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# **ENVIRONMENTAL IMPACT ASSESSMENT:**

## **DRAFT BASIC ASSESSMENT REPORT**

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### **PROPOSED UPGRADING OF THE BULK WATER SUPPLY TO THE GREATER MAMUSA AREA, SCHWEIZER-RENEKE, NORTH WEST:**

### **CONSTRUCTION OF A PIPELINE FROM BLOEMHOF DAM TO SCHWEIZER-RENEKE**

Applicant: Dr Ruth S. Mompoti District Municipality  
MDA Ref No: 40577  
DEDECT ref: NWP/EIA/59/2013  
DEDECT official: Mrs. T. Makuwa  
Date: February 2014



Town & Regional Planners,  
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## the DEDECT

Department:

**Economic Development, Environment, Conservation and Tourism**

North West Provincial Government

**Republic of South Africa**

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### **DIRECTORATE: ENVIRONMENTAL QUALITY & PROTECTION**

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**(For official use only)**

**File Reference Number:**

**Application Number:**

**Date Received:**


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

**Kindly note that:**

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. 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 ✓	NO
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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.

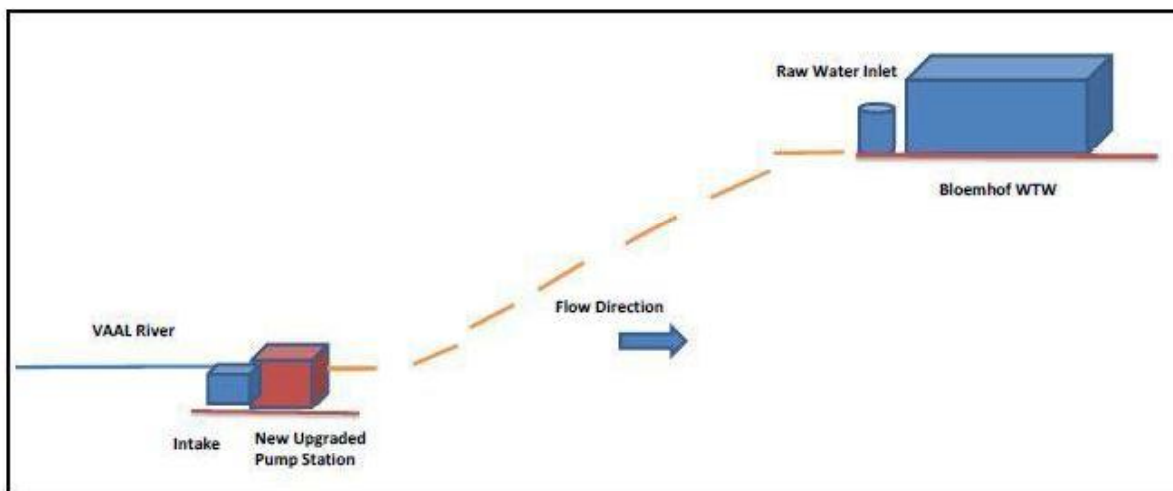
**1. ACTIVITY DESCRIPTION**

Describe the activity, which is being applied for, in detail<sup>1</sup>:

The proposed project consists of the establishment of a bulk water scheme between Schweizer Reneke and Bloemhof that includes the upgrading of the Bloemhof abstraction work and Bloemhof Water Treatment Works and the construction of a pipeline.

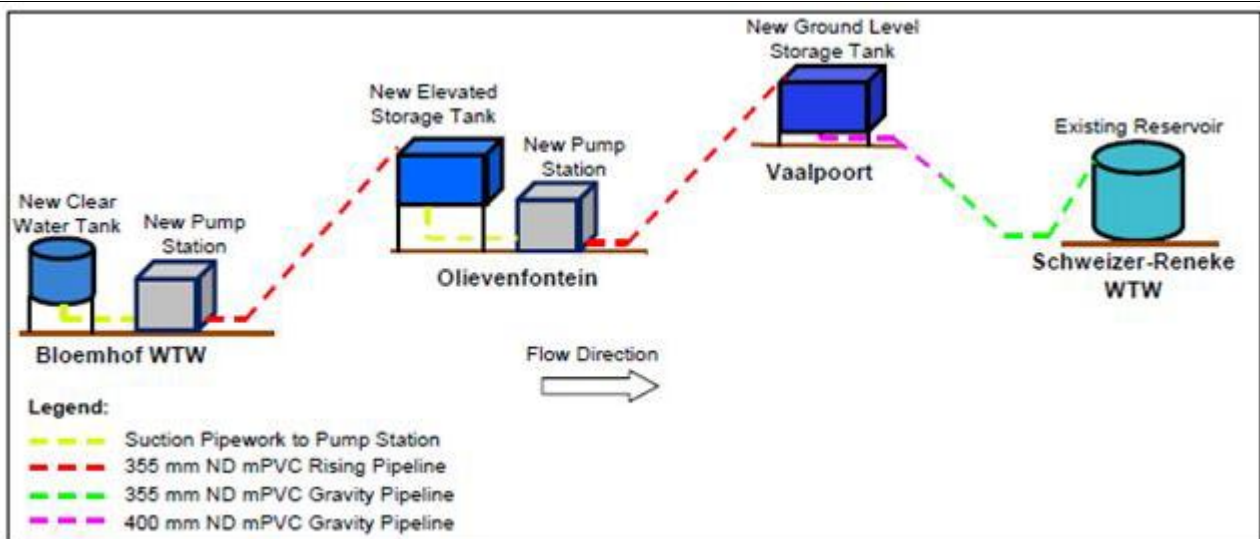
This project forms part of the larger project to supply the water demands for Bloemhof as well as the Greater Mamusa area within the North West Province. The abstraction works need to be upgraded to deliver the demand of 5.37Mm<sup>3</sup>/year. The proposed bulk raw water supply to the Bloemhof water treatment works will be designed to deliver 8.738 Mm<sup>3</sup>/year (1 197 m<sup>3</sup>/h, at 20 hours a day).

The proposed water pipeline route is as follows: The proposed route will connect the existing abstraction works to the WTW. From the Bloemhof WTW, the pipeline will be laid within the road reserve of the R34 towards Schweizer-Reneke. The water will be pumped from the Bloemhof WTW to the Elevated Olievenfontein Storage Tank (see Appendix A) from where it will be abstracted and pumped over a distance of 22.9 km to the Ground Level Vaalpoort Storage Tank (GLVST). A gravity pipeline from the GLVST will aid in the transportation of the water to Schweizer-Reneke, where it will branch off onto Cronje Street, before following Buiten Street to the reservoir.



**Schematic Representation of Proposed Infrastructure (1).**

<sup>1</sup> 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.



**Schematic Representation of Proposed Infrastructure (2).**

Refer to Appendix A for the locality plans.

Please note that the proposed pipeline within the towns and road reserves does not fall within the ambit of a listed activity in terms of the NEMA EIA Regulations. The sections of the pipeline proposed through and near watercourses (dam and wetlands) along the proposed route do require Environmental Authorisation.

This application for Environmental Authorisation however includes the entire proposed route for the pipeline, for clarity.

The activities, which being applied for, entails the following:

Activity 9 of Regulation 544, 18 June 2010: Construction of pipelines and infrastructure for the bulk transportation of water within 32 metres of a watercourse.

Activity 11 of Regulation 544, 18 June 2010: Construction of water abstraction infrastructure within 32 metres of a watercourse.

Activity 18 of Regulation 544, 18 June 2010: Pipeline excavations through / near to a watercourse (wetlands).

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

Describe alternatives that are considered in this application. 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.**

**NOTE:****Current status of the Bloemhof dam water works:**

Bloemhof dam controls the flood experienced downstream of the dam wall. The Bloemhof Dam wall has 20 radial sluice gates, each with a capacity of 500 m<sup>3</sup>/s and one outlet pipe (450 mm) to which a 100 mm raw water supply pipe is connected which supplies raw water to the DWA homes and offices at the dam wall, as well as raw water to a nursery situated near the dam wall. The 100 mm discharges raw water into a small raw water dam, where it is purified for domestic use for the DWA homes.

The original design allowed for two 30 KW submersible pumps which could delivered a combined flow of 0.167 /s to the WTW and provision was also made for one standby pump and a 7.5 KW priming pump. The switch controls for these pumps is housed in a control building situated on higher ground some 30m from the pump sump. These pumps were operational until 2007. These pumps have been removed and dry pumps have been installed above the abstraction works sump with the controls still being situated in the same control building.

The existing Bloemhof Raw water abstraction works is situated in the town of Bloemhof, on the western side of the Bloemhof dam. The Bloemhof abstraction works is situated on the Vaal River downstream of the Bloemhof Dam wall and immediately upstream of Weir no. C9H021. The existing abstraction works were designed to abstract 800m<sup>3</sup>/h (16M/d, for 20 hours per day) from the Vaal River and were commissioned in 1991.

The existing abstraction works is situated below the 1:50 year floodline and thus is prone to flooding during flood peaks, leading to damage to the switch control room and the dry pumps. The existing abstraction works also reportedly experience abstraction difficulties during drought periods of low water levels. The existing sewer pump station is situated approximately 300m upstream of the abstraction works and is within the 1:50 year flood line. Additional problems also occurred at the pump station, leading to effluent being discharged into the Vaal River, upstream of the abstraction works.

A need was identified to upgrade the bulk water supply (including the abstraction point) from Bloemhof Dam to cater for the future water demand of Bloemhof and the Greater Mamusa areas. This project forms part of the larger project to supply the water demands for Bloemhof as well as the Greater Mamusa area within the North West Province.

**The following criteria were used to evaluate the possible abstraction position:**

- Weir to be located downstream of main supply dam
- Weir to be located at river bend with abstraction works on outside of bend as river helps with generation of secondary flow patterns to facilitate coarse sediment diversion past the pump station intakes
- Abstraction works to be located on same side of river as main pipeline route to avoid expensive river crossing (if possible)
- River valley to be as narrow as possible to simplify flood management and to limit footprint

- Potential of outflanking by the river changing course to be manageable or not present
- River channel to be as narrow as possible as it implies stable river banks and indicates a smaller downstream gauging weir, allowing for shorter low OC lengths without impacting too much on the overall flow regime in the natural river channel
- Foundation conditions: preferable bed rock at shallow depth, to limit foundation treatment to ensure structural integrity during flood conditions
- Small weir basin to reduce evaporation losses and minimise impacts on upstream land owners
- Location of weir to result in shortest possible length of pipeline to users
- Weir to be as close as possible to sources of water to curtain river losses
- Proximity of existing infrastructure such as roads, power lines, etc. that will be positive for the proposed development
- Presence of existing infrastructures to be avoided as far as possible in the upstream reach of influence of the abstraction weir
- Lowest potential flood damage

Please take note of the description of the preferred- as well as the alternative projects:

#### **Alternative S<sub>2</sub>Alternative:**

Connecting to the 450mm Bloemhof Dam wall outlet and installing a gravity pipeline from the dam wall to the Bloemhof water treatment works. This option investigates the possibility of a connection to the existing Bloemhof Dam wall infrastructure.

It is envisaged that a connection will be made to the existing 450 mm outlet and gravitate from the dam wall to the water treatment works some 4.4 km away with a 450 mm raw water pipeline.

However, DWA commented as follows:

- DWA does not allow the abstraction of water directly from works to be sited at the dam wall
- The 450 outlet has three branches, including two butterfly valves and a spherical valve
- A stop log needs to be installed in the dam to seal off the outlet if any maintenance works is to be undertaken at the above mentioned valves
- If the stop log is in place, no water will be available at the blank flange
- The spherical valve forms part of the refurbishment programme scheduled for 2015/16 and will be out of operation for 6 – 8 months
- The spherical valve outlet is not linked to the two butterfly valves and it would be difficult to install interconnecting pipe works in the valve chamber due to the lack of space and such pipework would impede valve lifting equipment
- Thus, whilst the stop log is in place, no raw water would be released and as no additional outlet is available, no water can then be provided to the water treatment works during shutdown periods
- It is also possible that the proposed pipeline will be damaged when the sluice gate is opened as it is suggested that the pipeline should be strapped to the concrete wall as is currently the case for the 100mm outlet

With the above in mind, it is evident that this option cannot be seen as a reasonable / feasible alternative.

**Preferred project (Alternative S<sub>1Preferred</sub>):**

The preferred project entails the upgrading of the existing abstraction works.

