Any other unstable soil or geological feature	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO	<input type="checkbox"/>	NO
An area sensitive to erosion	YES	<input type="checkbox"/>	YES	<input type="checkbox"/>	YES	<input type="checkbox"/>

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).

Refer to Appendix D3 for the Geotechnical Report.

4. GROUND COVER

Indicate the types of groundcover present on the site:

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

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

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise. Refer to the Ecological Report in Appendix D1.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does 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:

NB: Indicate by highlighting/ticking

5.1 Natural area ✓

The proposed development site is primarily covered by natural grass and a distinct layer of woody plants (trees and shrubs), typical of the Savanna biome. Refer to the vegetation map in the Ecological Report (Appendix D1). According to the Ecological report, the natural vegetation on the proposed development site is classified by *Mucina & Rutherford* as Gold Reef Mountain Bushveld. The vegetation and landscape features of the Gold Reef Mountain Bushveld are rocky hills and ridges with more dense woody vegetation on the south facing slopes associated with distinct floristic differences.

5.2 Low density residential ✓

The proposed development is part of the Schoongezigt Estate development footprint – an upmarket residential complex with a total of 384 stands planned and covering an area of 39.1 hectares.

5.3 Medium density residential

5.4 High density residential

5.5 Informal residential^A

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 ✓

The 100 MI Rand water Reservoir is located on the eastern and low-lying side of the property. The trenched reservoir measures approximately 140 m long and 95 m wide.

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 ✓

The Kgwasane Nature Reserve borders the property on the western side and is double-fenced with a 10 m buffer in between and an additional 5 m wide firebreak along the boundary. The proposed pipeline does not

encroach into the boundary of the nature reserve and the area is not part of the potential expansion areas as identified by the National Protected Areas Expansion Strategy (NPAES).

5.36 Mountain, koppie or ridge ✓

The vegetation and landscape is characterised by rocky hills and ridges with more dense woody vegetation on the south facing slopes, a typical feature of the Gold Reef Mountain Bushveld

5.37 Museum

5.38 Historical building

5.39 Protected Area

5.40 Graveyard

5.41 Archaeological site

5.42 Other land uses (specify)

If any of the features marked with an "N" are highlighted or ticked, how this impact will / be impacted upon by the proposed activity?

N/A

If any of the features marked with an "An" are highlighted or 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 features marked with an "H" are highlighted or 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

	NO
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Archaeological or palaeontological sites, on or close (within 20m) to the site?	Uncertain
---	-----------

If YES, explain:	No archaeological or palaeontological sites on or close (within 20m) to any of the proposed development sites were identified by the Archaeological Specialist. Refer to Appendix D4 for the Heritage Impact Report.
------------------	--

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:	<p>Previous studies conducted in the larger Rustenburg area suggest a rich and diverse archaeological landscape and cognisance should be taken of previously undetected material that might be present in surface and sub-surface deposit. Since no heritage occurrences were noted in the Boschdal & Tierkloof Bulk water supply project, no impact on heritage resources, or the local archaeological landscape is foreseen.</p> <p>Thus, the significance of the development impact on the heritage landscape at Boschdal is considered to be negligible and this impact is expected to remain unchanged with the implementation of mitigation measures (monitoring) for the site, if / when required.</p>
---	---

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 being applied 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

Refer to Appendix G for proof of the above public participation process.

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.

Refer to Appendix G 1 and G3 for site notices and adverts.

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.

No public meeting has been conducted at this stage, as there no any issues raised to date enough to necessitate a public meeting.

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.

Refer to Appendix E for the comments and response report.

6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

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.

List of authorities informed:

North West Department of Economic Development, Environment and Tourism
(DEDET)
North West Department of Water Affairs (DWA)
North West Provincial Heritage Resources Authority (NWPHRA)
Bojanala Platinum District Municipality (BPDM)
Rustenburg Local Municipality (RLM)
Kgwasane Nature Reserve
Rand Water
Schoongezigt Estate Development Board

List of authorities from whom comments have been received:

Kgwasane Nature Reserve

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 sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable.

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): **Refer to Appendix E.**

The proposed development is on the Green Belt, i.e. on the periphery of the nature reserve

The proposed and preferred water supply pipeline route runs linear to the nature reserve boundary but within the Schoongezigt Estate property. In addition the pipeline reserve forms part of the existing firebreak and planned pedestrian walkway for residents.

