PROPOSED TOWNSHIP ESTABLISHMENT OF GREATER SEVILLE EXT 1 (THE REMAINDER OF PORTION 2 AND PORTION 3 OF THE FARM SEVILLE 224 KU), BUSHBUCKRIDGE, MPUMALANGA

BULK ENGINEERING SERVICES REPORT

January 2023, Rev01

PREPARED BY:

Dalimede Projects (PTY) LTD
No. 11 Pierre street,
IT Park RentCo Building,
Office 6,
Bendor, Polokwane,
South Africa,
0699

Tel: 015 291 0775, Cell: 079 368 8414,
E-mail: admin@dalimede.com

PREPARED FOR:

Bushbuckridge Local Municipality
R533 Graskop Main Road
Bushbuckridge
1280

Tel: 013 065 0814

Table of Contents

1 INTRODUCTION 6
2 LOCALITY 6
3 TOWN PLANNING 9
4 TOPOGRAPHY AND ACCESS 11
5 WATER SERVICE 14
5.1 Water source 15
5.2 Bulk Water Pipeline 18
5.3 Storage Reservoirs / Tanks 19
5.4 Water Reticulation 21
5.5 Water design criteria 21
5.6 Water demands 22
5.7 Bulk water capacity 25
5.8 Water infrastructure proposed 26
5.8.1 Ground water source 27
6 SEWER SERVICE 28
6.1 Existing wastewater treatment works 28
6.2 Bulk sewer 28
6.3 Sewer Reticulation 28
6.4 Sewer flows 29
6.5 Sewer proposed 31
7 ELECTRICITY 32
8 TOWNSHIP ROADS 33
8.1 Classification of roads 33
8.2 Geometric Design Standards 33
8.3 Pavement Design 34
9 STORMWATER DRAINAGE 35
9.1 Stormwater systems 35
9.2 Hydrology 35
9.3 Design Standards 36
10 SOLID WASTE 36
11 CONCLUSION 37
ANNEXURES 39

Tables

Table 1 Land use Seville Extension 1 Township 9
Table 2 WTW details 15
Table 3 Existing Boreholes 18
Table 4 The water design criteria 21
Table 5 Water demand 23
Table 6 Fire flow demands 24
Table 7 Pipeline existing capacity 25
Table 8 Sewer design flow of proposed development 30
Table 9 Classification of roads 33
Table 10 Class 5d – Access Road 33
Table 11 Class 5f – Internal roads 34
Table 12 Proposed pavement design 34
Table 13 Hydrological data 35
Table 14 Stormwater design standard 36

Annexures

ANNEXURE 1 Layout Plan 40

Figures

Figure 1 Locality map 6
Figure 2 Locality 7
Figure 3 Locality plan 8
Figure 4 Spatial Development Plan Seville Ext 1 10
Figure 5 Site view 11
Figure 6 Site access 12
Figure 7 Access Road – internal street 13
Figure 8 Existing water bulk infrastructure 14
Figure 9 Thorndale Dam, Seville, Bushbuckridge 16
Figure 10 Thorndale Dam WTW 17
Figure 11 Water bulk lines 18
Figure 12 Water storage 19
Figure 13 Water storages, Seville 20
Figure 14 Water connection proposed 26
Figure 15 Enviro-Loo existing toilets at Seville school 29
Figure 16 Proposed Infrastructure 31
Figure 17 Electrical lines in vicinity of site 32

Abbreviations

AADD	-	Average Annual Daily Demand
ADWF	-	Average Dry Weather Flow
DWS	-	Department of Water and Sanitation
FAR	-	Floor Area Ratio
IDP	-	Infrastructure Development Plan
kℓ	-	Kilo Litres
kℓ/day	-	Kilo Litres per day
ℓ/s	-	Litres per second
m^3	-	Cubic metre
MAP	-	Mean Annual Precipitation
Mℓ /day	-	Mega litres per day
PSC	-	Project Steering Committee
RWS	-	Regional Water Scheme
SANRAL	-	South African National Roads Authority Limited
StatsSA	-	Statistics South Africa
VIP toilet	-	Ventilated Improved Pit toilet
WC	-	Water Committee

1 INTRODUCTION

This is the bulk engineering services report for the proposed township establishment of Greater Seville Ext 1 (the Remainder of Portion 2 and Portion 3 of the Farm Seville 224 KU), Mpumalanga Province.

This report outlines the engineering services needed for the township, i.e., roads, water, sewer and electricity.

2 LOCALITY

The proposed township is situated 145km north of Mbombela along the R40, in Mpumalanga Province, South Africa. The area is administered by Bushbuckridge Local Municipality under Ehlanzeni District Municipality. GPS coordinates of site are 24°39'30.99"S 31°24'34.87"E. The locality map is shown on the figures below.