**Please note the following:**

- The site of the existing works is the most suitable along the river and within the Bloemhof areas
- The existing abstraction works pump station is situated on the right bank of the river some with the inlet to the pump will some 7.5 m upstream of the weir
- The existing pump station is a 7.1 x 7.5 m reinforced concrete structure that is 4.7 m deep
- The dry pumps are situated on the roof slab of the pump station
- Sewer pump station is located above the 1:10 year flood line, but below the 1:50 year flood line
- The abstraction works were designed for 95% reliability or system availability in any one year
- The existing low-lift pump station will be extended and provided with additional pumping bays to cater for the additional demand requirements
- Delivery pipeline (rising main) will have a capacity of 120% of the average annual water requirement plus all downstream losses supplied to the WTW
- The new 630 mm pipeline will be situated parallel to the existing 400mm ND pipeline
- The pipeline traverses private properties for approximately 100m, the remainder of the route is within the road reserve of the N12 (Princes Street) and the R34, approximately 2.5 m from the road reserve boundary, on the western side of the road reserve
- The new pipeline will cross a national road and surfaced roads in Bloemhof as well as cross and run parallel to various existing services, such as overhead electricity lines and poles, lamp poles, water, sewer and stormwater infrastructure, fences, sign posts and signs

**The proposed infrastructure to be provided as part of the preferred project (Alternative S<sub>1Preferred</sub>) will consist of the following:**

- Raw water intake on the right bank of the Vaal River immediately upstream of the Arlington Port Weir C9H021
- Raw water pump station which will pump raw water abstracted from the river to the Bloemhof WTW over a distance of 440 m
- Rising the pipeline to the Bloemhof WTW inlet works with a 600mm ND, X42 steel pipeline, with air valves, pipeline scour installations and isolating valves
- Installation of a hard wired flow meter on the raw water inlet of the WTW to give a positive indication of flow from the abstraction works
- An integrated energy management system will be installed to interface with the abstraction works and the WTW to achieve tariff appropriate energy management that minimises energy costs
- Power factor correction will be implemented at the LV side to achieve unity power factor at various anticipated operating points through step control of the PF control system
- A new 10 MI/d DAF unit be installed incorporating secondary flocculation after the settling unit and rapid gravity filters be installed after clarification
- Provision will be made for simultaneous air and water backwashing and the backwash process will be designed to operate semi-automatically ( the valves during the backwash process be actuated)



- The existing clear water tank will be modified to accommodate a constant head portion and a variable head portion and an additional 1000m<sup>3</sup> will be constructed and connected to the existing reservoir
- A new washwater recycling system will be constructed and supernatant water will be recycled back to the inlet works
- The existing sludge dams will be dredged and cleaned out
- A new Turbo settler will be constructed
- The existing dissolved air flotation (DAF) unit will be refurbished and brought back into operation
- The existing sand filters will be refurbished with new nozzles, media, actuators, backwash pumps and blowers
- Provision will be made for sufficient numbers of and trained operators;
- Flowmeters will be provided
- A new 5 M/reservoir be constructed at Boitomolong
- New high lift pumps (one set to Bloemhof reservoir and one set to Boitomolong reservoir) be installed to make provision for the higher flow
- Provision will be made at the raw water pumps to operate the plant continuously, albeit at times at a reduced rate

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#### **Raw water pump station:**

- The low lift pump station building will be similar to the existing reinforced concrete building in order to keep the footprint as small as possible
- Additional pump well will be constructed adjacent to the existing pump well
- Additional raw water intake will be constructed parallel to the existing intake, at a lower invert level to cater for intake flow during periods of drought / low river flow periods
- Existing pump station is 7.1 X 7.5 X 4.7 m deep with the pump well invert at 1208.84 masl, while the raw water intake level is 1210.04 masl
- The established pump station is to be kept in operation until the additional pump station is commissioned
- The existing pump station will be refurbished and provided with appropriate submersible pumps before they are connected to the new 630 mm MD delivery pipe
- The additional pump station will be 6.1 X 7.5 X 5.1 m deep in size and the raw water intake level will be at 1209.28 masl and the pump will invert will be at 1208.18 masl
- The upgraded pump station will be equipped with two 40 KW constant variable speed pumps for each chamber
- Each pump will be able to deliver 400 m<sup>3</sup>/h to the WTW raw water tank inlet which is at 1230.32 masl

#### **Flood protection works at the sewer pump station**

- It is not viable to move the abstraction point upstream of the sewer pump station and it is extremely costly and challenging to move the sewer pump station downstream of the abstraction point
- The construction of a flood protection berm of 560 m long, with an average height of 2 m is proposed as this will protect the sewer pump station during flooding events up to a 1:50 year return flood, aid in containing any effluent spillage to beyond the abstraction point and protect existing structures which are already constructed within the 1:50 year flood line
- Most of the berm will be constructed on the Bloemhof Golf course land

### 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.

**Alternative:**

**Latitude (S):**

**Longitude (E):**

Alternative S1<sup>2</sup> (preferred or only site alternative)

°	'	°	'
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Alternative S2 (if any)

°	'	°	'
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Alternative S3 (if any)

°	'	°	'
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**In the case of linear activities:**

**Alternative:**

**Latitude (S):**

**Longitude (E):**

**S<sub>1</sub>Preferred:**

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

27°	39.26'	25°	35.78'
27°	24.69'	25°	26.99'
27°	10.99'	25°	19.88'

**S<sub>2</sub>Alternative:**

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

27°	40.079'	25°	37.043'
27°	24.69'	25°	26.99'
27°	10.99'	25°	19.88'

Alternative S3 (if any)

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

°	'	°	'
°	'	°	'
°	'	°	'

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.

<sup>2</sup>"Alternative S.." refer to site alternatives.

**4. PHYSICAL SIZE OF THE ACTIVITY**

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

**Alternative:**

**Size of the activity:**

Alternative A1<sup>3</sup> (preferred activity alternative)

m <sup>2</sup>
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Alternative A2 (if any)

m <sup>2</sup>
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Alternative A3 (if any)

m <sup>2</sup>
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**or, for linear activities:**

**Alternative:**

**Length of the activity:**

**S<sub>1Preferred</sub>:**

± 65 000 m
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**S<sub>2Alternative</sub>:**

± 70 000 m
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Alternative A3 (if any)

m
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**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 activity alternative)

m <sup>2</sup>
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Alternative A2 (if any)

m <sup>2</sup>
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Alternative A3 (if any)

m <sup>2</sup>
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**NOTE:**

Extraction of water will be at the existing weir (C9H021). Most of the pipeline will be located within servitudes. A pump station along the R34 road will however be located on private land, namely: Remainder of Portion 3 of the Farm Olievenfontein 114 HO, Bloemhof District. Additionally, the tank and associated infrastructure on the farm Vaalpoort will also be located on privately owned farm land.

<sup>3</sup>"Alternative A.." refer to activity, process, technology or other alternatives.

**5. SITE ACCESS**

Does ready access to the site exist?

YES ✓	NO
m	

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

Describe the type of access road planned:

**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.**

**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.

**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?  
 What is the expected yearly income that will be generated by or as a result of the activity?  
 Will the activity contribute to service infrastructure?  
 Is the activity a public amenity?  
 How many new employment opportunities will be created in the development phase of the activity?  
 What is the expected value of the employment opportunities during the development phase?  
 What percentage of this will accrue to previously disadvantaged individuals?  
 How many permanent new employment opportunities will be created during the operational phase of the activity?  
 What is the expected current value of the employment opportunities during the first 10 years?  
 What percentage of this will accrue to previously disadvantaged individuals?

± R360 million	
Not applicable	
YES ✓	NO
YES	NO ✓
± 600	
± R 18 million	
90 %	
3	
Unknown – depending on the contractor	
90 %	

**9(b) Need and desirability of the activity**

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

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

<b>DESIRABILITY:</b>			
1.	Does the proposed land use / development fit the surrounding area?	YES ✓	NO
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES ✓	NO
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES ✓	NO
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
5.	Will the proposed land use / development impact on the sense of place?	YES	NO ✓
6.	Will the proposed land use / development set a precedent?	YES	NO ✓
7.	Will any person's rights be affected by the proposed land use / development?	YES	NO ✓
8.	Will the proposed land use / development compromise the "urban edge"?	YES	NO ✓
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		

<b>BENEFITS:</b>			
1.	Will the land use / development have any benefits for society in general?	YES ✓	NO
2.	Explain: The capacity of existing water sources and infrastructure is unable to meet the need for water demand for the Greater Mamusa area (Schweizer-Reneke, including Ipelegeng) for 2030 and therefore the most viable option is to obtain water from the Bloemhof Dam.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES ✓	NO
4.	Explain: Apart from the provision of water for the Greater Mamusa Area as mentioned above, job opportunities will also be provided for during the construction phase for local communities within and near to Bloemhof.		

**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:
<ul style="list-style-type: none"> <li>National Environmental Management Act, 1998 (Act 107 of 1998)</li> </ul>	DEDECT	1998
<ul style="list-style-type: none"> <li>National Water Act, 1998 (Act 36 of 1998)</li> </ul>	DWA	1998
<ul style="list-style-type: none"> <li>National Heritage Resources Act (Act 25 of 1999)</li> </ul>	SAHRA	1999
<ul style="list-style-type: none"> <li>National Forest Act (Act 84 of 1998)</li> </ul>	Dept. of Agriculture, forestry and fisheries	1998

**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 ✓	NO
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If yes, what estimated quantity will be produced per month?

Unknown m <sup>3</sup>
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How will the construction solid waste be disposed of (describe)?

The contractor will be responsible for the disposal of waste generated during the construction phase.

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

Solid waste disposal sites in Bloemhof or Schweizer-Reneke.

Will the activity produce solid waste during its operational phase?

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

m <sup>3</sup>
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How will the solid waste be disposed of (describe)?

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

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?

YES	NO ✓
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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?

YES	NO
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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?

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

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

Yes	NO ✓
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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?

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

Facility name:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

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

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

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Not applicable

**11(c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere?

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

YES	NO ✓
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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 is likely to be generated through excavations and construction vehicle activities during the construction phase. This would be temporary and can be controlled if problematic.

**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?

YES	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 due to construction activities is expected to occur. This would however be temporary and will be limited to normal working hours.



**12 WATER USE**

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

Municipal <input checked="" type="checkbox"/>	water board <input type="checkbox"/>	groundwater <input type="checkbox"/>	river, stream, dam or lake <input checked="" type="checkbox"/>	other <input type="checkbox"/>	the activity will not use water <input type="checkbox"/>
--	---	---	--	-----------------------------------	--

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:

± 728 000 kilo litres	
YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

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.

**NOTE:**

Municipal water will be used during the construction phase of the project (± 20 kilo litres per month).

Water will be abstracted from the weir during the operational phase of the project (± 728 000 kilo litres per month).

The Water Use Licence Applications required for the proposed water abstraction and pipeline are in process. Please refer to Annexure G2 for more information.

**13. ENERGY EFFICIENCY**

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

Not applicable

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

Not applicable

**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?

YES ✓	NO
----------	----

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:

Extraction of water will take place at the existing abstraction point (to be upgraded as part of the project) and the pipeline will run towards and within Bloemhof to the Water Treatment Works (WTW) and then along the R34 to Schweizer-Reneke. A pump station along the R34 road will however be located on private land, namely: Remainder of Portion 3 of the Farm Olievenfontein 114 HO, Bloemhof District. Additionally, the tank and associated infrastructure on Portion 12 of the farm Vaalpoort 84 will also be located on privately owned farm land.

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

**NOTE:**

The proposed pipeline will run from Bloemhof to Schweizer-Reneke. However, the only sections of this project that needs environmental authorisation, is within the areas in close proximity to the wetlands. Therefore, only certain farm portions are listed below:

- Olievenfontein 114, Portion 1 (Remaining extent), TOHO 000 000 000 114 000 01
- Olievenfontein 114, Portion 3, TOHO 000 000 000 114 000 03 (pump station)
- Vaalpoort 84, Portion 13, TOHO 000 000 000 084 000 13
- Vaalpoort 84, Portion 3, TOHO 000 000 000 084 000 03
- Vaalpoort 84, Portion 12, TOHO 000 000 000 084 000 12 (tank site)
- Zwartlaagte 345-HO (repeater)
- Klipfontein 344, Remainder of Portion 1, TOHO 000 000 000 344 000 01
- Klipfontein 344, Portion 12, TOHO 000 000 000 344 000 12
- Schweizer Reneke Town and Townlands 62, Portion 24 (Remaining extent), TOHO 000 000 000 062 000 24
- Schweizer Reneke Town and Townlands 62, Portion 0 (Remaining extent), TOHO 000 000 000 062 000 00

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:

Mostly road reserve, servitudes or agricultural.

- Olievenfontein 114, Portion 1 – road reserve
- Olievenfontein 114, Portion 3 – agricultural
- Klipfontein 344, Remainder of Portion 1 – servitude
- Klipfontein 344, Remainder of Portion 12 – servitude
- Vaalpoort 84, Portion 13 – road reserve
- Vaalpoort 84, Portion 3 - agricultural
- Vaalpoort 84 - agricultural
- Zwartlaagte 345-HO - agricultural
- Schweizer Reneke Town and Townlands 62, Portion 24 – road reserve
- Schweizer Reneke Town and Townlands 62, Portion 0 – road reserve

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?