Tierkloof site is disturbed already

Yes, the proposed site for the pressure control valve chamber is already disturbed, as there is an already existing 200 m³ steel tank (Tierkloof Reservoir). This reservoir is to be decommissioned when the proposed pressure control valve chamber is operational.

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.

Concern raised on the proximity of the proposed pipeline route to the nature reserve boundary

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 as Annexure E):

The proposed and preferred water supply pipeline route runs linear to the nature reserve boundary but within the Schoongezigt Estate property. In addition, the pipeline reserve forms part of the existing firebreak and planned pedestrian or cycling walkway for residents.

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.

PLANNING PHASE

Potential Environmental Impacts

Alternative (preferred alternative)

Direct impacts:

1. Potential visual impact if the proposed 1ML steel tank reservoir is not adequately designed or positioned in relation to the landscape

Indirect impacts:

1. Loss of aesthetic value due to potential visual impact, especially to tourists visiting the adjacent nature reserve
2. Increased risk for soil erosion on unprotected slopes if erosion control measures are not included in the design
3. Potential damage to the nature reserve boundary fence if the pipeline route reserve is not properly pegged or surveyed

Cumulative impacts:

None anticipated at this stage.

Mitigation measures

Alternative (preferred alternative)

Direct impacts:

1. The proposed 1ML steel tank reservoir must be designed in such a way to minimise its visual appearance across the landscape. The architectural and engineering design should be based on site topography which blends with the existing landscape and vegetation.

Indirect impacts:

1. Measures should be incorporated during the design phase to obscure the visibility of the steel tank especially on the western facing side – this includes maintaining the existing trees to provide a vegetation screen
2. Soil erosion control measures and storm water drainage must be incorporated into the site development plans
3. The pipeline route and reserve must be accurately surveyed and marked prior to vegetation removal or commencement of construction. In addition, a 5 m to 10 m buffer from the edge of the nature reserve boundary fence must be demarcated prior to construction.

CONSTRUCTION PHASE

Potential Environmental Impacts

Alternative (preferred alternative)

Direct impacts:

1. Vegetation removal and associated risk of increased soil erosion on unprotected slopes
2. Skills development for semi-skilled and unskilled workers in bulk water supply infrastructure technology and construction

Indirect impacts:

1. Potential increase in feral animals and impact on indigenous fauna e.g. cats, rats
2. Illegal hunting or disturbance by construction workers
3. Gully erosion in unprotected drainage channels and subsequent sedimentation further downstream
4. Gathering of storm water in open trenches and depressions during construction
5. Improved water supply security in the lower and upper supply zones
6. Sustainable urban expansion and growth in the Tierkloof and Boschdal area due to reliable water supply

Cumulative impacts:

1. Destruction/permanent loss of individuals of rare, endangered, endemic and/or protected species through habitat loss or fragmentation;
2. Further disturbance of remnant terrestrial wild mammal, avian, amphibian and insect fauna would probably occur through physical habitat destruction, noise, traffic, and movement of people

Mitigation Measures

Alternative (preferred alternative)

Direct impacts:

1. Vegetation removal and clearance as part of site preparation should be only be limited to the demarcated construction site or pipeline route. Any sensitive areas must be condoned off before construction commences.
2. Indigenous trees within the construction site or located along the pipeline route should be preserved wherever possible. Large indigenous trees (taller than 3m) should be protected as far as possible and be incorporated into the proposed development site or pipeline route.
3. During felling and the clearing of woody vegetation, avoid the removal of and/ or damage to the lower strata of vegetation, the basal grass cover and topsoil layer wherever possible.
4. The appointed contractors must comply with the Environmental Management Programme in Appendix F.

Indirect impacts:

1. Destabilised slopes during construction should be protected against erosion by soil stabilisation mechanisms, such as cladding or netting. Re-vegetation of exposed slopes should take place as soon as possible.
2. All the excavated material from the site must be stockpiled at a designated location within the development site, and protected from erosion.
3. Appropriate Stormwater drainage structures must be installed during construction to allow the free flow of water from the construction site.
4. Destabilised natural drainage channels responsible for channelling storm water off the construction site must be stabilised by stone pitching.
5. No illegal hunting or open fires are to be permitted on site. No wild animal may under any circumstances be hunted, snared, captured, injured, or killed. This includes animals perceived to be verminous.
6. The construction site must be kept clean, tidy and free of rubbish that would attract animal pests.
7. Endangered plants or animals identified by the Ecological Specialist should be relocated as

stated in the rescue plan appended in the EMPr.