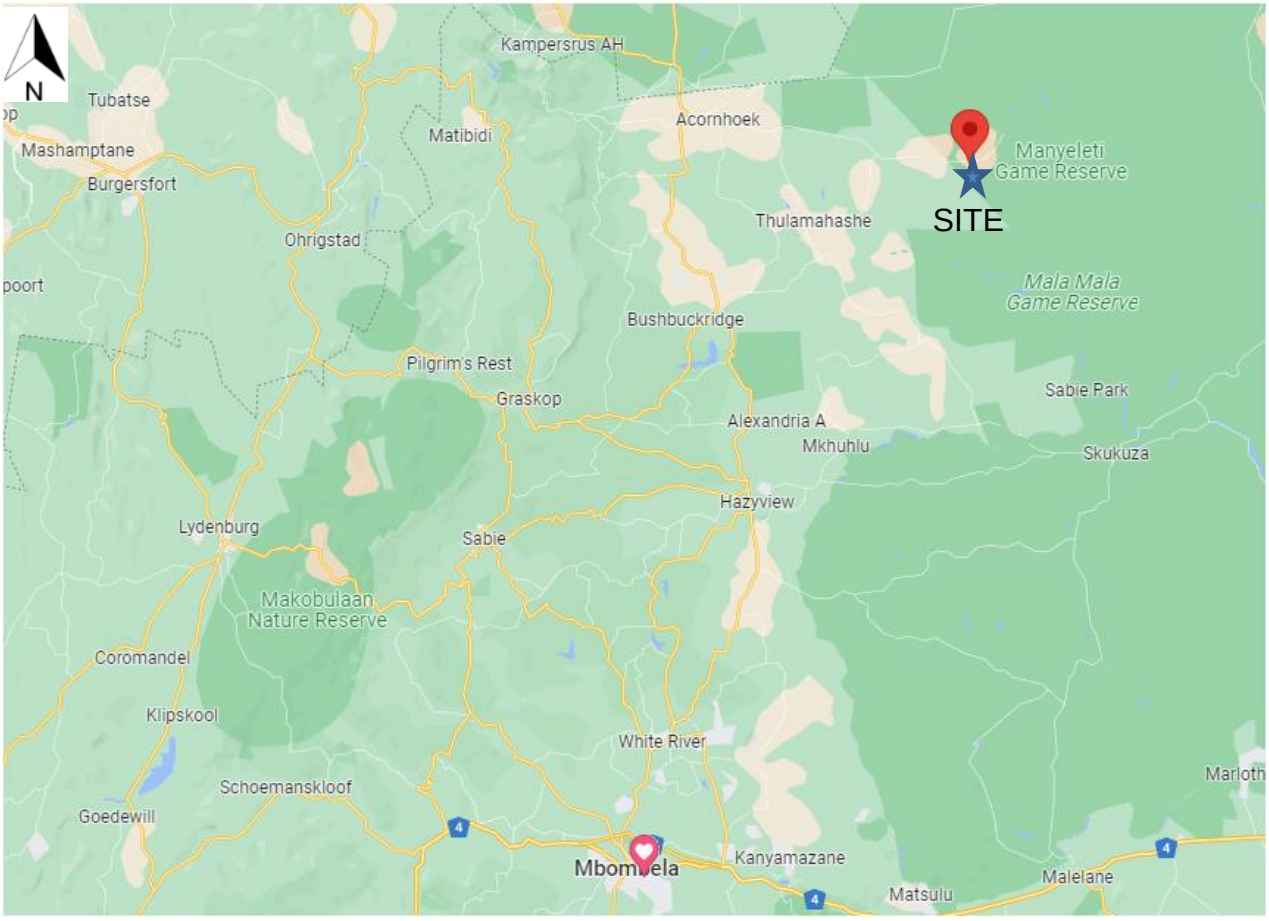


Figure 1 Locality map

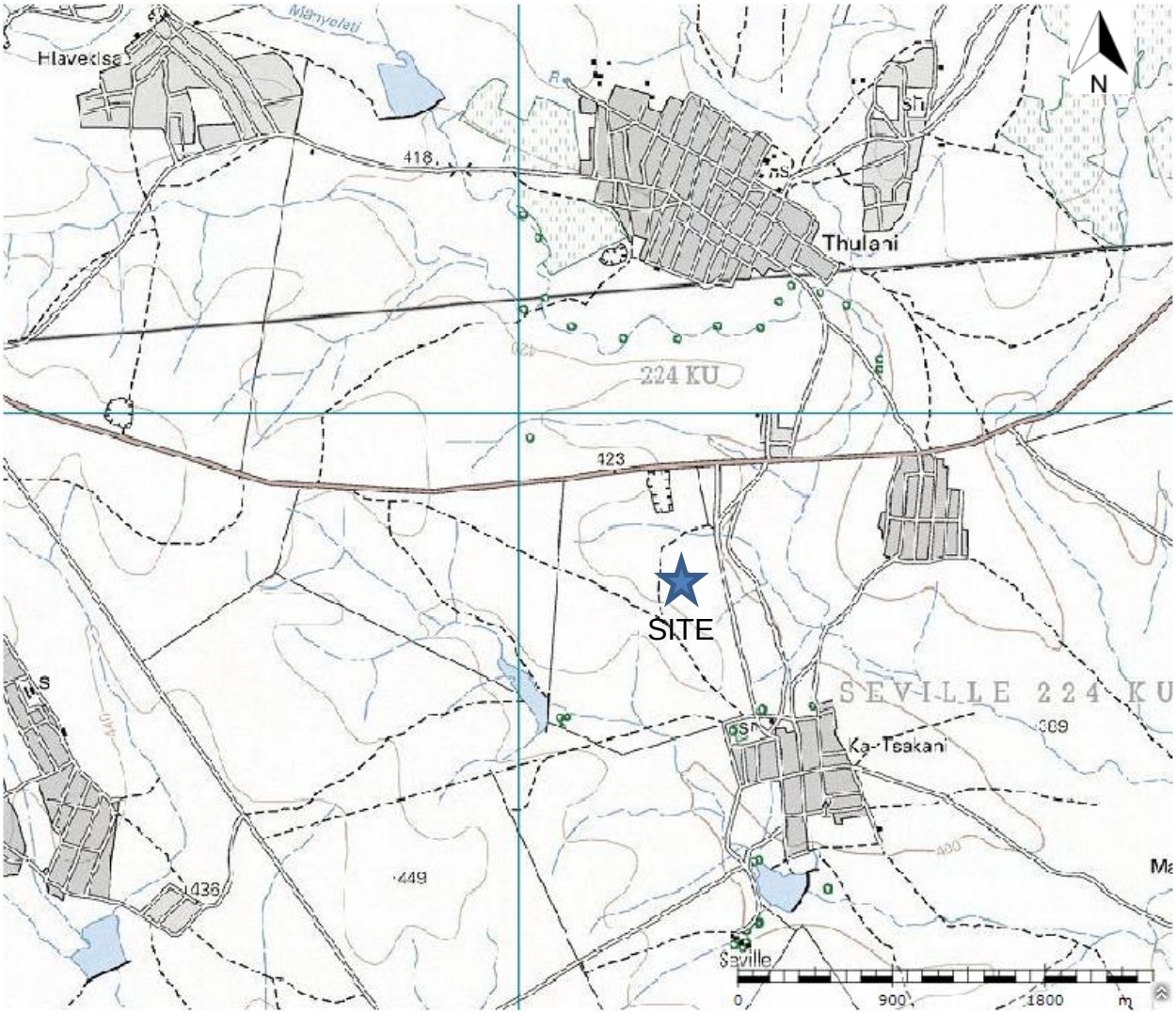


Figure 2 Locality

Figure 3 Locality plan

3 TOWN PLANNING

The site land use will be for residential purposes.

The site is to be developed for land uses shown in the table below.

Table 1 Land use Seville Extension 1 Township

ZONING	LAND USES	NO. OF ERF	AREA (HA)	AREA (%)	NOTATION
RESIDENTIAL 1	DWELLING UNIT/S	477	21.55	31.36	
BUSINESS 1	SHOPS/RETAIL	13	8.56	12.45	
INSTITUTIONAL	PLACE OF WORSHIP	2	0.19	0.27	
EDUCATIONAL	CRECHE	2	0.23	0.33	
PUBLIC OPEN SPACE	OPEN SPACE	3	27.68	40.28	
ROADS PURPOSES	PROPOSED ROADS		10.51	15.31	
TOTAL DEVELOPABLE AREA		497	68.71	100%	

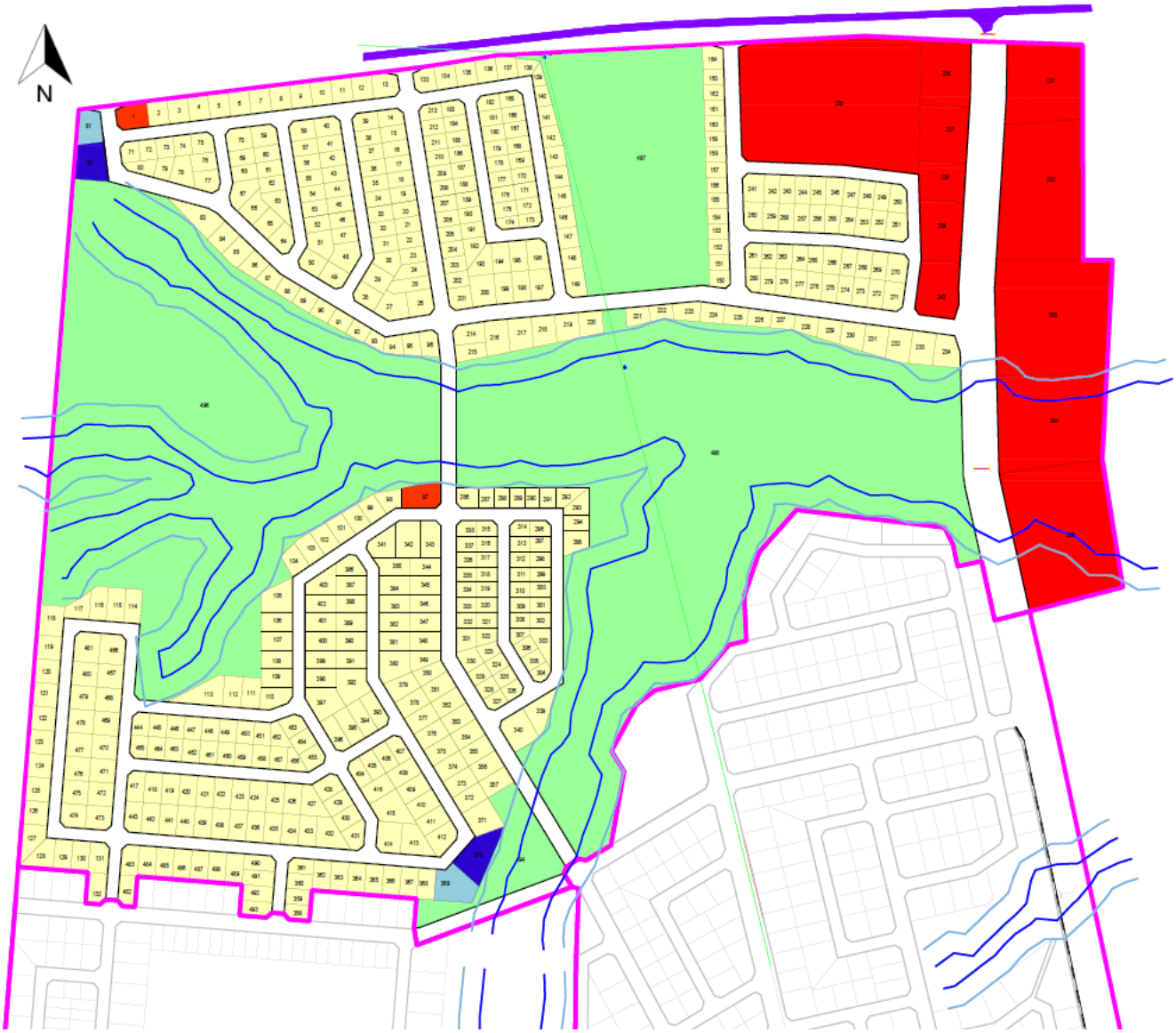


Figure 4 Spatial Development Plan Seville Ext 1

4 TOPOGRAPHY AND ACCESS

The site topography is generally flat.

