CIVILCONSULT
Consulting Engineers

CITY OF TSHWANE

REZONING OF PORTION 2 TO 102 OF ERF 1305 SOSHANGUVE-M

SERVICES REPORT

WATER AND SANITATION ENGINEERING SERVICES

APS (39485)

PROJECT NO. 2376

JUNE 2024

CITY OF TSHWANE

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1. CLIENT :

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2. FOR SUBMISSION TO :

Local Authority	City of Tshwane (Water and Sanitation)
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3. COMPILED BY :

Company	CIVILCONSULT Consulting Engineers (Pty) Ltd
Contact Person	Leon Wentzel (ECSA No. 950052)
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CITY OF TSHWANE : REZONING APPLICATION OF PORTION 2 TO 102 OF ERF 1305 SOSHANGUVE-M : SERVICES REPORT FOR WATER AND SANITATION ENGINEERING SERVICES

TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	PROFESSIONAL TEAM	1
3.	LOCATION OF DEVELOPMENT	2
4.	LAND USES	3
5.	GEOTECHNICAL ASPECTS	4
6.	CIVIL ENGINEERING SERVICES	6
7.	WATER	7
8.	SEWER	10
9.	DEVELOPMENT CHARGES	13
10.	COST ESTIMATES	14
11.	CONSTRUCTION PERIOD	15
12.	CONCLUSION	16

CITY OF TSHWANE : REZONING APPLICATION OF PORTION 2 TO 102 OF ERF 1305 SOSHANGUVE-M : SERVICES REPORT FOR WATER AND SANITATION ENGINEERING SERVICES

LIST OF ANNEXURES

ANNEXURE A	:	LOCALITY PLAN
ANNEXURE B	:	TOWNSHIP LAYOUT PLAN
ANNEXURE C	:	ENGINEERING LAYOUT DRAWINGS
ANNEXURE D	:	SG DIAGRAM
ANNEXURE E	:	TITLE DEED
ANNEXURE F	:	GLS REPORT

CITY OF TSHWANE : REZONING APPLICATION OF PORTION 2 TO 102 OF ERF 1305 SOSHANGUVE-M : SERVICES REPORT FOR WATER AND SANITATION ENGINEERING SERVICES

1. INTRODUCTION

CIVILCONSULT Consulting Engineers (Pty) Ltd was appointed by Nceba Galawe of Govhani Student Accommodation to compile a Service Report for Water and Sanitation Engineering Services for the Rezoning of Portion 2 to 102 of Erf 1305 Soshanguve-M.

For the purposes of this report, we will refer to the Rezoning of Portion 2 to 102 of Erf 1305 Soshanguve-M, as the Proposed Development.

2. PROFESSIONAL TEAM

The professional team is as follows :

Professional Discipline	Name of Company	Contact Person
Client	Govhani Student Accommodation	Nceba Galawe
Project Manager	Origin Project Management	Mike Woodruff
Town Planner	Emendo (Pty) Ltd Project Managers and Planners	Nompumelelo Majola
Architect	Batley Partners	Edmund Batley
Quantity Surveyor	Mbatha Walters and Simpson	Hilton Shak
Traffic Engineer	Infratrans / Techworld	Pieter Kruger
Electrical Engineer	CIVILCONSULT Consulting Engineers (Pty) Ltd	Herman Boshoff
Civil Engineer		Leon Wentzel / Marten Tiemensma / Taufeeq Guman

4. LOCATION OF PROPOSED DEVELOPMENT

The Proposed Development is located on Erf 1305 Soshanguve-M.

The Proposed Development is bounded by Imphangele Street to the north and Flower Street to the south and south west. The Proposed Development is approximately 1km to the west of the Tshwane University of Technology, Soshanguve Campus.

The Proposed Development will, to the best of our knowledge, not be affected by any 1:50 and 1:100-year flood lines.

Refer to Annexure, Drawing No. 2376/100/01/00 A for a Locality Plan.

4. LAND USES

The existing and proposed land uses are summarised in Tables 4.1 and 4.2 below.