YES	NO ✓
YES	NO ✓

Must a building plan be submitted to the local authority?

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)

**1. GRADIENT OF THE SITE**

Indicate the general gradient of the site.

**S<sub>1</sub>Preferred:**

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

**S<sub>2</sub>Alternative:**

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:**

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)?**

	<b>S<sub>1</sub>Preferred:</b>		<b>S<sub>2</sub>Alternative:</b>		<b>Alternative S3 (if any):</b>	
Shallow water table (less than 1.5m deep)	YES	NO ✓	YES	NO ✓	YES	NO
Dolomite, sinkhole or doline areas	YES	NO ✓	YES	NO ✓	YES	NO
Seasonally wet soils (often close to water bodies)	YES ✓	NO	YES ✓	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO ✓	YES	NO ✓	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO ✓	YES	NO ✓	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO ✓	YES	NO ✓	YES	NO

Any other unstable soil or geological feature  
An area sensitive to erosion

YES	NO ✓	YES	NO ✓	YES	NO
YES ✓	NO	YES ✓	NO	YES	NO

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

**4. 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 condition <sup>E</sup> ✓	Natural veld with scattered aliens <sup>E</sup>	Natural veld with heavy infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	Gardens ✓
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.**

**NOTE:**

A number of Camel Thorn (*Acacia erioloba*) trees were identified within or near to the proposed pipeline route. Camel Thorn trees were accommodated as far as possible during the planning phase of the pipeline route and will be protected during the construction phase. Camel Thorn trees within the road reserve of the R34 and in Schweizer-Reneke that will need to be removed are indicated in **Appendix G1**. Permits will need to be obtained by the contractor for the removal of these trees prior to construction. Permit application can only be undertaken after environmental authorisation has been received.

**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 ✓
- 5.2 Low density residential
- 5.3 Medium density residential ✓
- 5.4 High density residential
- 5.5 Informal residential<sup>A</sup>
- 5.6 Retail commercial & warehousing
- 5.7 Light industrial
- 5.8 Medium industrial<sup>AN</sup>
- 5.9 Heavy industrial<sup>AN</sup>
- 5.10 Power station
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam<sup>A</sup>
- 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<sup>A</sup> ✓
- 5.22 Train station or shunting yard<sup>N</sup>
- 5.23 Railway line<sup>N</sup> ✓
- 5.24 Major road (4 lanes or more)<sup>N</sup>
- 5.25 Airport<sup>N</sup>
- 5.26 Harbour
- 5.27 Sport facilities

- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station<sup>H</sup>
- 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 (specify)

**NOTE:**

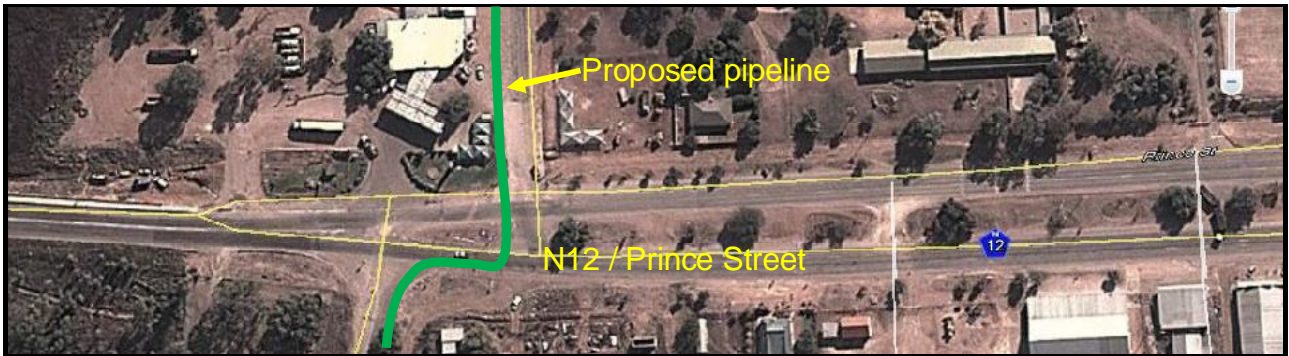
The pipeline will be located within the road reserve and in general about 4.5 m from the eastern boundary of the road reserve. For most of the pipeline route, an overhead telephone line is also located within the R34 road reserve boundary, approximately 1 m from the boundary.

The new pipeline will cross the Harts River near Schweizer-Reneke by means of steel brackets and supports will be fixed to the existing bridge.

The existing sewer pump station is situated some 300m upstream of the abstraction works and is within the 1 : 50 year flood line and is thus prone to flooding during floods. Also problems have occurred at the sewer pump station which have resulted in effluent being discharged into the Vaal River upstream of the abstraction works. It is not viable to move the abstraction point upstream of the sewer pump station and it is extremely costly and challenging to move the sewer pump station downstream of the abstraction point. A flood protection berm some 560m long with an average height of 2m, is proposed, this berm would have a dual purpose that is to protect the sewer pumps station to flooding events up to a 1:50 year return flood and would also help to contain any effluent spillage to beyond the abstraction point. The berm would mainly be installed on the Bloemhof Golf course land.

A wetland assessment has been undertaken for the sections of the pipeline route planned through or near to wetlands. Refer to Appendix D for the specialist's report.

The proposed pipeline will also cross the National Road N12 in Bloemhof.



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

**NOTE:**

The pipeline will cross a number of railway lines at the R34 road bridge in Bloemhof. No impact on / by railway lines is anticipated as a 900 mm ND concrete sleeve pipe will be installed by means of pipe jacking underneath all the railway lines and the new pipeline will be installed inside the concrete sleeve.

**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:

|

**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:

|



**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

YES	NO ✓
-----	---------

Archaeological or palaeontological sites, on or close (within 20m) to the site?

If YES, explain:

**NOTE:**  
The bridge at Schweizer-Reneke across the Harts River is reportedly older than 60 years. It is planned to attach the pipeline to the bridge, to prevent excavations through the river. It will however be ensured that no damage to the bridge is caused.

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:

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

YES ✓	NO
----------	----

**NOTE:**  
The bridge at Schweizer-Reneke across the Harts River is reportedly older than 60 years. It is planned to attach the pipeline to the bridge, to prevent excavations through the river. It will however be ensured that no damage to the bridge is caused.

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

YES	NO ✓
-----	---------

If yes, please submit 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

## **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.

**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:

- Mamusa Local Municipality
- Lekwa-Teemane Local Municipality
- Department of Water Affairs (DWA)
- Department of Public Works, Road and Transport (DPWRT)
- Transnet
- Department of Agriculture, Forestry and Fisheries
- Department of Sports, Arts and Culture
- Dr Ruth S Mompoti District Municipality

List of authorities from whom comments have been received:

- Transnet
  - Department of Agriculture, Forestry and Fisheries
  - Department of Public Works, Road and Transport (DPWRT)
- Please refer to Annexure E for a copy of the comments received.

**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 ✓	NO
----------	----

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

**Transnet**

- The proposed activities have been approved, and a list of conditions was forwarded with the approval letter. Please refer to Annexure E for proof of approval.

**Department of Agriculture, Forestry and Fisheries**

- A license for the removal of two Camel Thorn Trees will have to be obtained prior to the removal of these trees
- It is suggested that the proposed pipeline should be located in such a manner as not to disturb the other Camel Thorn Trees in the area

**Department of Public Works, Road and Transport (DPWRT)**

- Letter received stating that the department has no comments on proposed project

Please refer to Annexure E for proof of comments received.

**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.

The comments received up to date is described in the above section.

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):

No response was forwarded to Transnet, Dept of Agriculture, Forestry and Fisheries, or the Department of Public Works, Road and Transport as the feedback received from Transnet and DPWRT need no response.

An application as advised by the Department of Agriculture, Forestry and Fisheries for the removal of two Camel Thorn Trees will be submitted by the appointed contractor prior to the proposed removal thereof.

**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.

**Alternative (preferred alternative)****Direct impacts:**

- Destruction of vegetation within the pipeline route;
- Threat to natural habitat of wetland areas;
- Visual impact due to rock and spoil material dumps from trench excavation along the route;
- Possible pollution of surface water.

NOTE: The necessary precautions with regard to road safety should be implemented for construction work within road crossings.

**Indirect impacts:**

- Increase of erosion;
- Establishment of alien vegetative species at disturbed areas.
- Impact on traffic due to construction within road reserve.

**Cumulative impacts:**

- Increase of erosion.

**Alternative (Alternative 1 and Alternative 2)****Direct impacts:**

- Destruction of additional vegetation within the pipeline route, as the route is longer;
- Threat to natural habitat of wetland areas;
- Visual impact due to rock and spoil material dumps from trench excavation along the route;
- Possible pollution of surface water.

NOTE: The necessary precautions with regard to road safety should be implemented for construction work within road crossings.

**Indirect impacts:**

- Increase of erosion;
- Establishment of alien vegetative species at disturbed areas.
- Impact on traffic due to construction within road reserve.

**Cumulative impacts:**

- Increase of erosion.

**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.

The sections of the pipeline route which fall within the ambit of a listed activity requiring Environmental Authorisation prior to commencement are the sections planned through and near to wetlands. A wetland assessment was conducted by a specialist and seven wetland areas were identified (refer to wetland assessment report in Appendix D). It is important to note that the pipeline route is mainly planned within road reserves with existing roads located through and near to these wetland areas. Alternative routes bypassing the wetlands were eliminated during the planning phase as private, mainly agricultural land would need to be acquired. However, through the recommendations of the wetland specialist and general mitigation recommendations in the EMPr (Appendix F), the impact of the pipeline's construction phase on wetland areas can be kept to a minimum.

**Preferred project:**

The expected impacts for the proposed pipeline are temporary (only during the construction phase) and the mitigation measures referred to in the Environmental Management Programme should ensure that the disturbance is kept to a minimum and ensure that adequate rehabilitation takes place. The site for the proposed pipeline is mostly located within road reserve and the impact on wetland areas can be kept to a minimum.

**Alternative routes:**

Same as above, including:

- Wetlands will possibly be affected.
- More vegetation will be disturbed due to longer pipeline route.
- Not economically – expensive in comparison to the preferred route.

**No-go alternative (compulsory):**

The proposed pipeline is considered essential to increase and sustain the bulk water infrastructure for the Greater Mamusa area. As water provision is a basic service, the lack thereof would lead to major social impacts that would indirectly cause severe environmental concerns. The impacts expected during the construction phase of the pipeline can be minimised through the recommended mitigation measures and therefore the no-go alternative is not ideal.

**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 ✓	NO
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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):

--

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:

Refer to the EMPr for recommended conditions.
---

Is an EMPr attached?

YES ✓	NO
-------	----

The EMPr must be attached as Appendix F.