Figure 5 Site view

The proposed development can be accessed from the through the main route option, described below.

- D4418 from road D4419.

The D4419 road is bituminous top surfaced and is in critical condition with potholes, while the D4418 has gravel road.

See the figures below.

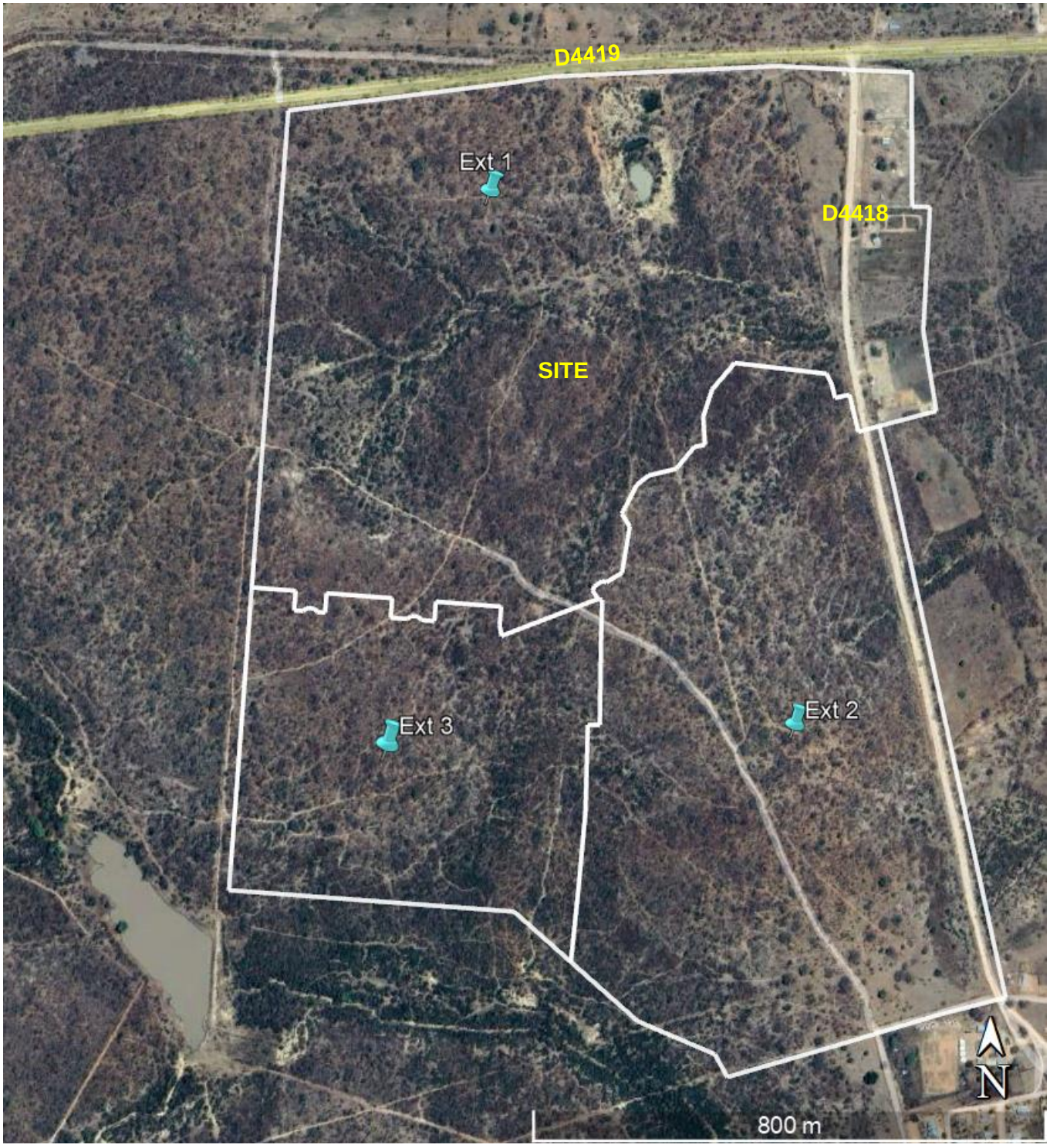


Figure 6 Site access

Figure 7 Access Road – internal street

5 WATER SERVICE

The project site has existing municipal infrastructure for water, electricity and access roads. The existing bulk water infrastructure is shown on the figure below.