Table 4.1 : Existing Land Uses

Zoning	Erf No	Area (ha)	No of Erven
Residential 1	1305	4.3685	101

Table 4.2 : Proposed Land Uses

Zoning	Erf No.	Area (ha)	FAR / Coverage	Floor Area (m^2)	No of Beds
Residential 5 (Student Accommodation)	1305	4.368	1.2 / 30%	52 416.00	2600

5. GEOTECHNICAL ASPECTS

A Detailed Shallow Soil Engineering Geological Investigation was conducted by Rocksoil Consult during April 2017 for the Proposed Development.

The following is an extract from the investigation's report :

The site is deemed suitable for the proposed development as from a geotechnical perspective, provided that the necessary design precautionary measures are implemented.

Rock outcrop to shallow rock are present that provide good founding conditions as from a bearing capacity perspective, however difficult conditions as from platform creation, installation of services and placement of structures. The rock outcrop, rock "koppies" and unfavourable slopes resulting from the outcrop/ridges are considered the major on-site geotechnical constraint.

The geotechnical constraints identified during this investigation can be summarized as (SANS634:2012 Geotechnical Constraints in Urban Development) :

- *Thin to localised thick upper collapsible and compressible soil horizons; Expected minor shallow seasonal seepage water conditions and/or saturated soil profiles mainly during and immediately after rainfall events;*
- *Severe shallow excavation difficulty; Upper soils with an intermediate to high susceptibility to erosion if exposed and subject to concentrated water flow;*
- *Intermediate (6 to 12°) to localised areas of least favourable slope angles (>12°)*
- *Other geotechnical constraints identified are :*
    - *Localised fill that are expected to result in composite founding conditions;*
    - *Large-size boulders and undulating bedrock that are expected to result in composite founding conditions;*
    - *Localised areas of possible water ponding;*
    - *Soils with a "mildly corrosive" corrosiveness rating towards ferrous metals based on soil/water paste conductivity measurements;*
    - *Presence of localised trees with root systems that may affect the soils negatively if removed*

The on-site soils generally classify as "SC", "SM" and as "GM" as per the USCS. The on-site soils are deemed suitable for soil mattress construction.

The majority on-site soils are considered suitable for bedding and backfill material as per the DWA specifications, provided the courser fragments/stones are removed.

The majority on-site soils are considered suitable for subgrade to subbase material in road pavement construction. Selective material may be suitable for base construction depending on the required specifications based on the overall pavement design, traffic loads and nature of the loads.

Based on the conditions encountered and expected cut-to-fill-to-level preparation, one or a combination of the following foundation options can be recommended (SAICE 1995), providing proper fill and platform compaction were implemented :

1. *Deep strip foundations (placement of foundations on highly to medium weathered competent granophyre).*
2. *Soil raft with lightly reinforced strip footings and light reinforcement in masonry.*
3. *Stiffened strip footings, stiffened or cellular raft.*
4. *Normal foundations (if placed in highly to slightly weathered granophyre or on outcrop).*

Proper compaction quality control will be essential in order to limit differential settlement across the cut-to-fill-to-level platforms. The mattress construction should be certified by a competent person appointed by the client or alternatively the responsible design engineer.

The material properties and general recommendations are discussed in the relevant report sections. The design engineer should laisse with the engineering geologist if there are any uncertainty or if any additional specific input is required.

The slope stability of any significant cuts and/or excavations should be evaluated.

Proper drainage and damp proofing are deemed good practice in order to prevent concentrated water flow and erosion that may result in undercutting of structures and potential moisture damage to the foundations/floors and masonry.

Proper rehabilitation such as backfill and compaction should be implemented the burrowed and uncompacted fill material areas.

The necessary safety precautionary measures should be implemented for all manned excavations or trenches and should be signed off by a competent person during the construction period as guided by the regulations.

The Detailed Shallow Soil Engineering Geological Investigation is available on request.

6. CIVIL ENGINEERING SERVICES

6.1 Design Standards

The design standards to be followed for the design of the infrastructure will be based on the technical requirements of the Engineering Department of the City of Tshwane (CoT) for the provision of municipal services.

The design of the water reticulation will be done in accordance with the latest edition of the Design Guidelines for Water Reticulation and Supply issued by the Water and Sanitation Division of the City of Tshwane.

Sewer designs will be done according to the design guidelines for Sewer Mains and Sewer Drainage Systems in the City of Tshwane.