Cumulative impacts:

1. The removal of vegetation should be confined to the footprints of the pipeline route and construction site. This constitutes a small area in relation to the total flora and fauna habitat.
2. Sufficient natural corridor sections should be protected around the proposed development footprints to allow fauna to move freely between the different vegetation units on the property. The drainage channels still represents highly sensitive areas in the area and mitigation measures should be implemented to ensure that the habitats are protected.
3. Roads in the area should be designed without vertical pavements to allow for the free movement of small mammals. Small culverts underneath the road could provide easy migration of smaller fauna.
4. Where trenches pose a risk to animal safety, they should be adequately cordoned off to prevent animals falling in and getting trapped and/or injured. This can be prevented by the constant excavation and backfilling of trenches during pipeline construction.

OPERATIONAL PHASE

Potential Environmental Impacts

Alternative (preferred alternative)

Direct impacts:

1. Increased soil erosion on unprotected slopes
2. Visual impact if the development site of the reservoir is not vegetated or rehabilitated to blend with existing natural landscape or vegetation
3. Corrosion of steel tank if not regularly repainted or maintained
4. Pipeline leakages and water loss

Indirect impacts:

1. Proliferation of alien and invasive plant species
2. Noise from pump room and Gen Set
3. Improved water security and supply for residents located in the upper and low-lying zones

Cumulative impacts:

None identified at this stage

Mitigation Measures

Alternative (preferred alternative)

Direct impacts:

1. Destabilised slopes after construction should be protected against erosion by soil stabilisation mechanisms, such as cladding or netting. Re-vegetation of exposed slopes should continue until vegetation is sufficiently rooted.
2. The Rehabilitation Plan must be implemented and regularly monitored after construction.
3. The Steel Tank Reservoir must be regularly repainted with a dull colour that blends with the existing natural vegetation and landscape. A vegetative screen should be maintained around the steel tank as much as possible.
4. The pipelines should be regularly inspected for any possible damage or corrosion to prevent water leakages. Any damaged pipes due to corrosion should be immediately replaced.
5. Visual impact if the development site of the reservoir is not vegetated or rehabilitated to blend with existing natural landscape or vegetation
6. Corrosion of steel tank if not regularly repainted or maintained
7. Pipeline leakages and water loss

Indirect impacts:

1. An Alien and Invasive Control Plan must be implemented as part of the maintenance programme. Weeds and plants growing on concrete structures and likely to compromise the structural integrity of the pump room or reservoir should be uprooted. Wooden structures must be treated with oil prior to installation to prevent termite damage.
2. The pumpset and the Gen Set must be regularly maintained to ensure operational efficiency.
3. Any animals observed in the pump room or reservoir structures must be reported to the Kwgasane Nature Reserve parks manager for rescue and possible relocation.

DECOMMISSIONING PHASE

Potential Environmental Impacts

Alternative (preferred alternative)

Direct impacts:

1. Noise from operation of machinery such as grinders for cutting steel structures, pneumatic

drills for ripping concrete

2. Potential disruption of water supply to affected areas
3. Illegal waste disposal of demolition rubble by contractors
4. Indiscriminate killing of reptiles such as snakes trapped in manholes

Indirect impacts:

1. Alien infestation and growth
2. Soil compacting and increased erosion

Cumulative impacts:

1. Potential soil pollution and subsequent groundwater contamination from oil leaking pumps, Gen Set, and other installed equipment during dismantling or removal

Mitigation Measures

Alternative (preferred alternative)

Direct impacts:

1. Dismantling of structures should be done manually wherever possible and the use of machinery reduced as much as possible
2. Dismantling activities must be carried out during working days and hours, excluding weekends and public holidays to minimise noise impact
3. Dust suppression measures such as water spraying to be implemented to prevent emission of dust during demolition
4. All oil or petroleum containing equipment removed should be stored in a secure warehouse with bunded floor. Oil or petroleum must be drained from the equipment on a bunded area and in a dip tray for storage in sealed drums.
5. All residents likely to be affected by possible water supply disruptions should be notified in advance prior to the decommissioning process.
6. Demolition waste such as concrete rubble should be removed and disposed by an approved waste management contractor. Records should be kept of all waste removed from site and where it has been disposed.
7. No animals or reptiles discovered in any of the existing structures should be killed. An animal rescue specialist should be immediately informed or called on site to rescue any identified animal or reptile.
8. Any alien or invasive plant identified on site should be eradicated.