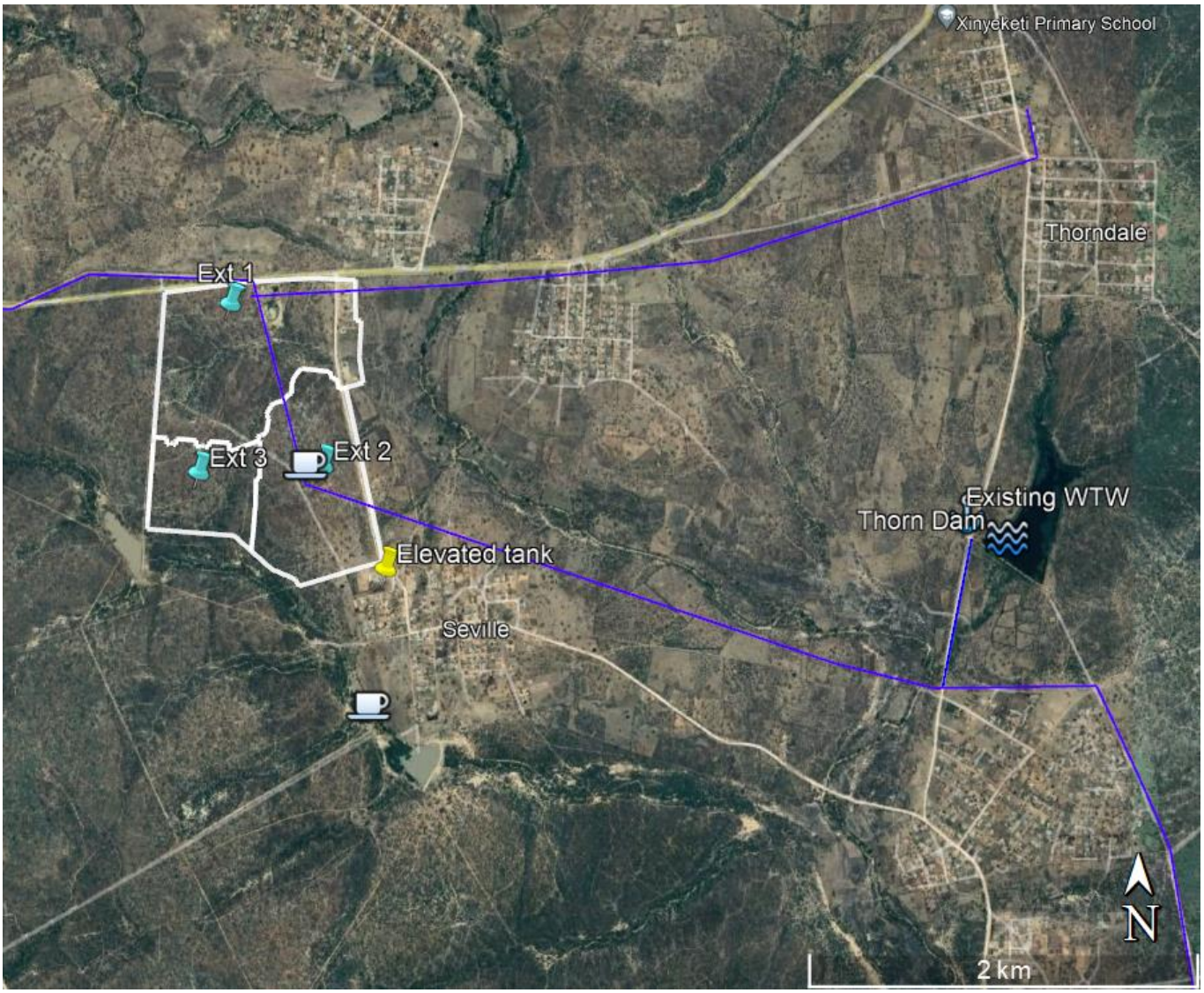


Figure 8 Existing water bulk infrastructure

5.1 Water source

In Seville village, water is sourced from Thorn Dam, GPS coordinates 24°39'56.57"S 31°26'43.80"E. The Thorn Dam is 3.5 km east of the proposed site.

Raw water is then conveyed to the following water treatment works (WTW):

- Thorndale Dam WTW, GPS 24°39'52.67"S 31°26'35.95"E

Table 2 WTW details

Description	**Locality:**
	Thorn Dam WTW
Water Treatment Works Capacity	0.295Mℓ/day

Daily meter reading last taken on the 14th of August 2022 was recorded as 0.295Mℓ.

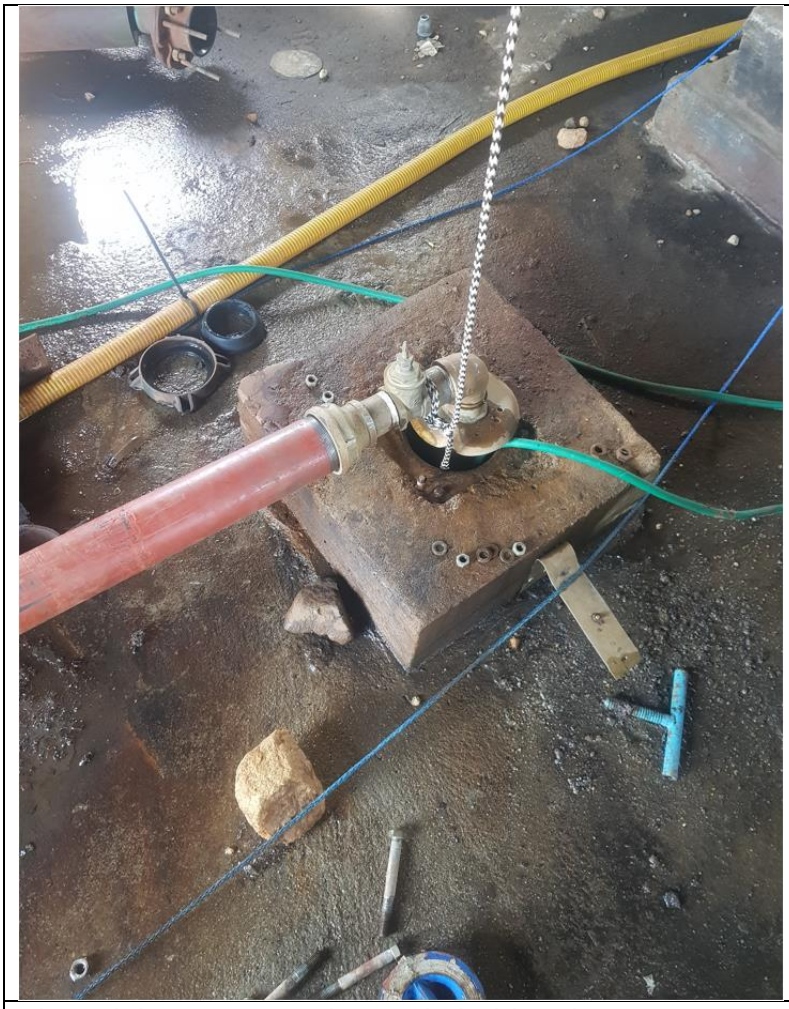
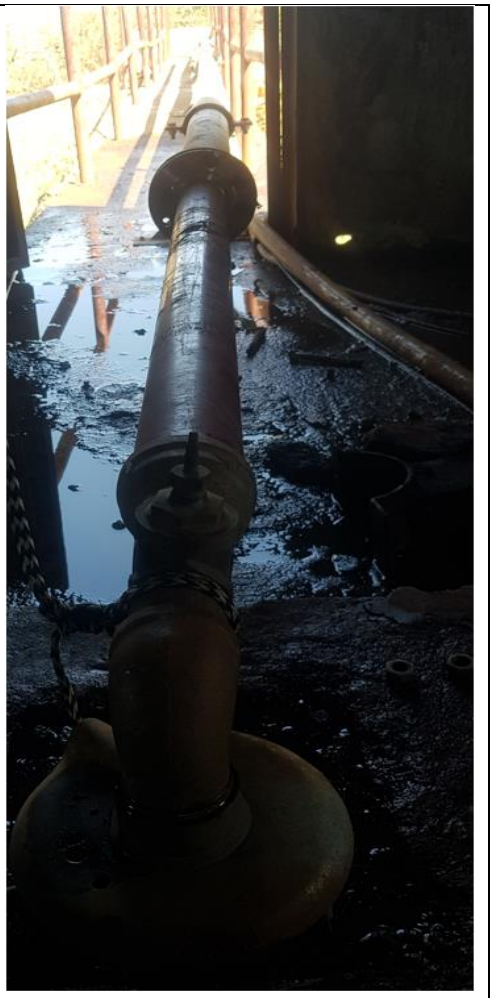
	
Thorndale Dam pumping main held up by rope to avoid sucking up Debre	Thorndale dam pumping main
	
Thorndale Dam and pumping station	Thorndale dam pump information

Figure 9 Thorndale Dam, Seville, Bushbuckridge

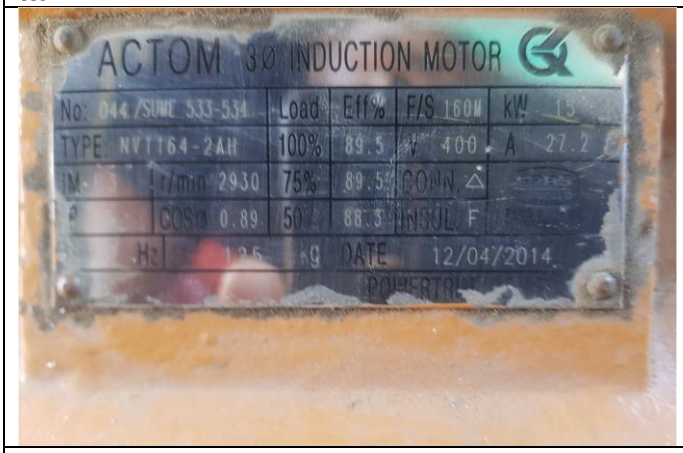
<table>
<tr><td>  </td><td> 
</td></tr>
<tr><td>Thorndale Dam WTW</td><td>Thorndale Dam WTW Chemical dosing</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Thorndale Dam WTW dosing tank and settling tank</td><td>Potable water storage tank. One connected and one yet to be connected</td></tr>
<tr><td> 
</td><td>  </td></tr>
<tr><td>Thorndale Dam high-lift pump information</td><td>Thorndale Dam WTW Pumping Main Pump Station</td></tr>
</table>

Figure 10 Thorndale Dam WTW

Table 3 Existing Boreholes

Description	Locality:
	Seville
Number of existing boreholes	2
Number of Functional Boreholes	2
Total borehole water discharge	Unknown

5.2 Bulk Water Pipeline

At the Thorndale Dam WTW, water is pumped through a 160mm diameter uPVC pipeline. The pumping main conveys potable water to the reservoir in Seville and directly into the existing water reticulation supplying the neighbouring villages.