**SECTION F: APPENDIXES**

The following appendixes must be attached as appropriate:

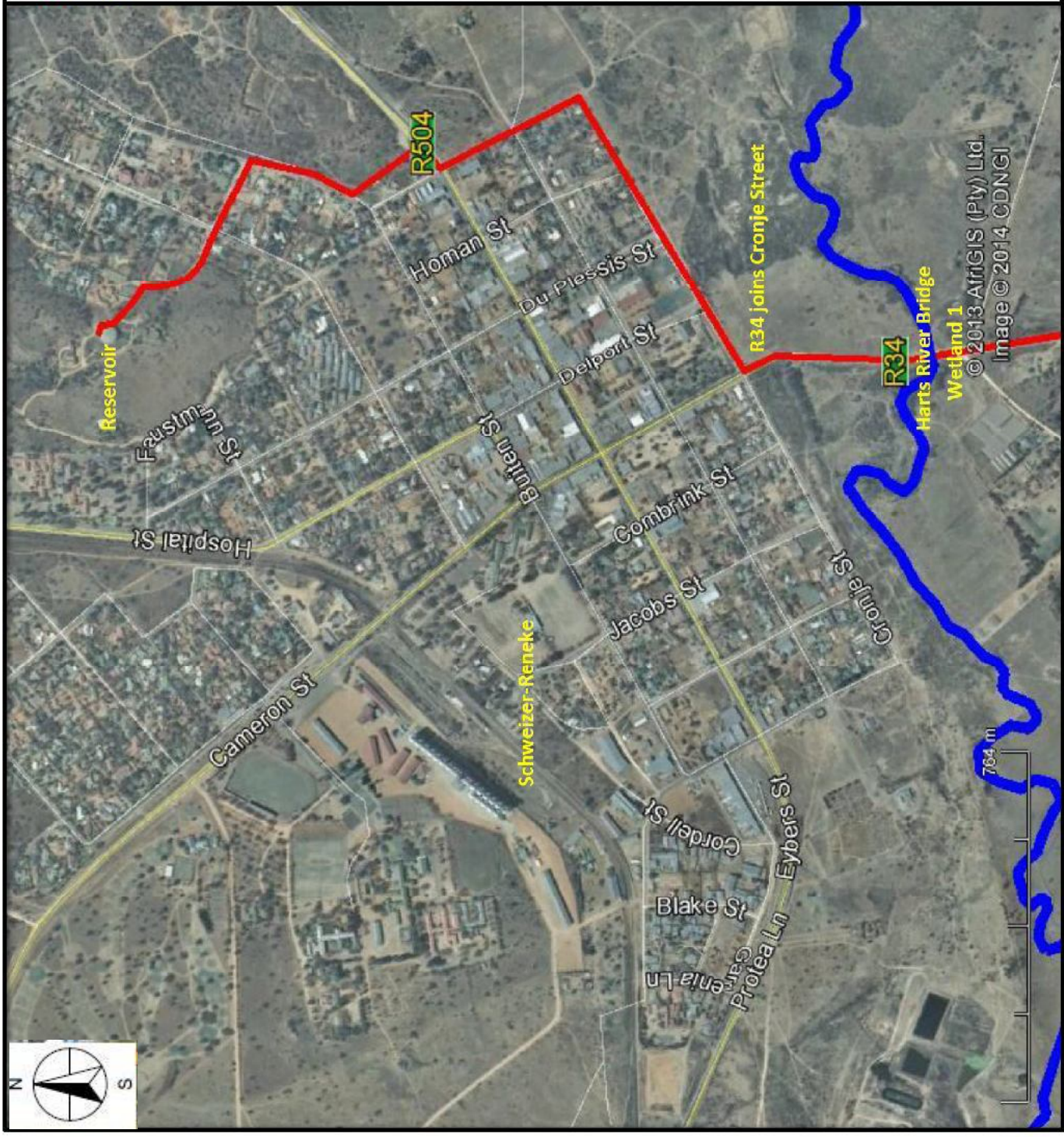
- Appendix A: Site plan(s)
- Appendix B: Photographs
- Appendix C: Facility illustration(s)
- Appendix D: Specialist reports
- Appendix E: Comments and responses Report
- Appendix E<sub>2013</sub>: Public participation undertaken during 2011-2013
- Appendix E<sub>2014</sub>: Public participation undertaken during 2014
- Appendix F: Environmental Management Programme (EMPr)
- Appendix G: Other information



# *APPENDIX A*

Site Plan(s)

Please note that the preferred route and the alternative route differ only from the point of abstraction towards the Bloemhof WTW, as indicated in Locality Plan 3.



**Legend:**

- Proposed pipeline
- Preferred pipeline section
- Alternative<sub>1</sub> pipeline section
- Alternative<sub>2</sub> pipeline section

**Coordinates:**

**Schweizer-Reneke Reservoir:**  
27°11'0.80"S, 25°19'51.57"E

**Harts River Bridge:**  
27°11'57.63"S, 25°19'51.28"E

**Wetland 1:**  
27°12'0.53"S, 23° 08' 31.97"E

**Wetland 2:**  
27°15'33.74"S, 25°22'21.97"E

**Wetland 3:**  
27°16'25.34"S, 25°22'39.10"E

**Wetland 4:**  
27°17'30.25"S, 25°23'14.70"E

**Wetland 5:**  
27°21'57.42"S, 25°25'48.68"E

**Wetland 6:**  
27°33'32.42"S, 25°32'42.33"E

**Wetland 7:**  
27°39'13.63"S, 25°36'45.45"E

**Pump station:**  
27°27'07.27"S, 25°28'37.42"E

**Tank:**  
27°15'57.95"S, 25°22'30.11"E

**Repeater:**  
27°35'51.06"S, 25°34'8.23"E

**Boshof WTW:**  
27°39'4.47"S, 25°35'41.34"E

**Preferred Abstraction:**  
27°39'15.95"S, 25°35'47.17"E

**Alternative Abstraction:**  
27°40'4.71"S, 25°37'2.41"E

TYPE OF PLAN:

**LOCALITY PLAN - 1**

**mda**  
Town & Regional Planners,  
Environmental &  
Development Consultants

**PROJECT:**  
MAMUSA BULK WATER SUPPLY: PROPOSED PIPELINE ROUTE FROM BLOEMHOF DAM TO SCHWEIZER-RENEKE

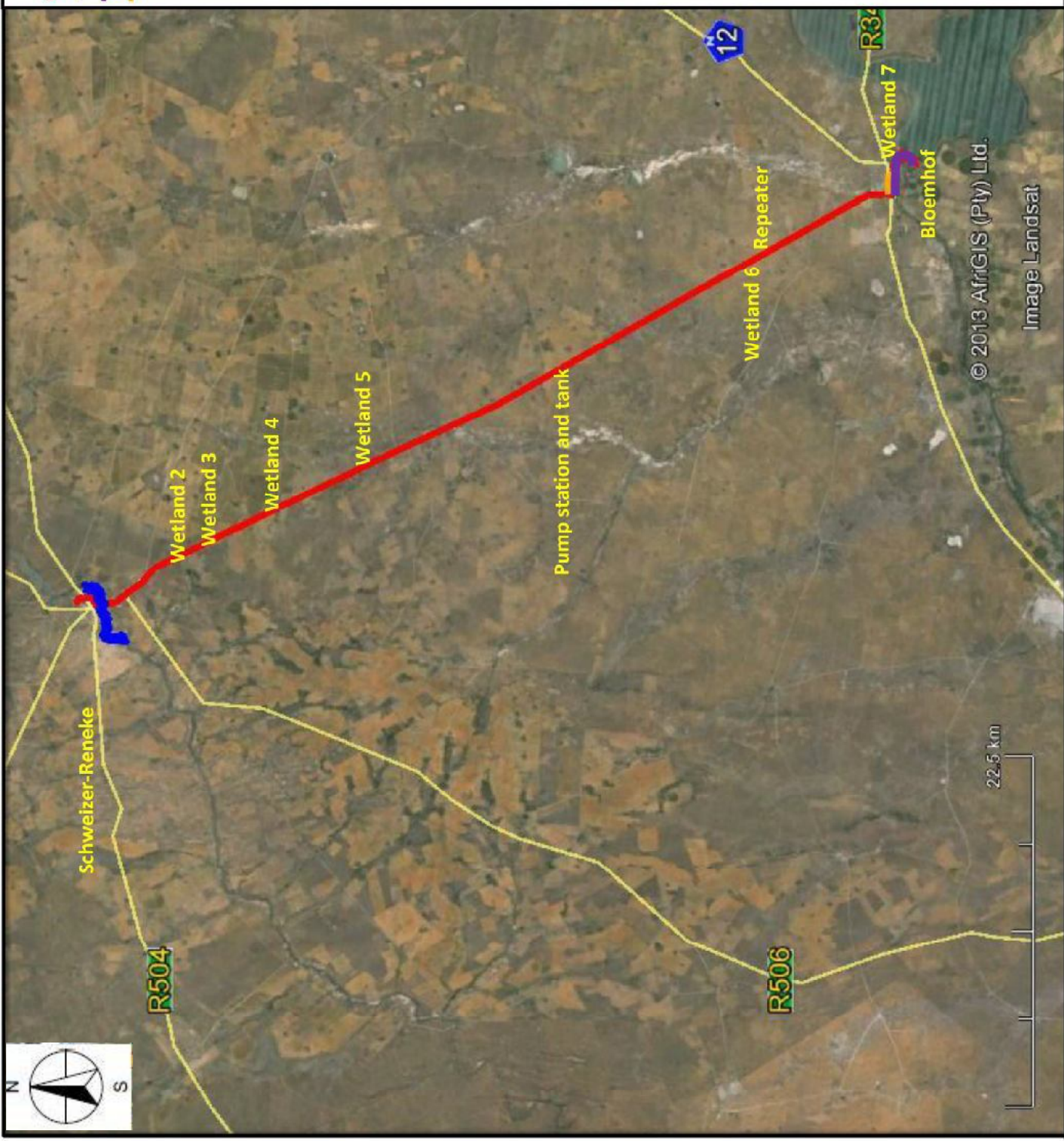
**PROJECT BY:**  
DR. RUTH S. MOMPATI DISTRICT MUNICIPALITY, NORTH WEST PROVINCE

SCALE: 365 m

DRAWN BY:  
HG

REF. NO:  
40577

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Image © 2014 CDNGI



- Legend:**
- Proposed pipeline
  - Preferred pipeline section
  - Alternative<sub>1</sub> pipeline section
  - Alternative<sub>2</sub> pipeline section

**Coordinates:**  
**Schweizer-Reneke Reservoir:**  
 27°11'0.80"S, 25°19'51.57"E

**Harts River Bridge:**  
 27°11'57.63"S, 25°19'51.28"E

**Wetland 1:**  
 27°12'0.53"S, 23° 08' 31.97"E

**Wetland 2:**  
 27°15'33.74"S, 25°22'21.97"E

**Wetland 3:**  
 27°16'25.34"S, 25°22'39.10"E

**Wetland 4:**  
 27°17'30.25"S, 25°23'14.70"E

**Wetland 5:**  
 27°21'57.42"S, 25°25'48.68"E

**Wetland 6:**  
 27°33'32.42"S, 25°32'42.33"E

**Wetland 7:**  
 27°39'13.63"S, 25°36'45.45"E

**Pump station:**  
 27°27'07.27"S, 25°28'37.42"E

**Tank:**  
 27°15'57.95"S, 25°22'30.11"E

**Repeater:**  
 27°35'51.06"S, 25°34'8.23"E

**Boshof WTW:**  
 27°39'4.47"S, 25°35'41.34"E

**Preferred Abstraction:**  
 27°39'15.95"S, 25°35'47.17"E

**Alternative Abstraction:**  
 27°40'4.71"S, 25°37'2.41"E

**LOCALITY PLAN -2**

	Town & Regional Planners, Environmental & Development Consultants	PROJECT: MAMUSA BULK WATER SUPPLY: PROPOSED PIPELINE ROUTE FROM BLOEMHOF DAM TO SCHWEIZER-RENEKE	SCALE: 1:1250 m 
	DR. RUTH S. MOMPATI DISTRICT MUNICIPALITY, NORTH WEST PROVINCE	DRAWN BY: HG	REF. NO: 40577

TYPE OF PLAN:

22.5 km



© 2013 AfrGIS (Pty) Ltd.  
 Image Landsat



**Legend:**

- Proposed pipeline
- Preferred pipeline section
- Alternative<sub>1</sub> pipeline section
- Alternative<sub>2</sub> pipeline section

**Coordinates:**

**Schweizer-Reneke Reservoir:**  
27°11'0.80"S, 25°19'51.57"E

**Harts River Bridge:**  
27°11'57.63"S, 25°19'51.28"E

**Wetland 1:**  
27°12'0.53"S, 23° 08' 31.97"E

**Wetland 2:**  
27°15'33.74"S, 25°22'21.97"E

**Wetland 3:**  
27°16'25.34"S, 25°22'39.10"E

**Wetland 4:**  
27°17'30.25"S, 25°23'14.70"E

**Wetland 5:**  
27°21'57.42"S, 25°25'48.68"E

**Wetland 6:**  
27°33'32.42"S, 25°32'42.33"E

**Wetland 7:**  
27°39'13.63"S, 25°36'45.45"E

**Pump station:**  
27°27'07.27"S, 25°28'37.42"E

**Tank:**  
27°15'57.95"S, 25°22'30.11"E

**Repeater:**  
27°35'51.06"S, 25°34'8.23"E

**Boshof WTW:**  
27°39'4.47"S, 25°35'41.34"E

**Preferred Abstraction:**  
27°39'15.95"S, 25°35'47.17"E

**Alternative Abstraction:**  
27°40'4.71"S, 25°37'2.41"E



**LOCALITY PLAN -1**

	<p><b>PROJECT:</b> MAMUSA BULK WATER SUPPLY: PROPOSED PIPELINE ROUTE FROM BLOEMHOF DAM TO SCHWEIZER-RENEKE</p>	<p>SCALE: 540 m</p>
	<p><b>PROJECT BY:</b> DR. RUTH S. MOMPATI DISTRICT MUNICIPALITY, NORTH WEST PROVINCE</p>	<p>DRAWN BY: HG</p>

TYPE OF PLAN:

# *APPENDIX B*

Photographs



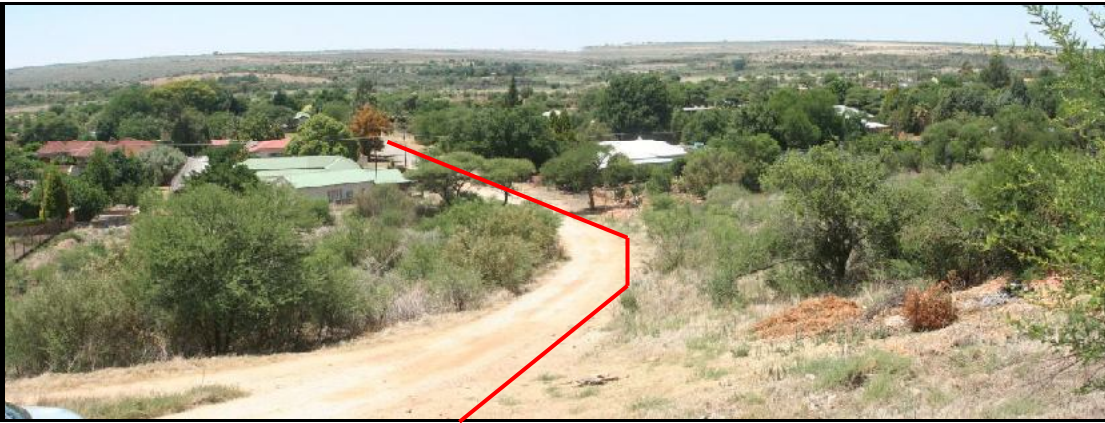
**Photo 1:** Current abstraction point.