9. Compacted soil after demolition activities should be loosened and vegetated to promote infiltration and reduce soil erosion.
10. Precautionary measures should be taken to avoid oil leakages or spillages during the dismantling or removal of equipment. Any polluted or contaminated soil must be immediately removed and transferred to a registered hazardous landfill site.

3. ENVIRONMENTAL IMPACT STATEMENT

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

Alternative S1 Layout 1 – 107392-DW-C-005

This is the preferred schematic layout of the proposed bulk water supply infrastructure. The development footprint is part of the existing Schoongezigt Estate residential development with a total of 384 stands planned, covering an area of 39.1 hectares. The planned residential stands will be serviced in three phases and currently there in Phase 1, which covers only a quarter of the land. The rest of the land is undeveloped and is predominantly covered by natural vegetation.

The proposed development site for the 1ML Steel Tank Reservoir and pump station 2 is on top of a ridge located at the south western corner of the property, which is relatively high at 1 435 m above mean sea level. The ridge is rocky, with patchy indigenous shrubs and trees. According to the ecological report, the type of vegetation on the ridge is *Loudetia simplex rocky grassland*. The vegetation structure is described as medium tall rocky grassland on shallow rocky soils and the grassland is still pristine. In general, the site is suitable for development provided that a relocation programme is implemented for red data flora. In terms of Geotechnical strength, the structures can be founded conventional at a depth of 0.5 m with bearing pressures in the order of 150 kPa. Excavated test pits indicate dense or very dense residual soil or competent quartzite bedrock is present at depths ranging between 0.2 m and 0.5 m.

The proposed development site for the pressure control valve is located next to the existing 200-m³ Tierkloof Steel Reservoir. This site is slightly disturbed but is surrounded by a pristine *Protea caffra* Woodland which must be preserved wherever possible. The vegetation structure is described as very open-to-open woodland almost completely dominated by *Protea Caffra* on shallow soils. In general, the site is suitable for development provided that a relocation programme is implemented for any red data flora identified on site. In terms of Geotechnical strength, the excavated soil profile comprises of hillwash material to a depth of 0.7m, underlain by silty or clayey residual diabase to an expected depth of 2.3 m and very soft diabase bedrock. The Geotech specialist has therefore recommended that the structure be founded on a soil raft with a 0.2 m depth grub and clear.

The proposed development site for the main pump station is located next to the existing 100 ML Rand Water Reservoir on degraded grassland. The site has been transformed by previous construction activities of the Rand Water Reservoir, and is described as suitable for unlimited development. Excavated test pits results indicate that the soil profile comprises of hillwash material, underlain by quartzite bedrock. The composition of the hillwash material is highly

variable and it is recommended that this structure be founded on the underlying bedrock. However, the Geotech specialist warns that excavations in excess of 1.5 m deep may be problematic and may require a powerful excavator equipped with a rock bucket. Deeper excavations may necessitate drilling and the use of explosives.

The proposed Ring Main and Gravity Main pipeline routes basically traverse through different vegetation types and geotechnical conditions. Both proposed pipelines will emanate from the proposed 1 ML Steel Tank Reservoir and gravitate westward towards the nature reserve boundary where they make a 90 degree turn just adjacent to the fence and head eastward in parallel to the fence. The Gravity Main will then take a northerly exit to connect with the proposed Pressure Control Valve Chamber, while the Rising Main will continue further east until it makes a final connection to the main pump station. However, the Rising Main passes through a wetland that eventually feeds the drainage channel inside the nature reserve and is classified in the Wetland report as Valley head seep wetland. The wetland is considered degraded, according to the Wetland report, due to the high incidence of exotic weds in the wetland area, and considering that it is fed by water from the banks of the constructed Rand Water Reservoir that occurs to the north of the wetland. Further, the Valley head seep wetland has a medium to high sensitivity due to its lower than expected functional role to provide water to the lower –lying drainage channel. Mitigation measures outlined in the Wetland report have been incorporated into the EMPr to ensure the construction of the pipeline has minimal impact to the wetland.