6.2 Design Software

The design of the civil engineering services will be carried out with TechnoCad design programs.

6.3 Ownership of Services

The City of Tshwane will take over and be responsible for the maintenance of the external engineering services.

The Land Owner or the successor in title of the Proposed Development will be responsible for the maintenance of the internal engineering services.

7. WATER

7.1 General

The Proposed Development falls within the Soshanguve-L Reservoir Zone.

A GLS Water Capacity Report dated 23 November 2018 was compiled for the Proposed Development.

Refer to Annexure F for a copy of the GLS Report.

7.2 Existing Bulk Services

An existing 75mm Ø water pipeline is located north of the Proposed Development along Impangele Street and an existing 110mm Ø uPVC Class 9 water pipeline is located along the southern and western side of Flower Street, south and west of the proposed development. A 200mm Ø AC water pipeline is located parallel to and outside the outside of the eastern boundary of the Proposed Development.

Refer to Annexure B, Drawing No. 2376/200/01/00 for details.

7.3 Estimated Water Demand

The estimated existing water demand of the Proposed Development are shown in Tables 7.3.1 and 7.3.2 below.

Table 7.3.1 : Estimated Existing Water Demand

Zoning	Proposed Development		
	No of Erven	Average Annual Daily Demand (AADD)	Water Demand (kℓ/d)
Residential 1	101	1.20kℓ/Erf	121.20
Total Water Demand			**121.20**

Table 7.3.2 : Estimated Proposed Water Demand

Zoning	Proposed Development		
	No. of Beds	Average Annual Daily Demand (AADD)	Water Demand (kℓ/d)
Residential 5 (Student Accommodation)	2 600	0.38kℓ/bed	975
Total Water Demand			**975.00**

Note : Fire Flow not included

The increase in water demand required for the Proposed Development is 853.80kℓ per day. Bulk Services Contributions will only be payable for the difference as the Proposed Development previously has been established.

7.4 Proposed Bulk Services

The GLS Report for the Proposed Development indicates that the following **reticulation items** will have to be installed to accommodate the Proposed Development in the Soshanguve-L Reservoir Zone.

Items required to accommodate the proposed development in the bulk water system :

- *SLR.144 6m x 160mm Ø pipe to install*
- *SLR.145 17m x 110mm Ø pipe to install*

Wayleaves will be required for all the work within the Municipal and Provincial Road reserves.

Refer to Annexure B, Drawing No. 3276/200/01/00 for details.

7.5 Internal Reticulation

7.5.1 Water Design Criteria

The design criteria to be used during the analyses and design of the water network are indicated in Table 7.5.1 below.

Table 7.5.1 : Water Design Criteria

Item No.	Design Element	Criteria
1.	Average Annual Daily Demand (AADD) for domestic sites	Refer to Table 7.3.2 above
2.	Gross Average Annual Daily Demand (GAADD)	Allow 10% losses
3.	Daily Peak Factor (DPF)	2.20
4.	Peak Hourly Factor (PHF)	3.00
5.	Design Peak Flow Rate (DPFR) for domestic flows	GAADD x PHF
6.	Maximum static head	90m
7.	Minimum residual head under conditions of domestic peak flows	24m
8.	Maximum linear flow velocity under conditions of domestic peak flows	1.8m/s
9.	Pipe type	uPVC pipes
10.	Minimum pipe class	Class 12
11.	Fire flow at any one hydrant under the condition of domestic peak flows	50ℓ/s
12.	Minimum residual head (fire plus domestic peak flow)	15m
13.	Maximum linear flow velocity under conditions of fire-fighting	2,2m/s
14.	Boundary roughness (K-Value)	0,1mm
15.	Available static head	To be confirmed
16.	Available dynamic head under fire flow conditions	To be confirmed
17.	Flow formulae	D'Arcy Weissbach
18.	Minimum pipe diameter	110mm

8. SEWER

8.1 General

The drainage pattern of the Proposed Development is in several directions due to a naturally raised area within the Proposed Development.

8.2 Existing Sewerage Infrastructure

An existing 150mm Ø clay-glaze midblock sewer is located to the north west of the Proposed Development. An existing 150mm Ø clay-glaze midblock sewer is located parallel to and along the north western side of Krimp Street crossing Sepela Street and draining along the natural watercourse.