See the figure below with water bulk line in blue colour.

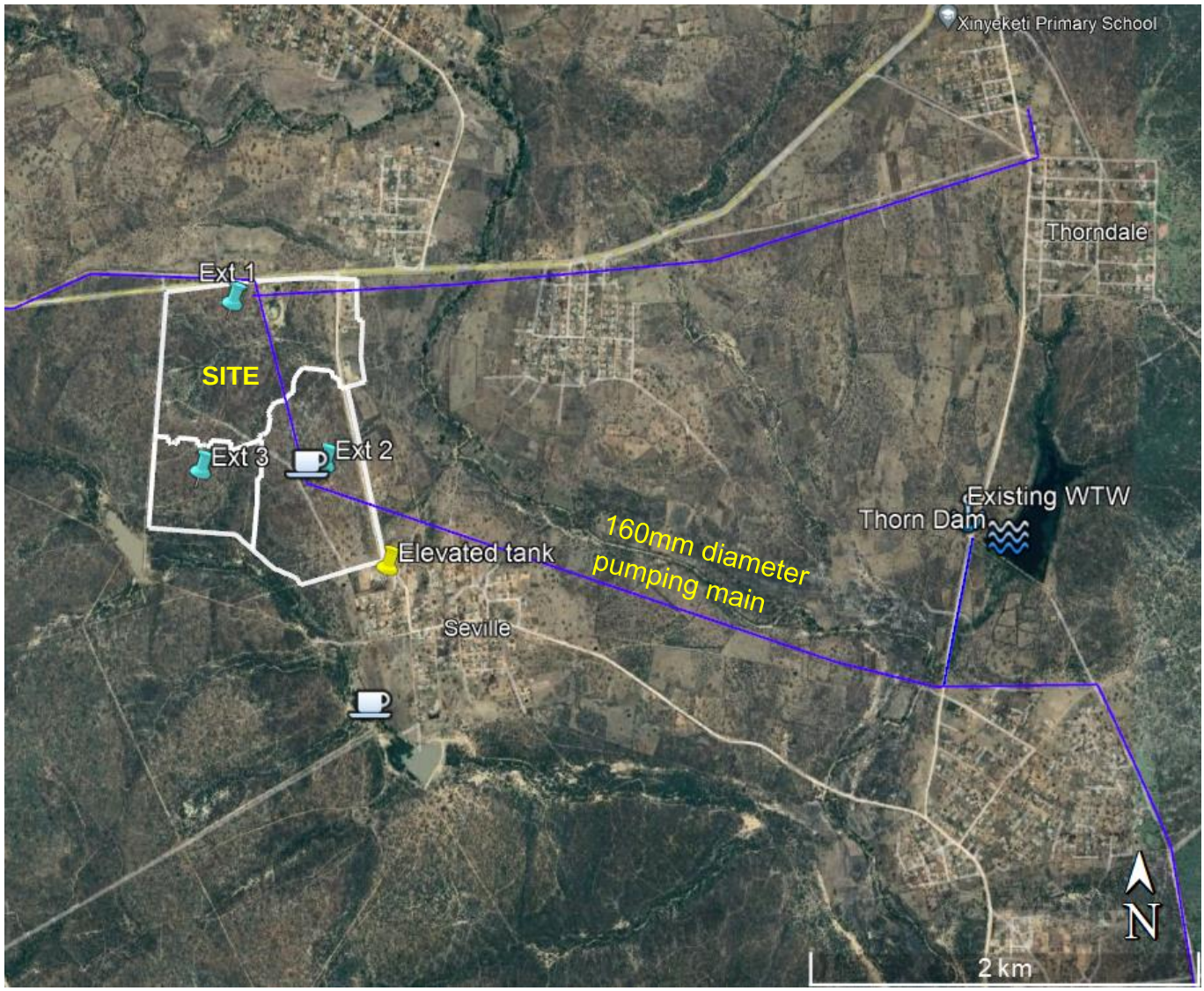


Figure 11 Water bulk lines

5.3 Storage Reservoirs / Tanks

There is one reservoir and one elevated steel tank in Seville village viz;

- One x 0.6Mℓ reservoir GPS coordinates 24°39'44.72"S 31°24'35.48"E.
- Elevated 0.079 Mℓ steel tank GPS coordinates 24°40'0.98"S 31°24'49.08"E.

The reservoirs are shown in the figure below.

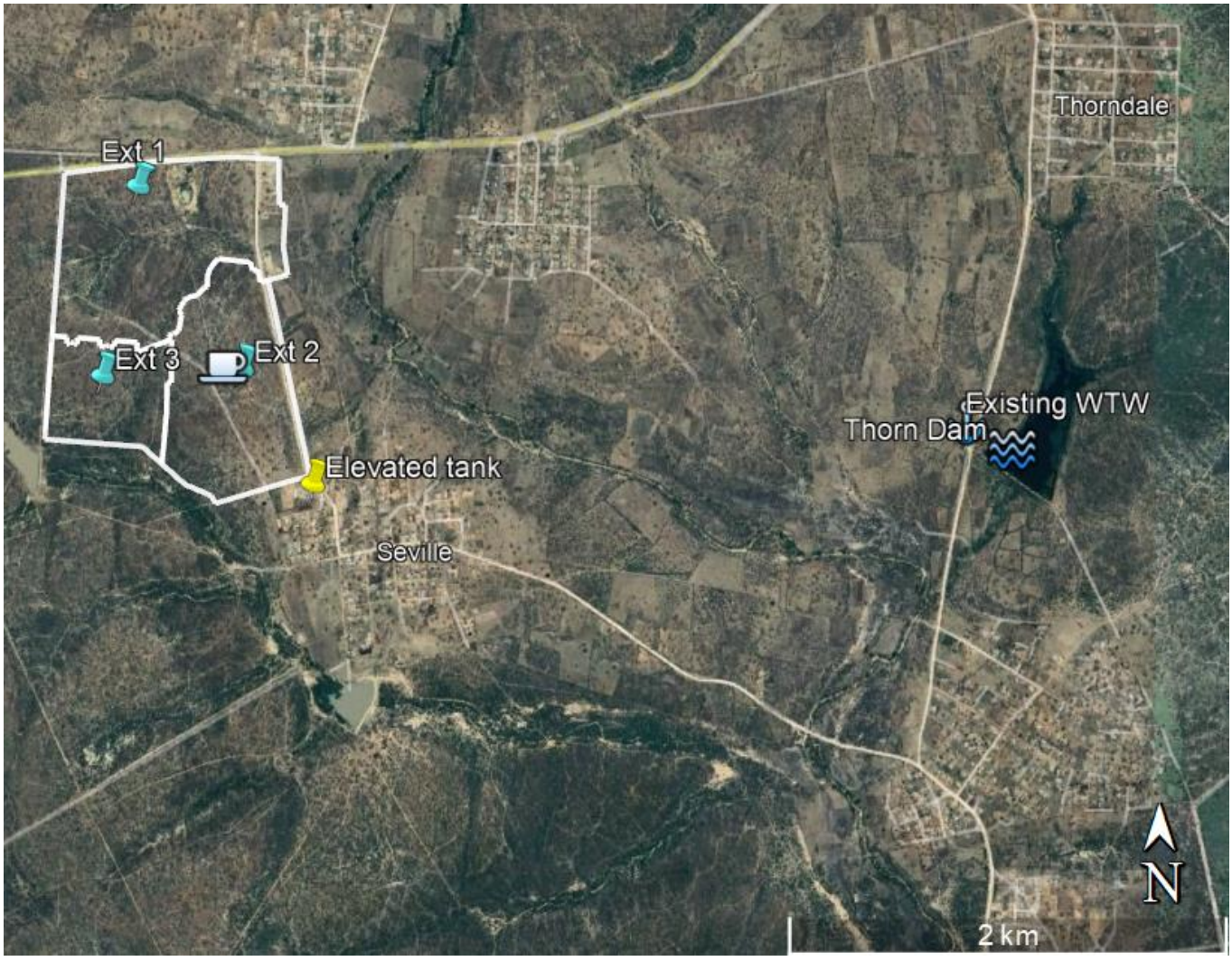


Figure 12 Water storage

Elevated 0.079 Mℓ steel tank, Seville

0.6Mℓ reservoirs, Seville

Figure 13 Water storages, Seville

5.4 Water Reticulation

The area adjacent to site has an existing water reticulation to yard connection standard.