**Photo 2:** Bloemhof Water Treatment Works (WTW).



**Photo 3:** View of bridge crossing the Harts River at Schweizer-Reneke. The pipelines will be attached to the bridge.



**Photo 4:** View of pipeline route (red) from the reservoir site in Schweizer-Reneke.

# *APPENDIX C*

Facility Illustration(s)





BLOEMHOF  
ABSTRACTION WORKS





NOTES

LEGEND:

- PIPELINE ROUTE
- EXISTING PIPE 400Ø
- 1-50 YEAR FLOODLINE

PRELIMINARY DESIGN

DATE: 2013/05/01  
 DRAWN BY: [Redacted]  
 CHECKED BY: [Redacted]  
 PROJECT: [Redacted]

NO.	DESCRIPTION	DATE

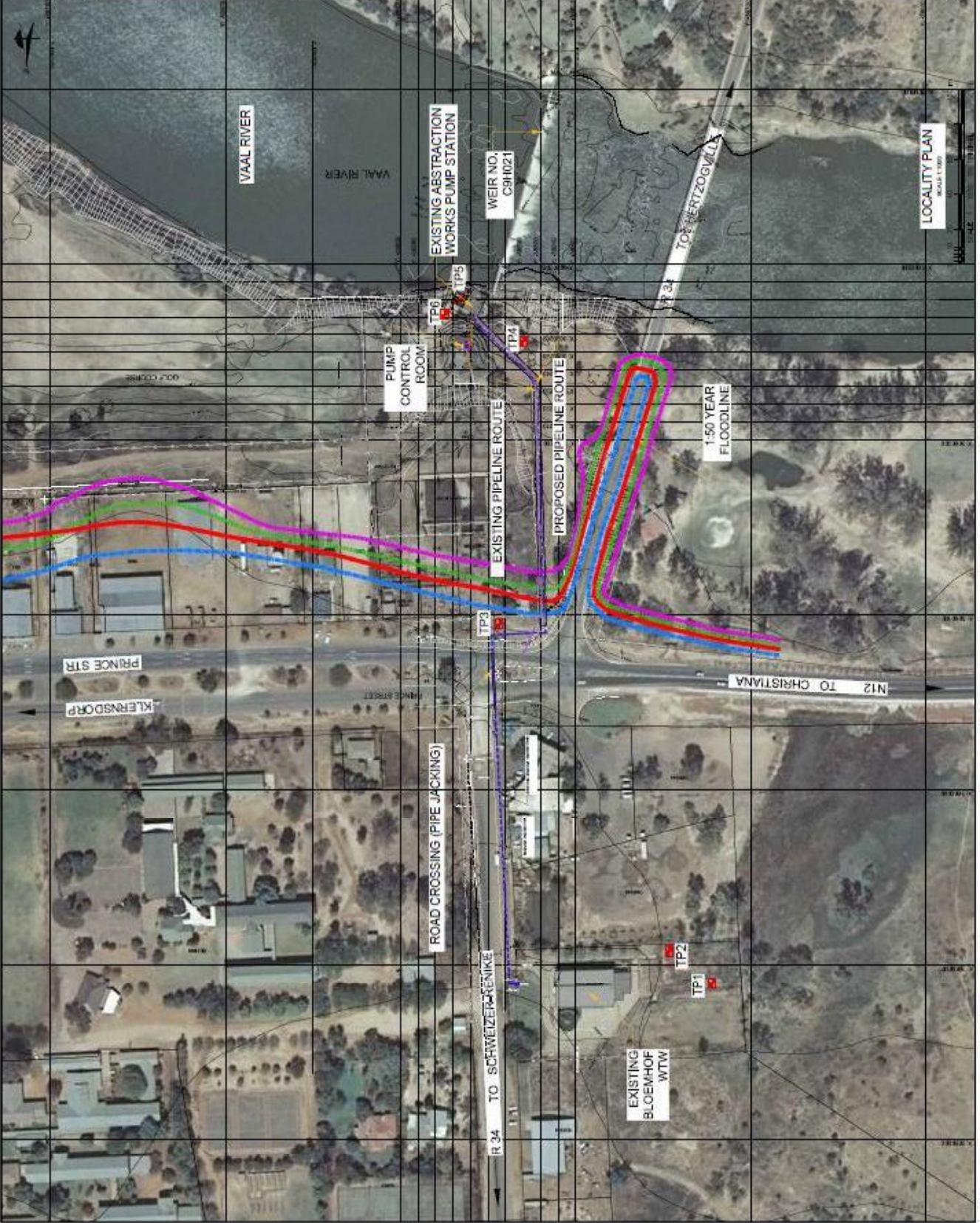


Dr. RUTH S MOMPATI  
 DISTRICT MUNICIPALITY

UPGRADING OF THE  
 BLOEMHOF  
 ABSTRACTION WORKS

BLOEMHOF  
 ABSTRACTION WORKS:  
 LOCALITY PLAN

SCALE: AS SHOWN  
 DATE: MAY 2013  
 PROJECT NO: 12025/ABS/004  
 DRAWING NO: 0



LOCALITY PLAN  
 SCALE 1:500













**LEGEND:**

**PIPELINE ROUTE:**

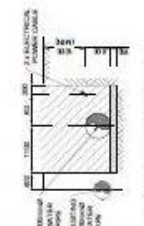
- EXISTING
- NEW
- PROPOSED
- EXISTING
- NEW
- PROPOSED
- EXISTING
- NEW
- PROPOSED
- EXISTING
- NEW
- PROPOSED

**PIPELINE ROUTE:**

- EXISTING
- NEW
- PROPOSED
- EXISTING
- NEW
- PROPOSED
- EXISTING
- NEW
- PROPOSED
- EXISTING
- NEW
- PROPOSED

**SERVITUDE POINTS COORDINATES LIST**

POINT	X-COORD	Y-COORD
A	3,000,274.462	-58,078,336
B	3,000,283.715	-58,078,336
C	3,000,282.198	-58,078,336
D	3,000,279.037	-58,078,336
E	3,000,233.450	-58,078,336
F	3,000,234.690	-58,078,336



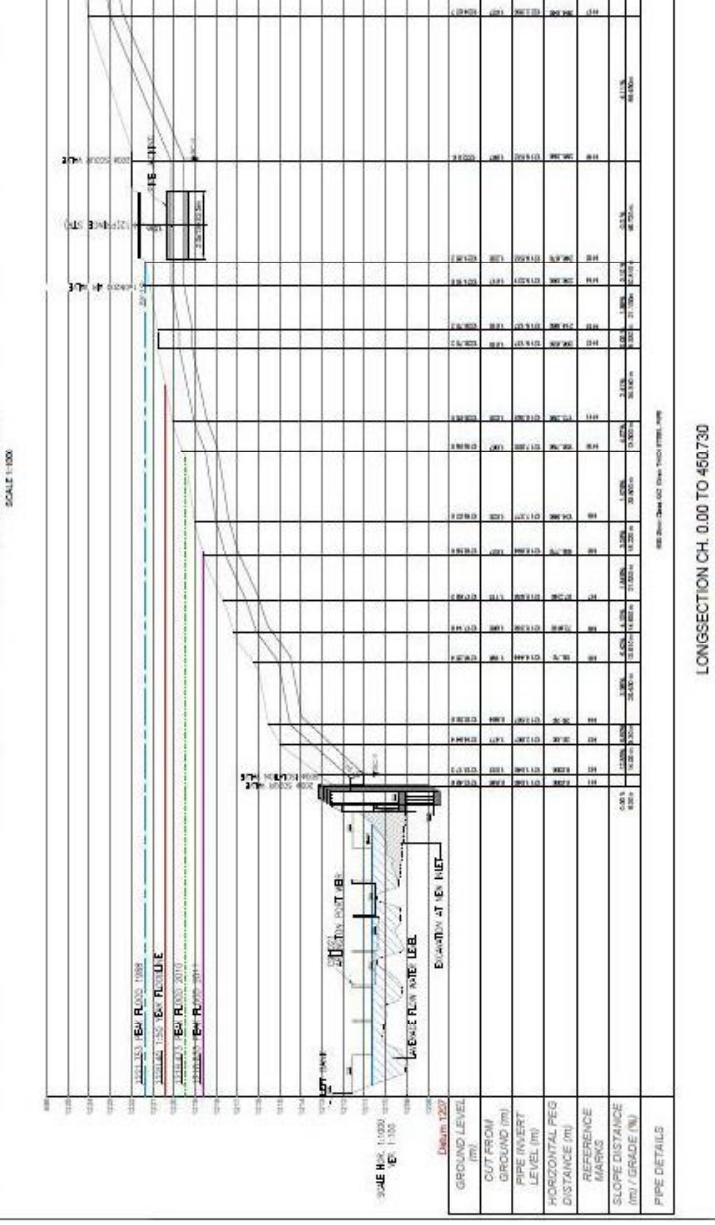
**PRELIMINARY DESIGN**

**Dr. RUTH S. MOMPATI**  
DISTRICT MUNICIPALITY

**UPGRADING OF THE BLOEMHOF ABSTRACTION WORKS**

**BLOEMHOF ABSTRACTION WORKS: PLAN AND LONG SECTION PIPELINE**

AS SHOWN  
12/25/2013  
12025/ABS/010



**LONGSECTION CH. 0.00 TO 460.730**

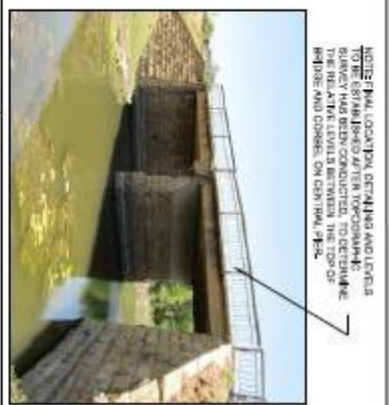
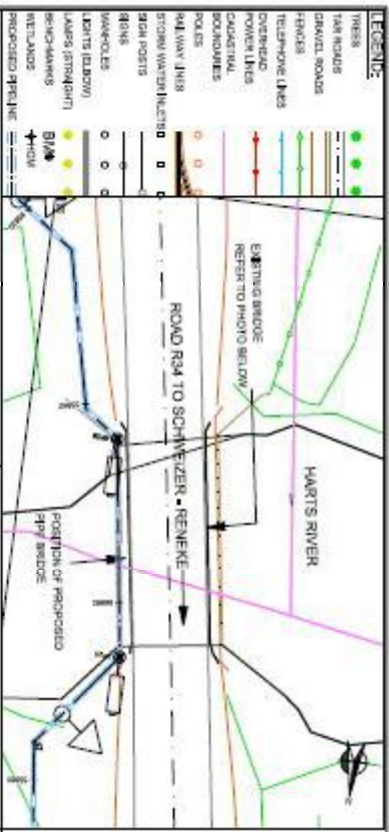
AS SHOWN  
12/25/2013  
12025/ABS/010