8.3 Estimated Sewerage Flow

The estimated sewerage flow for the Proposed Development is shown in Tables 8.3.1 and 8.3.2 below.

Table 8.3.1 : Estimated Existing Sewerage Flow

Zoning	Proposed Development		
	No of Erven	Average Annual Daily Demand (AADD)	Sewerage Flow (kℓ/d)
Residential 1	101	0.70kℓ/Erf	70.70
Total Sewerage Flow			**70.70**

Table 8.3.2 : Estimated Proposed Sewerage Flow

Zoning	Proposed Development		
	Floor Area (m^2)	Average Annual Daily Demand (AADD)	Sewerage Flow (kℓ/d)
Residential 5 (Student Accommodation)	52 416.00	1.8kℓ/ 100m^2	943.49
Total Sewerage Flow			**943.49**

The increase in sewage flow of the Proposed Development is 872.79kℓ per day. Bulk Services Contributions will only be payable for the difference as the Proposed Development previously has been established.

8.4 Proposed Sewerage Infrastructure

Two sewer connection points are proposed for the Proposed Development. A new 160mm Ø sewer connection could be provided at the south western boundary of the Proposed Development crossing Flower Street and connecting to the existing sewer on the north western side of Krimp Street. An existing sewer connection is located in the north western corner of the Proposed Development.

The internal sewer network of the Proposed Development will connect directly to the existing sewer manhole in the north western corner and to the new sewer connection provided in the south western boundary of the Proposed Development.

Brian Sonamzi of City of Tshwane (CoT) Water and Sanitation Department indicated that a section of the existing sewer infrastructure located to the north west of the Proposed Development does not have sufficient capacity and should be upgraded to accommodate the Proposed Development. The section of sewer to be upgraded is located along the southern side of Buputju Street up to Farahani Street. This existing sewer then crosses Farahani Street to the northern side of Pfukani Street up to the eastern side of Buitekant Street. The sewer then turns south up to an existing 200mm Ø clay sewer.

Brian Sonamzi also indicated that the Bulk Services Contributions could be used to upgrade the existing sewer section.

No Water Use License Application (WULA) will be required for the Proposed Development as the City of Tshwane sewer infrastructure will be utilised and none of the activities that triggers a WULA will be affected by the Proposed Development.

Refer to Annexure B, Drawing No. 2376/300/01/00 for details.

8.5 Internal Sewerage Reticulation

8.5.1 Sewerage Design Criteria

The design criteria to be used to design the sewerage network are indicated in Table 8.5.1 below.

Table 8.5.1 : Sewerage Design Criteria

Item No.	Design Element		Criteria
1.	Average Annual Daily flow for special and residential erven		Refer to Table 8.3.1 above
2.	Peak Factor		2,5
3.	Allowance for infiltration		15%
4.	Capacity of Sewerage		Pipes may run full at the Total Design Flow, which includes the peak and infiltration flows
5.	Sewer pipe (Material & Class)		PVC-U Class 400kPa
6.	Minimum velocity @ full flow		0,6m/s
7.	Minimum pipe diameter		160mm
8.	Minimum depth to invert	Road Reserves	1,50m
		Mid-Block	1,20m

9. DEVELOPMENT CHARGES

The Bulk Services Contributions payable to the City of Tshwane for water and sanitation engineering services, will be determined with the compilation of the services agreements. The estimated bulk services contributions are shown in Table 9.1 below.

Table 9.1 : Estimated Bulk Services Contributions

Description	Amount (R) (VAT Included)
Water	7 339 478-25
Sanitation	13 117 466-39
Total	**20 456 944-64**

10. COST ESTIMATES

10.1 Water and Sewage

The cost estimates for the installation of the water and sewage are shown in Table 10.1 below.