5.5 Water design criteria

The water design criterion to be used is listed in the table below. The design guidelines were adopted from the CSIR document titled:

The Neighbourhood Planning and Design Guide, Creating Sustainable Human Settlements, developed by, Department of Human Settlements, Published by the South African Government, Version 1.1.

Table 4 The water design criteria

Item	Design element	Criteria
i.	Average Annual Daily Demand (AADD), for Residential 1	0.6kℓ/c/day
ii.	Group / cluster housing, Medium density	0.5kℓ/unit/day
iii.	Business / commercial, FAR = 0.4	0.65kℓ/100m^2
iv.	Park	12kℓ/hectare
v.	Municipal, FAR = 0.4	0.6kℓ/100m^2
vi.	Institutional, FAR = 0.4	0.6kℓ/100m^2
vii.	Educational, FAR = 0.4	0.6kℓ/100m^2
viii.	Industrial, FAR = 0.4	0.4kℓ/100m^2
ix.	Taxi Rank	0.3kℓ/100m^2
x.	School, crèche, educational buildings	60 ℓ/student
xi.	Hospital, building according to Floor Area Ratio (FAR)	1.2 kℓ/100m^2
xii.	Church buildings	0.3 kℓ/100m^2
xiii.	Church grounds	1.2 kℓ/Ha
xiv.	School, crèche, educational buildings	60 ℓ/student
xv.	School, crèche, educational grounds	12 kℓ/Ha
xvi.	Institutional, FAR = 0.4	0.6 kℓ/100m^2
xvii.	Sport grounds / Recreational	40 kℓ/Ha
xviii.	Residential stands; High density, small sized, with 20 to 12 units/Ha	11 kℓ/Ha/day
xix.	Flats, High density	0.35 kℓ/unit/day
xx.	Stadium: Buildings only	1.5 kℓ/1000seats
xxi.	Stadium: Grounds only	12 kℓ/Ha/day
xxii.	Hotels	0.2 kℓ/person
xxiii.	Golf estate - excluding golf course water requirements. Stand size less than 2670m^2.	3kℓ/stand/day
xxiv.	Garage or filling station	0.8kℓ/100m^2
xxv.	Frail care centres and hospitals, Building according to FAR	1.2kℓ/100m^2
xxvi.	Gross Average Annual Daily Demand (GAADD)	Allow 10% losses
xxvii.	Daily Instantaneous Peak Factor (DIPF)	1.5
xviii.	Design Peak Flow Rate (DPFR) for domestic flows.	25ℓ/s
xxix.	Maximum static head	90m

Item	Design element	Criteria
xxx.	Minimum residual head under conditions of domestic peak flow	10m
xxxi.	Maximum linear flow velocity under conditions of domestic peak flow	3m/s
xxxii.	Pipe type	uPVC
xxiii.	Minimum pipe class	9
xxiv.	Fire flow at any one hydrant under the conditions of domestic peak flows (one hydrant at a time)	15 ℓ/s
xxv.	Minimum residual head (fire plus domestic peak flow)	25m
xxvi.	Maximum linear flow velocity under conditions of fire-fighting	3m/s
xvii.	DWS storage reservoirs sizing criteria: 48 Hrs x AADD Pumped from One Source 36 Hrs x AADD Pumped from Multiple Sources 24 Hrs x AADD Gravity Source	

The following adoptions were also made:

- Residential 2 land use type has 44 Dwelling Units / Hectare
- Residential 3 land use type has 65 Dwelling Units / Hectare

5.6 Water demands

The estimated water demand for the proposed development is shown in table below. As per the table below, the water demand calculations indicate that the proposed township will require 861.1kℓ/d AADD and 947.2kℓ/d Gross Average Annual Daily Demand.

Table 5 Water demand

Land Use	No. of Erven	Area (Ha)	No. of Units	Floor Area Ratio, FAR	Unit flow	Unit of measure	Water Demand	
Seville Extension 1 Township								
Residential 1 (Dwelling Unit/s)	477	21.55	477		0.6	kℓ/erf/day	289.8	kℓ/d
Business 1 (Shops/ Retail)	13	8.56		0.4	0.65	kℓ/100m^2	222.6	kℓ/d
Institutional (Place of Worship)	2	0.19		0.4	0.600	kℓ/100m^2	4.6	kℓ/d
Education (Creche)	2	0.23	200		0.060	kℓ/student	12.0	kℓ/d
Public Open Spaces Open Space)	3	27.68			12.0	kℓ/Ha	332.2	kℓ/d
Road Surfaces (Proposed Roads)		10.51						
Totals	497	68.72						
Sub-total Average Annual Daily Demand (AADD)							861.1	kℓ/d
Gross Average Annual Daily Demand (GAADD) (added 10%)							947.2	kℓ/d
Gross Average Annual Daily Demand (GAADD) (added 10%)							11.0	ℓ/s
Multiply by a peak factor (Summer Peak Factor)					1.5	peak factor	1 420.8	kℓ/d
Multiply by a peak factor (Summer Peak Factor)					1.5	peak factor	16.4	ℓ/s

The Fire flows are shown in the table below.

Table 6 Fire flow demands

Fire category: **Moderate risk 1: Industrial, business, high rise flats ≥ four storeys**	**Quantity**	**Unit**
Total fire flow	50	ℓ/s
Duration of design fire flow	4	Hours
Minimum Flow at one hydrant (ℓ/s)	25	ℓ/s
Moderate risk 2: Cluster & low-income housing, high rise flats ≤ three storeys		
Total fire flow	25	ℓ/s
Duration of design fire flow	2	Hours
Minimum Flow at one hydrant (ℓ/s)	25	ℓ/s
Fire category: **Low risk: Single residential housing**		
Total fire flow	15	ℓ/s
Duration of design fire flow	1	Hours
Minimum Flow at one hydrant (ℓ/s)	15	ℓ/s

5.7 Bulk water capacity

The proposed development water demand AADD is 861.1kℓ/d.

The Seville reservoir has a capacity of 0.6Mℓ and receive water from a gravity conveyance line and a pumping line.

Therefore, Greater Seville Ext 1 required storage = AADD x 2 = 861.1kℓ/d x 2 = 1722kℓ/d = Let's say 1.7 Mℓ

Seville required storage (1.7Mℓ/d) **>** Existing reservoirs capacity of 0.6Mℓ

Hence the existing Seville reservoir capacity is Not adequate.

The capacity of the existing 160mm bulkline pumping water to Seville is shown in the table below.

Table 7 Pipeline existing capacity

BULKLINE	**INTERNAL DIAMETER**	**MAX CAPACITY (at V=1.2m/s)**		**WATER SUPPLY**	
DIAMETER	**(mm)**	**Flow Q (ℓ/s)**	**Flow Q (m^3/s)**	**Supply (m^3/d)**	**Supply (Mℓ/d)**
160mm, class 16	140.6	18.63	0.019	1609.7	1.610

The Seville Extension 1 peak water demand of 16.4ℓ/s is less than the capacity of the existing 160mm diameter pipeline with a capacity of 18.63ℓ/s.

The village of Seville is currently struggling to meet demand for the existing settlement. Illegal connections have been made on the existing bulkline / reticulation lines.

The existing Seville reservoir will not be able to meet capacity for the proposed development and the combined development and will require a proposed reservoir that meets capacity as calculated in the Bulk water capacity.

5.8 Water infrastructure proposed

The proposed development will increase the water demand on the existing water sources by an amount indicated by the AADD in Table 5 Water demand.