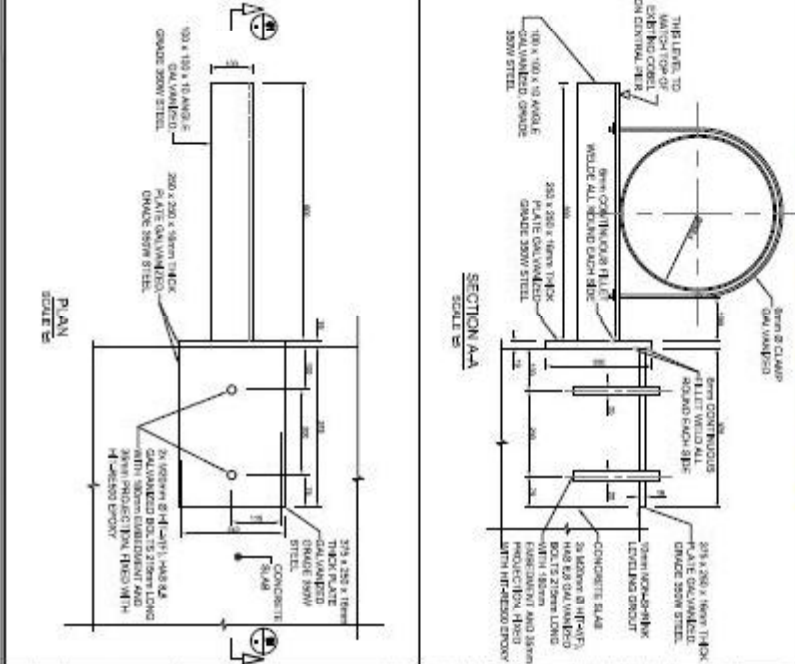
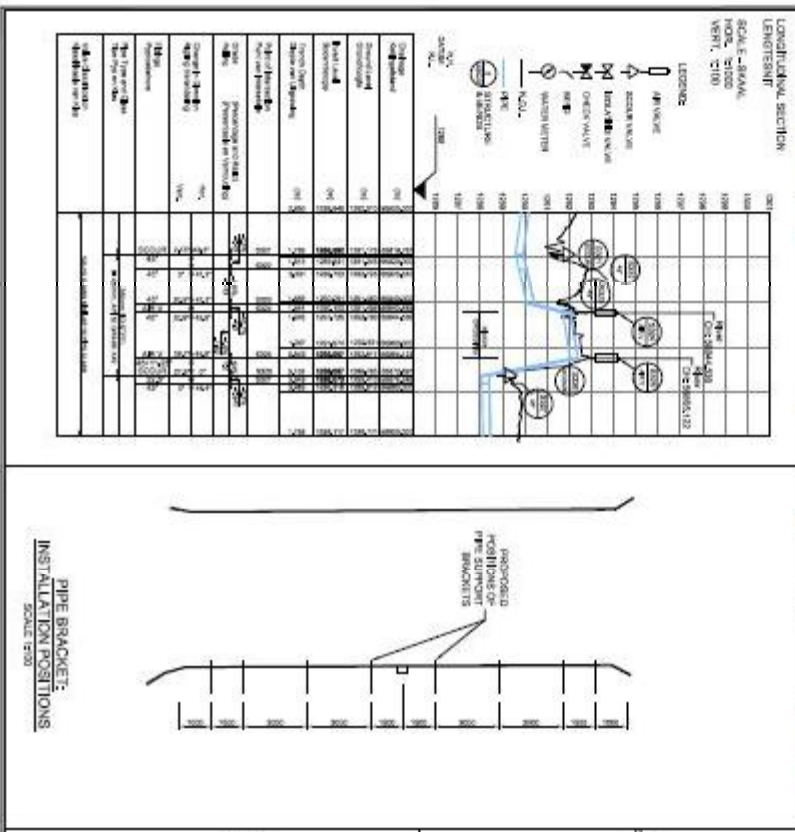




NOTE: FINAL LOCATION, DETAILING AND LAYOUTS TO BE ESTABLISHED AFTER TOPOGRAHY SURVEY HAS BEEN CONDUCTED. TO DETERMINE THE RELATIVE LEVELS BETWEEN THE TOP OF BRIDGE AND CORNER OF 15M WALL PILES.

**LEGEND:**

- TREES
- 15M ROAD
- GRAND ROADS
- TELEPHONE LINES
- OVERHEAD POWER LINES
- CABLEDIAL
- COAXIAL
- POLES
- RAILWAY LINES
- STEEL WATER TREATMENT
- 50M PILES
- 50M PILES
- WALKWAYS
- LANES (BLAZING)
- LANES (BLAZING)
- BENCHMANS
- RETAINERS
- PROPOSED OPEN LINE



**NOTES**

FOR COORDINATION OF THE FOLLOWING WORKS REFER TO DRAWING NO. 231090YVNB/C01/1/40

- POINTS OF INTERSECTION
- STRUCTURES
- BENCHMANS
- CROSSING OF EXISTING SERVICES

**CROSSING OF EXISTING SERVICES**

1. FOR THE ROAD
2. OR - OVERHEAD POWER
3. OR - OVERHEAD POWER LINES
4. OR - OVERHEAD LINES
5. F. - FENCE
6. RW - PAVED ROAD

**PRELIMINARY DESIGN**

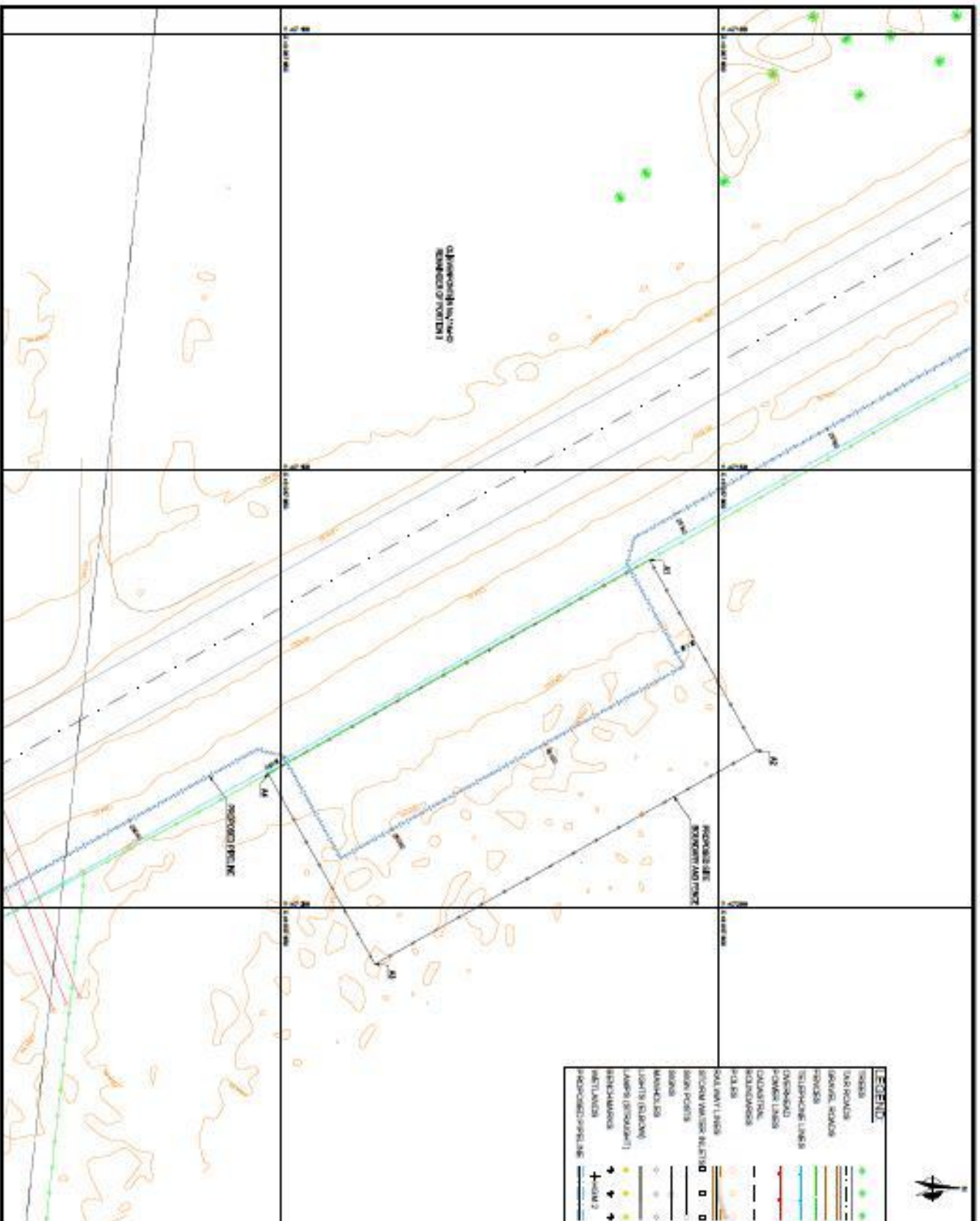
**WorleyParsons**

**D. RUTH S MONPATI**  
 DISTRICT MUNICIPALITY

**BULK WATER SUPPLY TO THE GREATER MAMUSA AREA**

**RIVER CROSSING LAYOUT & DETAILS**

DATE: 21/09/2011  
 TIME: 10:00  
 SCALE: 1:100  
 DRAWN BY: [Name]  
 CHECKED BY: [Name]  
 PROJECT NO: 231090YVNB/C01/1/40