Table 10.1 : Cost Estimates for External Water and Sewage

Item No.	Description	External	
A	**Civil**	**Water (R)**	**Sewer (R)**
A1	**Construction Costs**		
A1.1	Preliminary and General	29 100-00	195 262.42
A1.2	Water Mains (Excluding Bulk Water Meters)	97 000-00	0-00
A1.3	Sewer Mains	0-00	976 312-08
Total A		**126 100-00**	**1 171 574-50**
B	**Professional Fees**		
B1	Civil Services	18 915-00	146 446-81
Total B		**18 915-00**	**146 446-81**
Total (A + B)		**145 015-00**	**1 318 021-31**
Contingencies (10%)		**14 501-50**	**131 802-13**
VAT (15%)		**23 927-48**	**217 473-52**
Total (VAT Included)		**183 443-98**	**1 667 296-96**

11. CONSTRUCTION PERIOD

The anticipated construction period for the external civil services is ± 5 months.

Construction will commence once the Services Agreements are signed by all affected parties and the construction drawings are approved.

12. CONCLUSION

We trust that the above report meets with your requirements. Please contact us should you require any additional information.

Leon Wentzel
for CIVILCONSULT Consulting Engineers (Pty) Ltd

28/06/2024
Date

ANNEXURE A

LOCALITY PLAN

NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
2. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
3. DO NOT SCALE FROM THESE DRAWINGS.
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10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND

DEVELOPMENT BOUNDARY

CITY OF TSHWANE
IGNITING EXCELLENCE
PO BOX 1022
PRETORIA
0001

CITY OF TSHWANE
UTILITY SERVICES DEPARTMENT
WATER AND SANITATION

AMENDMENTS

NR	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION

FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE

Director	NAME	Prof. Reg. No	SIGNATURE	DATE
DIRECTOR: WATER AND SANITATION - PLANNING				
REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)				
DIRECTOR: SYSTEM DEVELOPMENT				
DIRECTOR: BULK WATER				
DIRECTOR: INFRASTRUCTURE PROVISION				
DIRECTOR: WASTE WATER TREATMENT				

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I, L. WENTZEL/ G.F.J RAS Prof Reg Nr 950052/20140322 HEREBY CERTIFY THAT THE SERVICES WILL\ HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING

SIGNATURE: DATE: 25/06/2024

CONSULTANT DRAWING NUMBER: 2376-100-01-00 REVISION 0

	NAME	Prof Reg No	SIGNATURE	DATE
DESIGNED	D.F.LANDSBERG			25/06/2024
DRAWN	R.BEUKES			25/06/2024
CHECKED	L. WENTZEL Pr Eng.	950052		25/06/2024
INFORMATION OFFICE CHECKED	Pr Eng.			
DESIGN OFFICE APPROVAL	Pr Eng.			

CONTRACT No:	2376
PROJECT No.	2376
SHEET No.	1 OF 1
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INSPECTOR OF WORKS of COT:
NAME: Pr Eng. Prof Reg No:
SIGNATURE: DATE:

LOCATION OF PROJECT:
PORTION 2 TO 102 OF ERF 1305 SOSHANGUVE-M

DESCRIPTION OF PROJECT:
LOCALITY PLAN

WBS No. : _-_______-_-____-_-_

COT DRAWING NUMBER: 2376-100-01-00 REVISION 0

ANNEXURE B

TOWNSHIP LAYOUT PLAN

CONSOLIDATION PLAN
PORTIONS 2 - 102 OF
ERF 1305
SOSHANGUVE M
LOCATED ON THE FARM
RIETGAT 611 J.R.
TSWANE MUNICIPALITY
GAUTENG

Legend

- Proposed Consolidation
- Provinces
- Servitude area
- Main roads
- Roads
- Public place
- Parent farms
- Existing Erven
- Farm portions
- Holdings

Notes

1. THE FIGURE A-B-C-D-E-F-G-H -I-J-K-A REPRESENT PORTION 2 - 102 OF ERF 1305 SOSHANGUVE-M MEASURING 4,4 HA IN EXTENT.
2. ALL SIZE AND DIMENSION ARE APPROXIMATE AND SUBJECT FOR FINAL SURVEY.