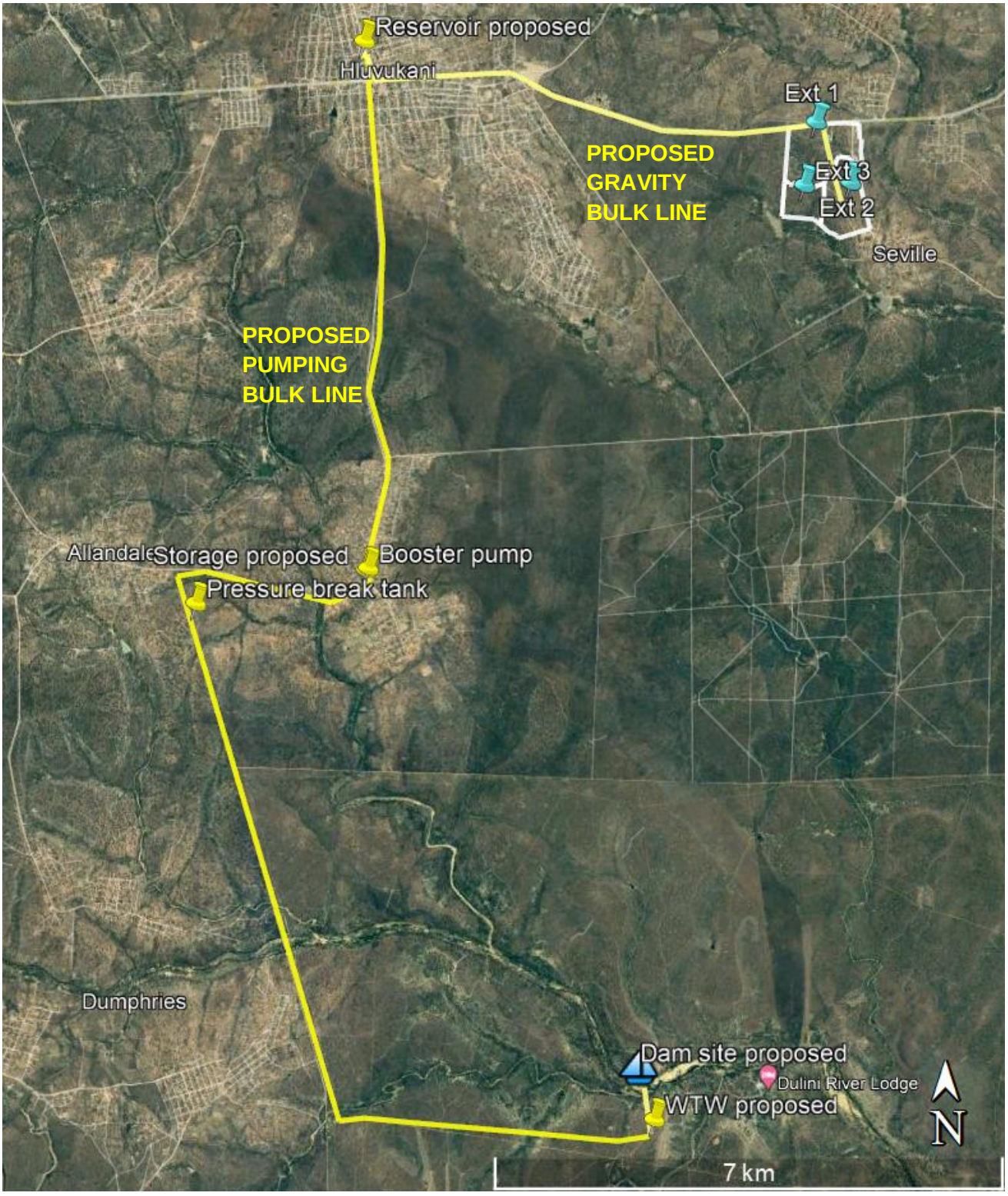


Figure 14 Water connection proposed

The following is proposed:

- A dam to be constructed at the location indicated in the above figure.
- 1km raw water pumping main. The pipe diameter will be determined at detailed design stage.
- WTW to be constructed to as indicated in the above figure.
- The clear water high lift pump station at the proposed WTW.
- A proposed regional reservoir in Hluvukani village. The capacity will be determined at detailed design stage.
- The 23km long water pumping bulkline from the proposed WTW to the regional reservoir in Hluvukani. The pipe diameter will be determined at detailed design stage.
- A pressure break tank in Allandale village along the pumping main.
- Booster pump and storage at Athole village. This booster pump will pump to Hluvukani.
- An 8km long gravity pipeline from Hluvukani proposed regional reservoir to the Seville proposed site. The pipe diameter will be determined at detailed design stage.
- A water connection to the proposed reticulation for the development.

5.8.1 Ground water source

In order to augment the water supply to site, a groundwater borehole will need to be divined, drilled and tested. The borehole should be aimed at matching the water demand of the development as shown in Table 5 Water demand.

6 SEWER SERVICE

6.1 Existing wastewater treatment works

Seville village currently has no existing wastewater treatment works. Sewer is currently handled onsite through septic tanks and pit toilets. A honey-sucker trucks are then engaged by individuals to empty filled up septic tanks.

6.2 Bulk sewer

There are no existing bulk sewer pipelines servicing Seville village.

6.3 Sewer Reticulation

There is no sewer reticulation currently at the township site. The community rely on pit toilets and septic tanks for sanitation needs.

Figure 15 Enviro-Loo existing toilets at Seville school

6.4 Sewer flows

The design guidelines were adopted from the CSIR document titled:

The Neighbourhood Planning and Design Guide, Creating Sustainable Human Settlements, developed by, Department of Human Settlements, Published by the South African Government, Version 1.1.

Table 8 Sewer design flow of proposed development

Land Use	No. of Erven	Area (Ha)	Water Demand		Sewer Return	Sewer Flow	
Seville Extension 1 Township							
Residential 1 (Dwelling Unit/s)	477	21.55	289.8	kℓ/d	85%	246.3	kℓ/d
Business 1 (Shops/ Retail)	13	8.56	222.6	kℓ/d	85%	189.2	kℓ/d
Institutional (Place of Worship)	2	0.19	4.6	kℓ/d	85%	3.9	kℓ/d
Public Open Spaces Open Space)	3	27.68	332.2	kℓ/d	85%	282.3	kℓ/d
Road Surfaces (Proposed Roads)	0	10.51	0.0	kℓ/d	85%	-	kℓ/d
Totals	495	68.49	849.1				
Sub-total Sewer ADWF						**721.7**	**kℓ/d**
15% Extraneous flow						108.3	kℓ/d
Gross Sewer						830.0	kℓ/d
Gross Sewer Flow						9.6	ℓ/s
Peak Factor						2.5	
Peak Sewer Flow						24.0	ℓ/s

The proposed development will have an estimated sewer ADWF of 721.7kℓ/d and a gross sewer flow of 830kℓ/d.