**LEGEND**

PROPOSED 18" WATER MAIN	Green dashed line
PROPOSED 12" WATER MAIN	Blue dashed line
PROPOSED 8" WATER MAIN	Red dashed line
PROPOSED 6" WATER MAIN	Yellow dashed line
PROPOSED 4" WATER MAIN	Light blue dashed line
PROPOSED 3" WATER MAIN	Light green dashed line
PROPOSED 2" WATER MAIN	Light purple dashed line
PROPOSED 1.5" WATER MAIN	Light pink dashed line
PROPOSED 1" WATER MAIN	Light orange dashed line
PROPOSED 0.75" WATER MAIN	Light yellow dashed line
PROPOSED 0.5" WATER MAIN	Light cyan dashed line
PROPOSED 0.375" WATER MAIN	Light blue dashed line
PROPOSED 0.25" WATER MAIN	Light green dashed line
PROPOSED 0.1875" WATER MAIN	Light purple dashed line
PROPOSED 0.125" WATER MAIN	Light pink dashed line
PROPOSED 0.09375" WATER MAIN	Light orange dashed line
PROPOSED 0.0625" WATER MAIN	Light yellow dashed line
PROPOSED 0.046875" WATER MAIN	Light cyan dashed line
PROPOSED 0.03125" WATER MAIN	Light blue dashed line
PROPOSED 0.0234375" WATER MAIN	Light green dashed line
PROPOSED 0.01734375" WATER MAIN	Light purple dashed line
PROPOSED 0.01303125" WATER MAIN	Light pink dashed line
PROPOSED 0.00976875" WATER MAIN	Light orange dashed line
PROPOSED 0.0073265625" WATER MAIN	Light yellow dashed line
PROPOSED 0.005494921875" WATER MAIN	Light cyan dashed line
PROPOSED 0.0041311953125" WATER MAIN	Light blue dashed line
PROPOSED 0.0030983940625" WATER MAIN	Light green dashed line
PROPOSED 0.002323795546875" WATER MAIN	Light purple dashed line
PROPOSED 0.00174284666015625" WATER MAIN	Light pink dashed line
PROPOSED 0.00130713500000000" WATER MAIN	Light orange dashed line
PROPOSED 0.00098035125000000" WATER MAIN	Light yellow dashed line
PROPOSED 0.00073526343750000" WATER MAIN	Light cyan dashed line
PROPOSED 0.00055144757812500" WATER MAIN	Light blue dashed line
PROPOSED 0.00041358569375000" WATER MAIN	Light green dashed line
PROPOSED 0.00030993927031250" WATER MAIN	Light purple dashed line
PROPOSED 0.00023245445312500" WATER MAIN	Light pink dashed line
PROPOSED 0.00017434084062500" WATER MAIN	Light orange dashed line
PROPOSED 0.00013075563046875" WATER MAIN	Light yellow dashed line
PROPOSED 0.00009806672285156" WATER MAIN	Light cyan dashed line
PROPOSED 0.00007355004213906" WATER MAIN	Light blue dashed line
PROPOSED 0.00005516253160156" WATER MAIN	Light green dashed line
PROPOSED 0.00004137189875000" WATER MAIN	Light purple dashed line
PROPOSED 0.00003098394062500" WATER MAIN	Light pink dashed line
PROPOSED 0.00002323795546875" WATER MAIN	Light orange dashed line
PROPOSED 0.00001742846660156" WATER MAIN	Light yellow dashed line
PROPOSED 0.00001307135000000" WATER MAIN	Light cyan dashed line
PROPOSED 0.00000980351250000" WATER MAIN	Light blue dashed line
PROPOSED 0.00000735263437500" WATER MAIN	Light green dashed line
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PROPOSED 0.00000309939270312" WATER MAIN	Light orange dashed line
PROPOSED 0.00000232454453125" WATER MAIN	Light yellow dashed line
PROPOSED 0.00000174340840625" WATER MAIN	Light cyan dashed line
PROPOSED 0.00000130755630469" WATER MAIN	Light blue dashed line
PROPOSED 0.00000098066722852" WATER MAIN	Light green dashed line
PROPOSED 0.00000073550042139" WATER MAIN	Light purple dashed line
PROPOSED 0.00000055162531602" WATER MAIN	Light pink dashed line
PROPOSED 0.00000041371898750" WATER MAIN	Light orange dashed line
PROPOSED 0.00000030983940625" WATER MAIN	Light yellow dashed line
PROPOSED 0.00000023237955469" WATER MAIN	Light cyan dashed line
PROPOSED 0.00000017428466602" WATER MAIN	Light blue dashed line
PROPOSED 0.00000013071350000" WATER MAIN	Light green dashed line
PROPOSED 0.00000009803512500" WATER MAIN	Light purple dashed line
PROPOSED 0.00000007352634375" WATER MAIN	Light pink dashed line
PROPOSED 0.00000005514475781" WATER MAIN	Light orange dashed line
PROPOSED 0.00000004135856938" WATER MAIN	Light yellow dashed line
PROPOSED 0.00000003099392703" WATER MAIN	Light cyan dashed line
PROPOSED 0.00000002324544531" WATER MAIN	Light blue dashed line
PROPOSED 0.00000001743408406" WATER MAIN	Light green dashed line
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PROPOSED 0.00000000980667229" WATER MAIN	Light pink dashed line
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PROPOSED 0.00000000017434084" WATER MAIN	Light pink dashed line
PROPOSED 0.00000000013075563" WATER MAIN	Light orange dashed line
PROPOSED 0.00000000009806672" WATER MAIN	Light yellow dashed line
PROPOSED 0.00000000007355004" WATER MAIN	Light cyan dashed line
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PROPOSED 0.00000000004137190" WATER MAIN	Light green dashed line
PROPOSED 0.00000000003098394" WATER MAIN	Light purple dashed line
PROPOSED 0.00000000002323796" WATER MAIN	Light pink dashed line
PROPOSED 0.00000000001742847" WATER MAIN	Light orange dashed line
PROPOSED 0.00000000001307135" WATER MAIN	Light yellow dashed line
PROPOSED 0.00000000000980351" WATER MAIN	Light cyan dashed line
PROPOSED 0.00000000000735263" WATER MAIN	Light blue dashed line
PROPOSED 0.00000000000551448" WATER MAIN	Light green dashed line
PROPOSED 0.00000000000413586" WATER MAIN	Light purple dashed line
PROPOSED 0.00000000000309939" WATER MAIN	Light pink dashed line
PROPOSED 0.00000000000232454" WATER MAIN	Light orange dashed line
PROPOSED 0.00000000000174341" WATER MAIN	Light yellow dashed line
PROPOSED 0.00000000000130756" WATER MAIN	Light cyan dashed line
PROPOSED 0.00000000000098067" WATER MAIN	Light blue dashed line
PROPOSED 0.00000000000073550" WATER MAIN	Light green dashed line
PROPOSED 0.00000000000055163" WATER MAIN	Light purple dashed line
PROPOSED 0.00000000000041372" WATER MAIN	Light pink dashed line
PROPOSED 0.00000000000030984" WATER MAIN	Light orange dashed line
PROPOSED 0.00000000000023238" WATER MAIN	Light yellow dashed line
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PROPOSED 0.00000000000000014" WATER MAIN	Light pink dashed line
PROPOSED 0.00000000000000010" WATER MAIN	Light orange dashed line
PROPOSED 0.00000000000000008" WATER MAIN	Light yellow dashed line
PROPOSED 0.00000000000000006" WATER MAIN	Light cyan dashed line
PROPOSED 0.00000000000000005" WATER MAIN	Light blue dashed line
PROPOSED 0.00000000000000004" WATER MAIN	Light green dashed line
PROPOSED 0.00000000000000003" WATER MAIN	Light purple dashed line
PROPOSED 0.00000000000000002" WATER MAIN	Light pink dashed line
PROPOSED 0.00000000000000001" WATER MAIN	Light orange dashed line

**NOTES**

**CO-ORDINATE LIST FOR PUMP STATION SITE SYSTEM WGS (G.D. 25)**

POINT	X	Y
1	4719621.8	303797.63
2	4719620.0	303797.63
3	4719618.2	303797.63
4	4719616.4	303797.63

**PRELIMINARY DESIGN**

**Workley Parsons**

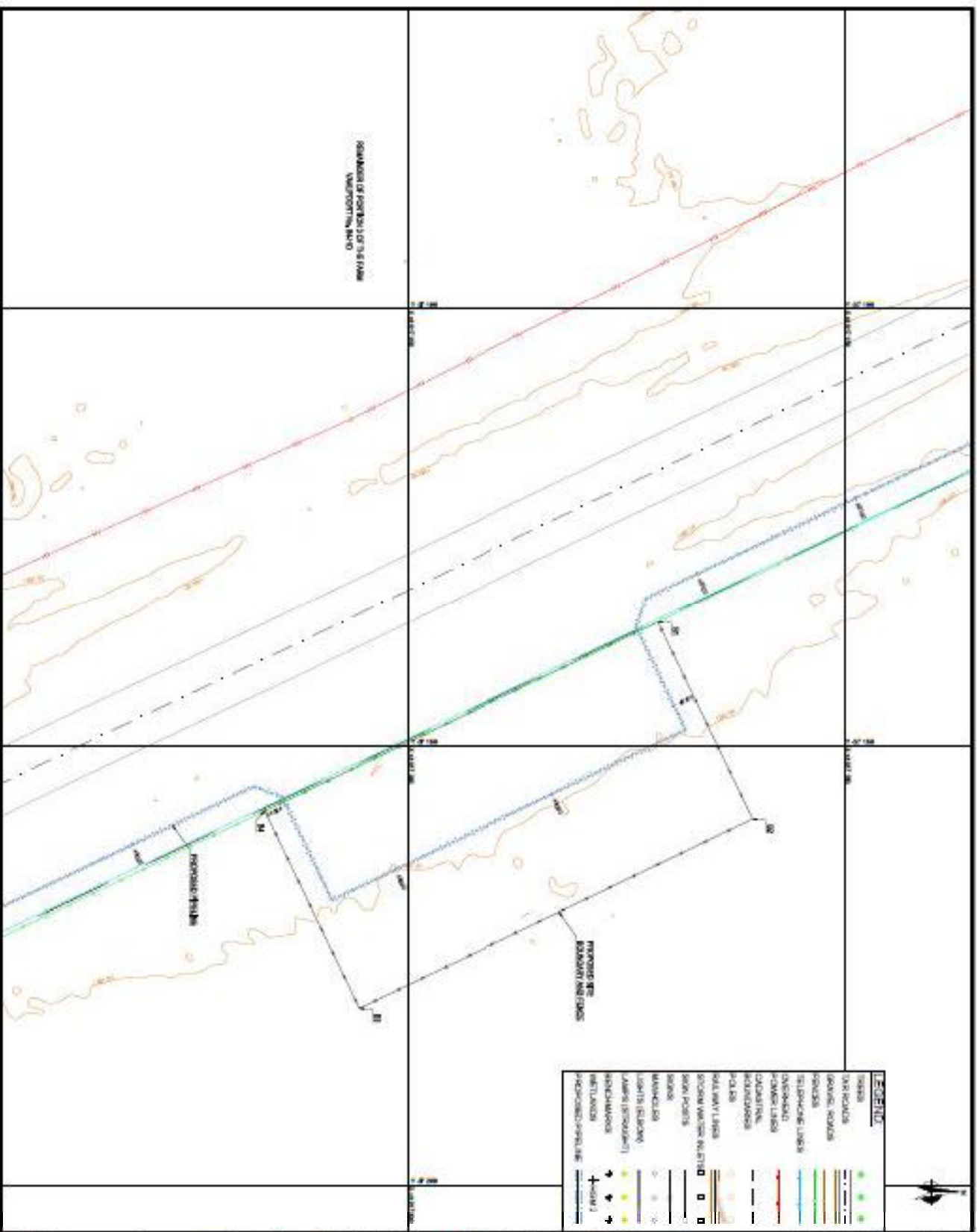
**DR. RUTH S. MOWPATI**  
DISTRICT MUNICIPALITY

**BULK WATER SUPPLY TO THE GREATER MANUSAREA**

**BOOSTER PUMP STATION AND ELEVATION TANK SITE LAYOUT**

DATE: MAY 2013  
PROJECT NO: 231080VNB/C/D/1/120





BOUNDARY OF PORTION OF THE MAIN WATERWORKS AREA

**LEGEND**

BOUNDARY OF PORTION OF THE MAIN WATERWORKS AREA	--- (dashed line)
PROPOSED 36" WATER MAIN	--- (dashed line)
PROPOSED 18" WATER MAIN	--- (dashed line)
PROPOSED 12" WATER MAIN	--- (dashed line)
PROPOSED 6" WATER MAIN	--- (dashed line)
PROPOSED 4" WATER MAIN	--- (dashed line)
PROPOSED 2" WATER MAIN	--- (dashed line)
PROPOSED 1.5" WATER MAIN	--- (dashed line)
PROPOSED 1" WATER MAIN	--- (dashed line)
PROPOSED 0.75" WATER MAIN	--- (dashed line)
PROPOSED 0.5" WATER MAIN	--- (dashed line)
PROPOSED 0.375" WATER MAIN	--- (dashed line)
PROPOSED 0.25" WATER MAIN	--- (dashed line)
PROPOSED 0.1875" WATER MAIN	--- (dashed line)
PROPOSED 0.125" WATER MAIN	--- (dashed line)
PROPOSED 0.09375" WATER MAIN	--- (dashed line)
PROPOSED 0.0625" WATER MAIN	--- (dashed line)
PROPOSED 0.046875" WATER MAIN	--- (dashed line)
PROPOSED 0.03125" WATER MAIN	--- (dashed line)
PROPOSED 0.0234375" WATER MAIN	--- (dashed line)
PROPOSED 0.0175" WATER MAIN	--- (dashed line)
PROPOSED 0.013125" WATER MAIN	--- (dashed line)
PROPOSED 0.009375" WATER MAIN	--- (dashed line)
PROPOSED 0.00703125" WATER MAIN	--- (dashed line)
PROPOSED 0.0053125" WATER MAIN	--- (dashed line)
PROPOSED 0.0040625" WATER MAIN	--- (dashed line)
PROPOSED 0.003046875" WATER MAIN	--- (dashed line)
PROPOSED 0.002285156" WATER MAIN	--- (dashed line)
PROPOSED 0.00171875" WATER MAIN	--- (dashed line)
PROPOSED 0.001289062" WATER MAIN	--- (dashed line)
PROPOSED 0.000966797" WATER MAIN	--- (dashed line)
PROPOSED 0.000725095" WATER MAIN	--- (dashed line)
PROPOSED 0.000543821" WATER MAIN	--- (dashed line)
PROPOSED 0.000407866" WATER MAIN	--- (dashed line)
PROPOSED 0.000305900" WATER MAIN	--- (dashed line)
PROPOSED 0.000229425" WATER MAIN	--- (dashed line)
PROPOSED 0.000171875" WATER MAIN	--- (dashed line)
PROPOSED 0.000128906" WATER MAIN	--- (dashed line)
PROPOSED 0.000096679" WATER MAIN	--- (dashed line)
PROPOSED 0.000072509" WATER MAIN	--- (dashed line)
PROPOSED 0.000054382" WATER MAIN	--- (dashed line)
PROPOSED 0.000040786" WATER MAIN	--- (dashed line)
PROPOSED 0.000030590" WATER MAIN	--- (dashed line)
PROPOSED 0.000022942" WATER MAIN	--- (dashed line)
PROPOSED 0.000017187" WATER MAIN	--- (dashed line)
PROPOSED 0.000012890" WATER MAIN	--- (dashed line)
PROPOSED 0.000009667" WATER MAIN	--- (dashed line)
PROPOSED 0.000007250" WATER MAIN	--- (dashed line)
PROPOSED 0.000005438" WATER MAIN	--- (dashed line)
PROPOSED 0.000004078" WATER MAIN	--- (dashed line)
PROPOSED 0.000003059" WATER MAIN	--- (dashed line)
PROPOSED 0.000002294" WATER MAIN	--- (dashed line)
PROPOSED 0.000001718" WATER MAIN	--- (dashed line)
PROPOSED 0.000001289" WATER MAIN	--- (dashed line)
PROPOSED 0.000000966" WATER MAIN	--- (dashed line)
PROPOSED 0.000000725" WATER MAIN	--- (dashed line)
PROPOSED 0.000000543" WATER MAIN	--- (dashed line)
PROPOSED 0.000000407" WATER MAIN	--- (dashed line)
PROPOSED 0.000000305" WATER MAIN	--- (dashed line)
PROPOSED 0.000000229" WATER MAIN	--- (dashed line)
PROPOSED 0.000000171" WATER MAIN	--- (dashed line)
PROPOSED 0.000000128" WATER MAIN	--- (dashed line)
PROPOSED 0.000000096" WATER MAIN	--- (dashed line)
PROPOSED 0.000000072" WATER MAIN	--- (dashed line)
PROPOSED 0.000000054" WATER MAIN	--- (dashed line)
PROPOSED 0.000000040" WATER MAIN	--- (dashed line)
PROPOSED 0.000000030" WATER MAIN	--- (dashed line)
PROPOSED 0.000000022" WATER MAIN	--- (dashed line)
PROPOSED 0.000000017" WATER MAIN	--- (dashed line)
PROPOSED 0.000000012" WATER MAIN	--- (dashed line)
PROPOSED 0.000000009" WATER MAIN	--- (dashed line)
PROPOSED 0.000000007" WATER MAIN	--- (dashed line)
PROPOSED 0.000000005" WATER MAIN	--- (dashed line)
PROPOSED 0.000000004" WATER MAIN	--- (dashed line)
PROPOSED 0.000000003" WATER MAIN	--- (dashed line)
PROPOSED 0.000000002" WATER MAIN	--- (dashed line)
PROPOSED 0.000000001" WATER MAIN	--- (dashed line)