N

0 5 10 20 30 40 m

1:1 500

Print size: A3

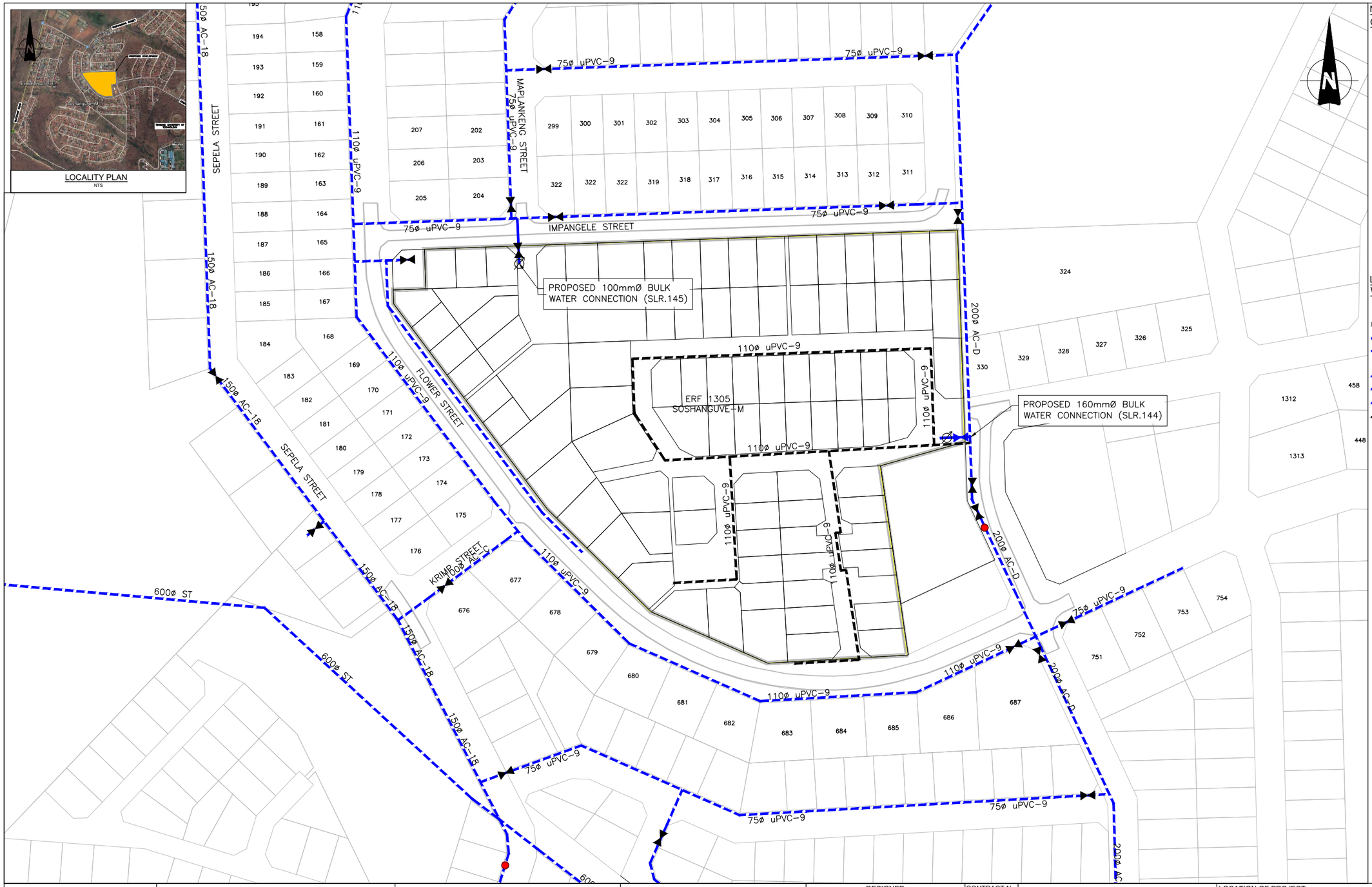
Drawn by:
Emendo (Pty) Ltd
Date: 2024/01/15

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

ANNEXURE C

ENGINEERING LAYOUT DRAWINGS

LOCALITY PLAN
NTS



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10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND
WATER

- DEVELOPMENT BOUNDARY
- PROPOSED WATER PIPELINE
- PROPOSED VALVES
- PROPOSED BULK WATER METER
- EXISTING WATER PIPELINE
- EXISTING VALVES
- EXISTING FIRE HYDRANTS
- EXISTING WATER PIPES TO BE REMOVED