6.5 Sewer proposed

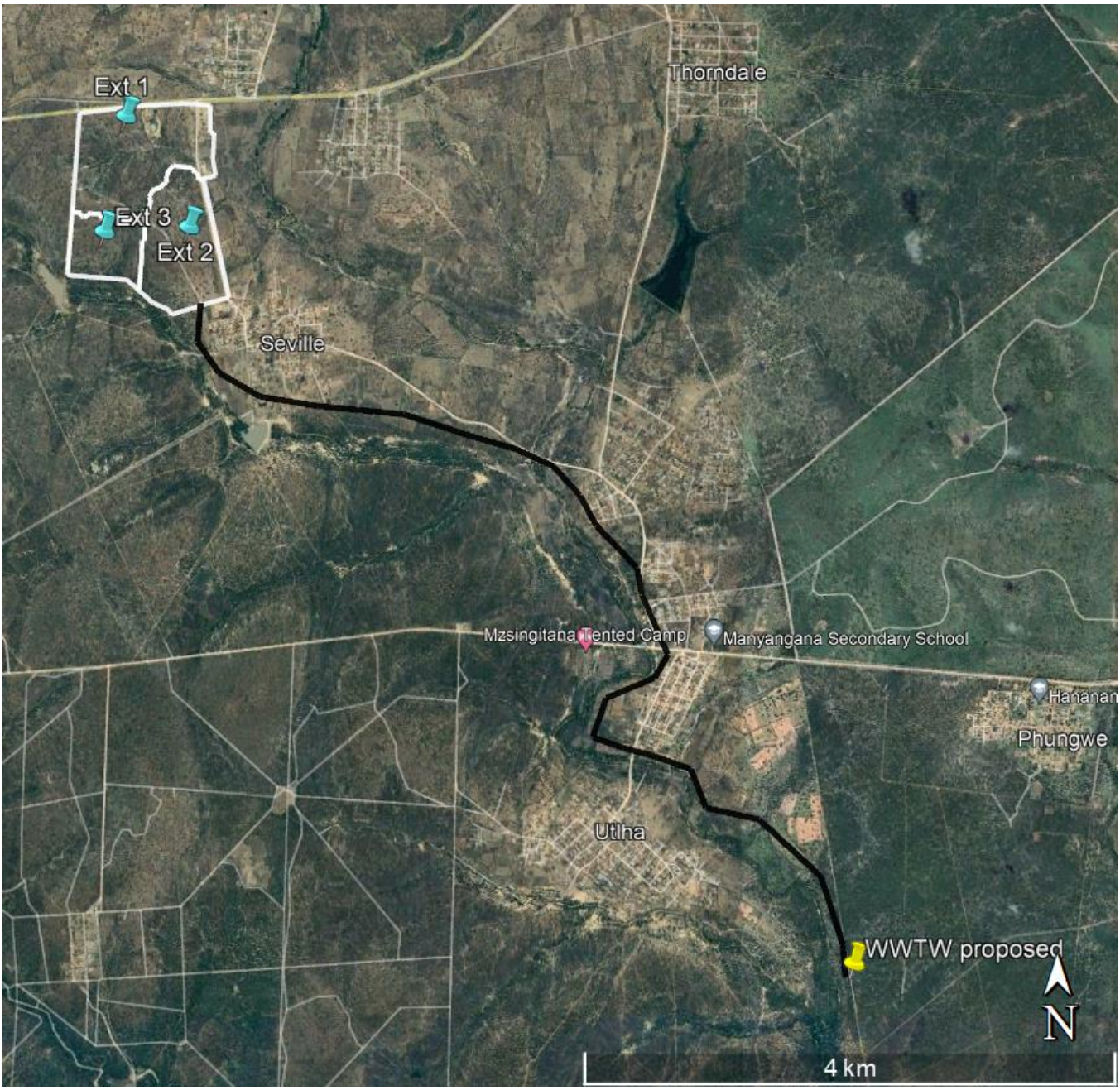


Figure 16 Proposed Infrastructure

Sewer reticulation must be constructed to service the township on the premise that the following must be in-place:

- 9km sewer outfall from the proposed development. The pipe diameter will be determined at detailed design stage.
- A WasteWater Treatment Works (WWTW) to be constructed as indicated in the above figure.

7 ELECTRICITY

There is existing electricity supply infrastructure in the vicinity of the proposed development. This could be utilised to supply the development, subject to approval from the power authority.

Figure 17 Electrical lines in vicinity of site

8 TOWNSHIP ROADS

There is an existing functioning road network that can be used to access the proposed development.

The road infrastructure to internally service the development will be the standards of the Red Book, TMH, TRH books and the local municipality.

8.1 Classification of roads

Table 9 Classification of roads

Description	Class no.	Function	Reserve width	Roadway width
Access Road	5d	Access from existing bounding road	15m	7.4m
Internal Service Road	5f	Internal Road	13	6m
Internal Service Road	5f	Internal Road	10	6m

8.2 Geometric Design Standards

Table 10 Class 5d – Access Road

Design speed	60km/h
Minimum centre line radii	50m
Minimum gradient	0.5%
Favoured maximum gradient	10%
Maximum grade/grade length	12.5% over 70m
Maximum K-value : Crest	16
: Sag	16

Table 11 Class 5f – Internal roads

Design speed		30km/h
Minimum centre line radii		30m
Minimum gradient		0.5%
Favoured maximum gradient		12%
Maximum grade/grade length		16% over 50m
Maximum K-value	: Crest	6
	: Sag	8

8.3 Pavement Design

The proposed pavement designs are based on anticipated traffic volumes and ground conditions, a detailed pavement design will require a geotechnical centreline investigation report.

The table below shows the proposed pavement design for the development.

Table 12 Proposed pavement design

Design	Description
Pavement	30mm Premix Asphalt / 80mm concrete block paving
Base	150mm Thick natural gravel stabilised with Cement to create C4 material compacted to 97% of Mod AASHTO
Subbase	150mm Thick natural gravel G7 material compacted to 97% of Mod AASHTO
Upper Selected Layer	150mm Thick Natural gravel G7 material compacted to 97% of Mod AASHTO Density.
Lower Selected Layer	150mm Thick Natural gravel G7 material compacted to 97% of Mod AASHTO Density.
Roadbed & Fill (where required)	150mm Thick layers compacted to 90% of Mod AASHTO Density. Minimum CBR= 3 at 90% of Mod AASHTO Density- G9

9 STORMWATER DRAINAGE

Stormwater generated onsite can be channelled to follows the natural slope of the ground, to the lowest point. It is envisioned to use Sustainable Urban Drainage Systems (SuDS) to manage stormwater runoff from the site. A stormwater management plan will need to be submitted to the municipality before construction starts. Extraneous stormwater from above the site will be accommodated over the site.

9.1 Stormwater systems

Stormwater runoff onsite will be handled through an internal stormwater system that will be provided to drain the site in a safe and efficient way. It is proposed to make use of SuDS to manage the stormwater runoff before being discharged into the natural water courses. The stormwater can be discharged into the adjacent river and streams.

Stormwater discharge control will be applied in order to reduce the damaging effect of the increase in runoff due to densification.

9.2 Hydrology

The hydrological data used in the design of the stormwater drainage system is shown in the table below.

Table 13 Hydrological data

Hydrological Data	
a) Flood return period	1: 2 years for storm water pipe system. 1: 5 years for the combined stormwater pipe and road systems
b) Average yearly rainfall	800mm
c) Minimum time of concentration and run	As per Local Municipality Guidelines
d) Design Method	Rational method

9.3 Design Standards

The table below lists the standards to be used in the design of the stormwater drainage system:

Table 14 Stormwater design standard

Design Element	Specification
a) Minimum pipe size	600 concretes
b) Minimum pipe gradient	0.67%
c) Storm water details	Local Municipal Standard Details

10 SOLID WASTE

A regional landfill situated nearest the site is to be used to dispose solid waste. The local municipality is responsible for connecting and disposing the solid waste. If the municipality is not able to provide this service, then a private company will need to be appointed by the development owners for the service.

A refuse area with bins will be done onsite and solid waste will be disposed of at the municipal dump site as per the municipal health bylaws.

The Neighbourhood Planning and Design Guide, Creating Sustainable Human Settlements, developed by, Department of Human Settlements, Published by the South African Government, Version 1.1.

The solid waste generation range from 0.6 kg per capita per day in the poor areas, to 1.29 kg per capita per day.

The rate of 0.6kg/c/d was adopted for the township. Solid waste will be generated by the development.

Population estimate = 483 residential units x 4 people per unit = 1 932 people

- Solid waste = 0.6kg/per person/day or (0.6kgx365 days)
- Waste generated per day = 0.6x 1 932 = 792kg = 0.8 tonne
- Waste generated per annum = 0.8x365 = 289 tonne

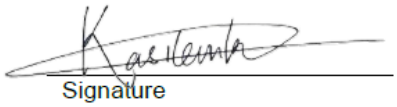
11 CONCLUSION

The proposed development will contribute towards improving the service delivery of the area and general livelihood of the residents.

PROPOSED TOWNSHIP ESTABLISHMENT OF GREATER SEVILLE EXT 1 (THE REMAINDER OF PORTION 2 AND PORTION 3 OF THE FARM SEVILLE 224 KU), BUSHBUKRIDGE, MPUMALANGA

BULK ENGINEERING SERVICES REPORT:

CIVIL SERVICES REPORT

Compiled by	W. KASILEMBO B. Tech Civil	 Signature	17/08/2022 Date
Reviewed by	L. MTHUNZI BSc Hons Eng, Pr Tech Eng ECSA	 Signature	17/08/2022 Date

ANNEXURES

ANNEXURE 1 Layout Plan