**NOTES**

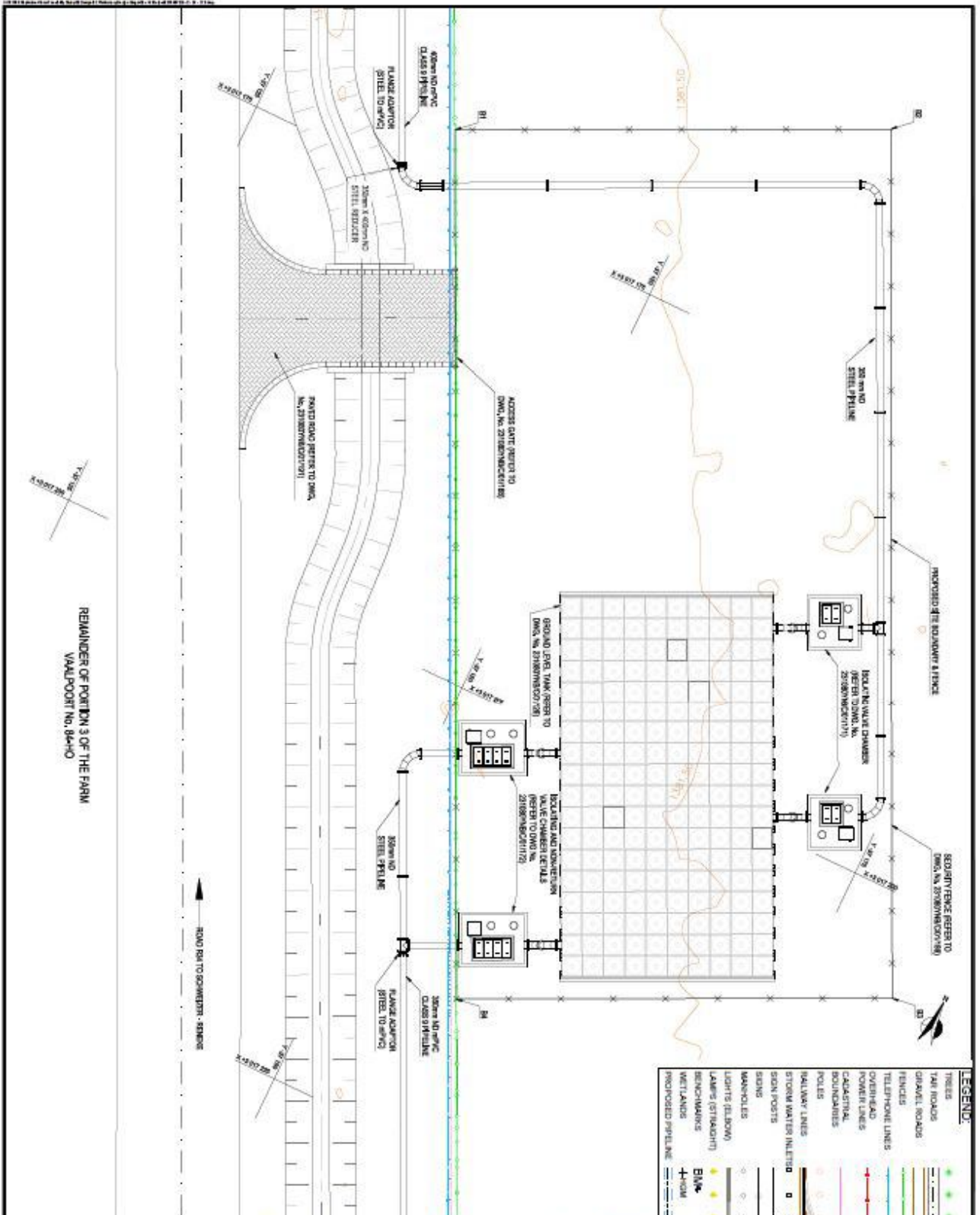
CO-ORDINATE LIST FOR TANK SITE SYSTEM (MOS (L.O 25))

POINT	Y	X
01	37732.840	307271.280
02	37732.840	307271.840
03	37733.000	307272.000
04	37732.840	307271.840

**PRELIMINARY DESIGN**



<p>DR. RUTH S. MOWPATI DISTRICT MUNICIPALITY</p>	
<p>BULK WATER SUPPLY TO THE GREATER MANUSA AREA</p>	
<p>ELEVATED TANK SITE LAYOUT</p>	
DATE	NOV 2012
SCALE	AS SHOWN
PROJECT NO.	23-00807/MS/C07/1125



REMAINDER OF PORTION 3 OF THE FARM  
VAALPOORT NO. 84-10

**LEGEND**

TREES	---
FAIR ROADS	---
GRAVEL ROADS	---
FENCES	---
TELEPHONE LINES	---
POWERHEAD	---
POWER LINES	---
CABLETRENCH	---
BOUNDARIES	---
POLES	---
RAILWAY LINES	---
STORM WATER INLETSD	---
SOON POSTS	---
SONS	---
MANHOLES	---
LIGHTS (ALBOW)	---
LAAP'S (STRAIGHT)	---
BENCH-MARKS	---
WETLANDS	---
PROPOSED PIPELINE	---

**NOTES**

**CO-ORDINATE LIST FOR TANK SITE SYSTEM WGS (LO 25)**

POINT	Y	X
B1	-37735.848	301771.200
B2	-37769.392	301750.452
B3	-37780.028	301728.592
B4	-37787.464	301725.276

**PRELIMINARY DESIGN**

**Work**

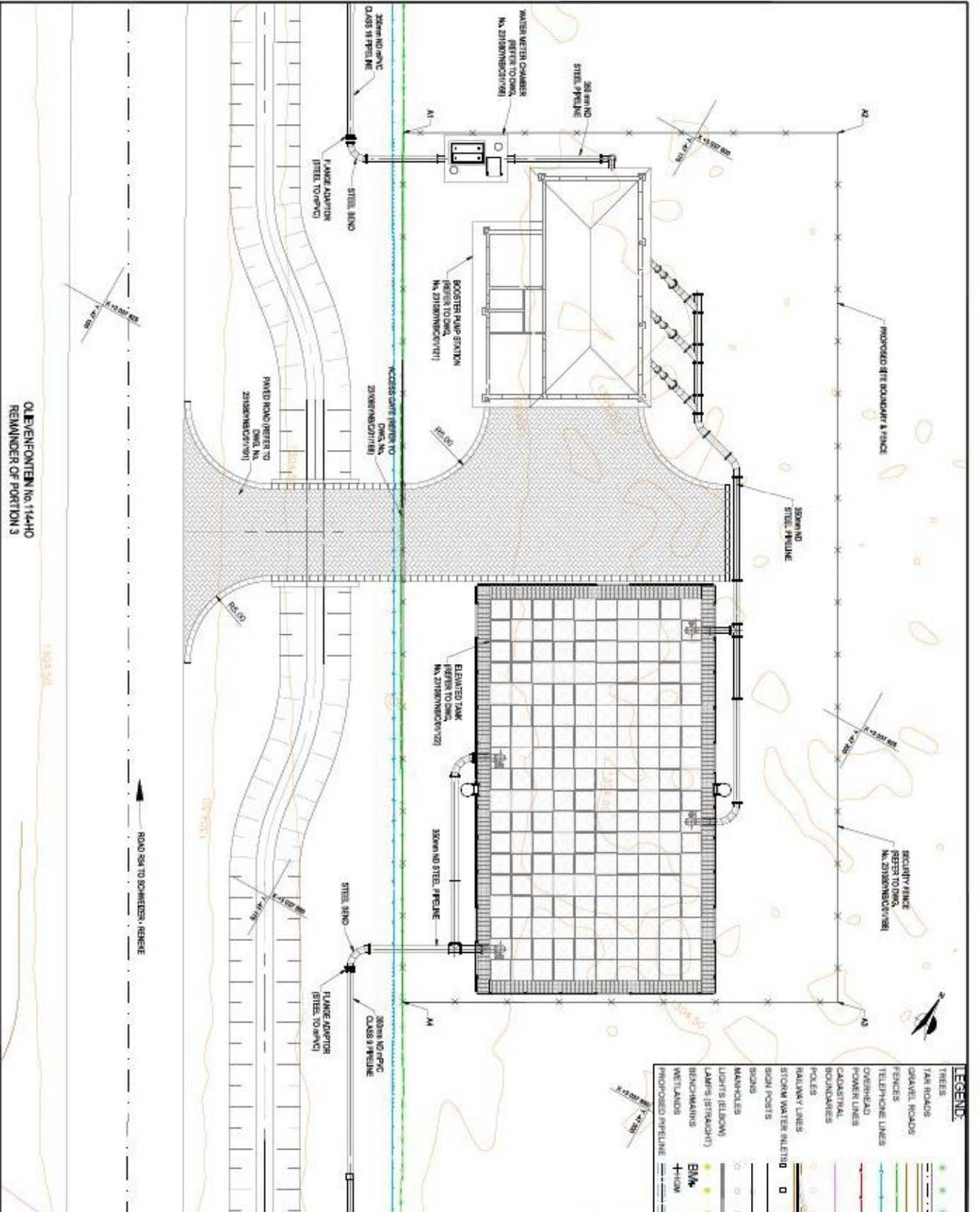
**Work**

**Dr. RUTH S. MOMPATI**  
DISTRICT MUNICIPALITY

**BULK WATER SUPPLY TO THE GREATER MANUSA AREA**

**VAALPOORT GROUND LEVEL TANK SITE LAYOUT**

**SCALE:** 1:100  
**DATE:** JULY 2012  
**DRAWN BY:** [Name]  
**CHECKED BY:** [Name]



**LEGEND**

- TREES
- 1:60 ROAD
- GRAVEL ROADS
- FENCES
- TELEPHONE LINES
- OVERHEAD POWER LINES
- CADASTRAL BOUNDARIES
- POLES
- RAILWAY LINES
- STORM WATER INLETS
- SIGN POSTS
- SCANS
- MANHOLES
- LIGHTS (BESLOW)
- LAMPS (STRASCH)
- BENCHMARKS
- WELL LIDS
- PROPOSED PIPELINE

**NOTES**

**CO-ORDINATE LIST FOR PUMP STATION SITE SYSTEM WGS (LO 25)**

POINT	X	Y
A1	-47182.219	503780.002
A2	-47182.209	503776.898
A3	-47206.486	503783.307
A4	-47194.654	503781.526

**PRELIMINARY DESIGN**

**WORKER PARSONS**

**DR. RUTH S. KOMPATI**  
DISTRICT MUNICIPALITY

**BULK WATER SUPPLY TO THE GREATER MAMUSA AREA**

**OUEVENFONTEIN PUMP STATION AND ELEVATED TANK SITE LAYOUT**

SCALE: 1:100  
DATE: 15 JUNE 2012  
PROJECT NUMBER: 231080VNB/C01/120

OUEVENFONTEIN No. 114-HO  
REMAINDER OF PORTION 3

# *APPENDIX D*

Specialist reports

# *APPENDIX D<sub>1</sub>*

Wetland Report

Refer to CD

# *APPENDIX D<sub>2</sub>*

Preliminary Design Report

Refer to CD