CITY OF TSHWANE
GAUTENG SOUTH AFRICA
PO BOX 1022
PRETORIA
0001

CITY OF TSHWANE
UTILITY SERVICES DEPARTMENT
WATER AND SANITATION

AMENDMENTS

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DIRECTOR: WASTE WATER TREATMENT
NAME Prof. Reg. No SIGNATURE DATE

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SIGNATURE DATE 25/06/2024

CONSULTANT DRAWING NUMBER: 2376-200-01-00
0 REVISION

DESIGNED
NAME: D.F. LANDSBERG Prof Reg No:
SIGNATURE: DATE: 25/06/2024

DRAWN
NAME: R.BEUKES Prof Reg No:
SIGNATURE: DATE: 25/06/2024

CHECKED
NAME: L. WENTZEL Pr Eng. Prof Reg No: 950052
SIGNATURE: DATE: 25/06/2024

INFORMATION OFFICE CHECKED
NAME: Pr Eng. Prof Reg No:
SIGNATURE: DATE:

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SIGNATURE: DATE:

INSPECTOR OF WORKS of COT:
NAME: Pr Eng. Prof Reg No:
SIGNATURE: DATE:

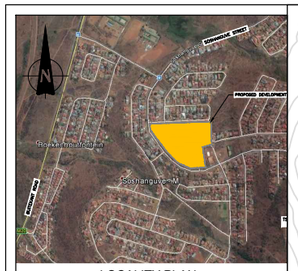
LOCATION OF PROJECT:
PORTION 2 TO 102 OF ERF 1305 SOSHANGUVE-M

DESCRIPTION OF PROJECT:

WATER LAYOUT PLAN

WBS No. : _-_____-_-____-_-_

COT DRAWING NUMBER: 2376-200-01-00
0 REVISION



LOCALITY PLAN
NTS

BUPUTJU STREET
BUTEKANT STREET
PEUKANI STREET
FARANANI STREET
FLOWER STREET
SEPELA STREET
IMPANGELE STREET
KRIMP STREET
MPLANKENG STREET
PROPOSED CONNECTION POINTS
CONNECT TO EXISTING SEWER MANHOLE
ERF 1305 SOSHANGUVE-M

NOTES AND SPECIFICATIONS

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
2. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
3. DO NOT SCALE FROM THESE DRAWINGS.
4. ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
5. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS.
6. THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS.(IF APPLICABLE).
7. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
8. THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT. IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.
9. THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
10. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

LEGEND
SEWER

- DEVELOPMENT BOUNDARY
- EXISTING 160mmØ SEWER
- EXISTING MANHOLE
- SEWER TO BE UPGRADED

CITY OF TSHWANE
PO BOX 1022
PRETORIA
0001

CITY OF TSHWANE
UTILITY SERVICES DEPARTMENT
WATER AND SANITATION

AMENDMENTS

NR	DATE	APPROVED	DESCRIPTION	PAR

WATER AND SANITATION
FOR INTERNAL APPROVAL - RECEIVED SIGN WHEN APPLICABLE

DIRECTOR: WATER AND SANITATION - PLANNING
NAME Prof. Reg. No SIGNATURE DATE

REGIONAL DIRECTOR: (1,2,3,4,5,6 or 7)
NAME Prof. Reg. No SIGNATURE DATE

DIRECTOR: SYSTEM DEVELOPMENT
NAME Prof. Reg. No SIGNATURE DATE

DIRECTOR: BULK WATER
NAME Prof. Reg. No SIGNATURE DATE

DIRECTOR: INFRASTRUCTURE PROVISION
NAME Prof. Reg. No SIGNATURE DATE

DIRECTOR: WASTE WATER TREATMENT
NAME Prof. Reg. No SIGNATURE DATE

CONSULTANT DETAIL
CIVILCONSULT Consulting Engineers
PO BOX 12645
HATFIELD
0028
Tel 012-343 6297/0845
Fax 012-343 8929
mail@civilconsult.co.za

I, L. WENTZEL/ G.F.J RAS Prof Reg Nr 950052/20140322
HEREBY CERTIFY THAT THE SERVICES WILL\ HAVE BEEN INSTALLED ACCORDING TO NOTE 9 OF THE ABOVE NOTES AND TO THE DRAWING