No major environmental impacts are anticipated as a result of the proposed development provided the contractors and applicant comply with the mitigation measures stipulated in the EMPr and specialist reports. The Rustenburg Local Municipality is faced with a growing population and expanding urban area of which the provision of water supply is a major challenge. The proposed bulk water supply infrastructure is one of the numerous projects the RLM is undertaking in order to alleviate water supply shortages associated with a growing urban population.

Alternative S2 Layout 2 – 107392-DW-C-006

With this alternative, the proposed development site for the 1 ML Reservoir is on a mountain situated within the Kgaswane mountain reserve. This option has been rendered not feasible following consultations with the nature reserve authorities who have objected to the location due to the cumulative impacts the proposed development will have on the nature reserve’s ecology.

Alternative S3 Layout 3 - 107392-DW-C-007

The same as above applies to this option.

No-go alternative (compulsory)

If the proposed bulk water supply project is not implemented, the existing and future planned Tierkloof and Boschdal areas will face water supply challenges. This means planned residential

developments especially in the Tirekloof supply zone will not be possible due to lack of water supply. Existing supply zones are likely to experience erratic water supply and at times cut offs due to existing capacity constraints of storage and pumping equipment.

Even if the proposed bulk water supply project is not implemented, the development site is already earmarked for residential development. The natural environment will therefore not remain the same in the nearby future.

There no benefits associated with this option, although vegetation on some sections of the development site is still pristine, it is likely to be impacted by an already planned residential development.

SECTION E. RECOMMENDATION OF PRACTITIONER

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

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

N/A

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

No major environmental impacts are anticipated as a result of the construction and operation of the bulk water supply infrastructure on the proposed development site provided the following recommendations and mitigation measures are adhered to:

- ✚ The appointed Contractor and sub-contractors must strictly comply with all the conditions and actions stipulated in the Environmental Management Programme (EMPr) in Appendix F.
- ✚ An environmental awareness and EMPr induction for all contractors should be conducted prior to construction.
- ✚ All the proposed bulk water supply infrastructure should be designed, installed or constructed, and operated as required by the Department of Water Affairs and Forestry Technical Guidelines for the Development of Water and Sanitation Infrastructure, 2nd Edition, 2004.
- ✚ Surrounding landowners should be notified in advance, at least 24 hours, prior to any blasting activities during construction.
- ✚ No vegetation shall be cleared outside of the demarcated construction areas. The construction area is to be demarcated using barrier tape, outside of which is to be considered a no-go area.
- ✚ Clearing of vegetation is to be minimised. The natural vegetation encountered on the site is to be conserved and left as intact as possible.
- ✚ Vegetation clearance must be done gradually and not all at once.
- ✚ Adequate on-site chemical sanitation systems, at least one toilet for every 8 workers, must be

provided within walking distance to all construction workers. Strict penalties in re-numeration must be applied for workers that use other surrounding open areas for this purpose. The facilities may not be located below the 1:100 year floodline.

Is an EMPr attached?

YES

The EMPr must be attached as Appendix F. *Refer to Appendix F.*

SECTION F: APPENDIXES

The following appendices have been attached:

Appendix A: Site plan(s)

- A1: Preferred Schematic Layout 1 - 107392-DW-C-005
- A2: Alternative Schematic Layout 2 – 107392-DW-C-006
- A3: Alternative Schematic Layout 3 - 107392-DW-C-007
- A4: Alternative pipeline routes – 107392-DW-C-008
- A5: Bulk Water Supply Zones - 107392-DW-C-004
- A6: Supply Reservoir Plan layout – 107392-DW-C-240
- A7: Pump Station 1 Site Plan - 107392-DW-C-220

Appendix B: Site Photographs

Appendix C: Facility illustration(s)

- C1: 1 ML Pre-fabricated Steel Reservoir
- C2: Pump Room Stations
- C3: Pressure-Reducing Valve Chamber (PRV)

Appendix D: Specialist reports

- D1: Ecological Report
- D2: Wetland Report
- D3: Geotechnical Report
- D4: Heritage Report

Appendix E: Comments and responses report

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Public Participation

- G1: Site Notice
- G2: Notification
- G3: Newspaper Advert