SIGNATURE DATE 25/06/2024

CONSULTANT DRAWING NUMBER: 2376-300-01-00 REVISION 0

DESIGNED
NAME: D.F.LANDSBERG Prof Reg No:
SIGNATURE: DATE: 25/06/2024

DRAWN
NAME: P.BEUKES Prof Reg No:
SIGNATURE: DATE: 25/06/2024

CHECKED
NAME: L. WENTZEL Pr Eng. Prof Reg No: 950052
SIGNATURE: DATE: 25/06/2024

INFORMATION OFFICE CHECKED
NAME: Pr Eng. Prof Reg No:
SIGNATURE: DATE:

DESIGN OFFICE APPROVAL
NAME: Pr Eng. Prof Reg No:
SIGNATURE: DATE:

CONTRACT No: 2376
PROJECT No. 2376
SHEET No. 1 OF 1
PAPER SIZE: A1
SCALE: N.T.S
DATE: 25/06/2024

PROJECT STATUS
RECEIVED SIGN WHEN APPLICABLE

● CONCEPT DRAWING ○ TENDER DRAWING ○ APPROVED CONSTRUCTION DRAWING ○ AS BUILT DRAWING

PROJECT ENGINEER of COT:
NAME: Pr Eng. Prof Reg No:
SIGNATURE: DATE:

INSPECTOR OF WORKS of COT:
NAME: Pr Eng. Prof Reg No:
SIGNATURE: DATE:

LOCATION OF PROJECT:
PORTION 2 TO 102 OFERF 1305 SOSHANGUVE-M

DESCRIPTION OF PROJECT:

SEWER LAYOUT PLAN

WBS No. : __-_____-_-____-_-_

COT DRAWING NUMBER: 2376-300-01-00 REVISION 0

ANNEXURE D

SG DIAGRAM

TP 8792(10

SYE		METER	RIGTINGS-HOEKE	KOÖRDINATE Stelsel Lo 29° Meter, Konstantes Y ±0,00 X +2 800 000,00	Y	X
HOOFDBAKE						
A	B	281,00	268 00 00	A	+91 545,85	+25 059,04
B	C	94,98	358 00 00	B	+91 265,02	+25 059,23
C	D	132,34	356 05 00	C	+91 282,05	+25 144,16
D	E	15,27	0 27 40	D	+91 151,81	+25 130,61
E	F	53,44	259 40 00	E	+91 151,93	+25 135,87
F	G	24,57	342 50 00	F	+91 099,35	+25 126,36
G	H	30,40	351 45 00	G	+91 091,96	+25 149,80
H	J	68,00	72 50 00	H	+91 087,60	+25 179,88
J	K	174,00	45 00 00	J	+91 152,45	+25 200,13
K	L	71,00	86 45 00	K	+91 310,15	+25 273,88
L	M	64,08	113 45 00	L	+91 381,04	+25 277,89
M	N	74,22	154 45 00	M	+91 439,66	+25 252,01
N	P	125,25	148 15 00	N	+91 492,57	+25 199,76
P	Q	22,00	178 00 00	P	+91 589,50	+25 096,19
Q	A	7,07	203 00 00	Q	+91 570,67	+25 074,21

GROOTTE = 6,3756 HEKTAAR

BLOKBAKE		
101	+91 280,24	+25 195,04
102	+91 255,78	+25 245,31
201	+91 266,41	+25 156,41
204	+91 242,18	+25 242,17
205	+91 200,35	+25 192,47
301	+91 136,91	+25 133,16
305	+91 137,41	+25 190,59

VERSEKERINGSMERKE		
VM 1	+91 136,80	+25 194,78
VM 8	+91 152,58	+25 120,36

TRIGONOMETRIESE BAKENS (1928)		
△ 5 Soshanguve	+90 191,84	+24 678,13
△ 605 Soshanguve M1	+50 342,88	+25 587,36

WYSIGENDE ALGEMENE PLAN

VAN DIE DORP

SOSHANGUVE - M

DISTRIK : SOSHANGUVE

PROVINSIE : TRANSVAAL

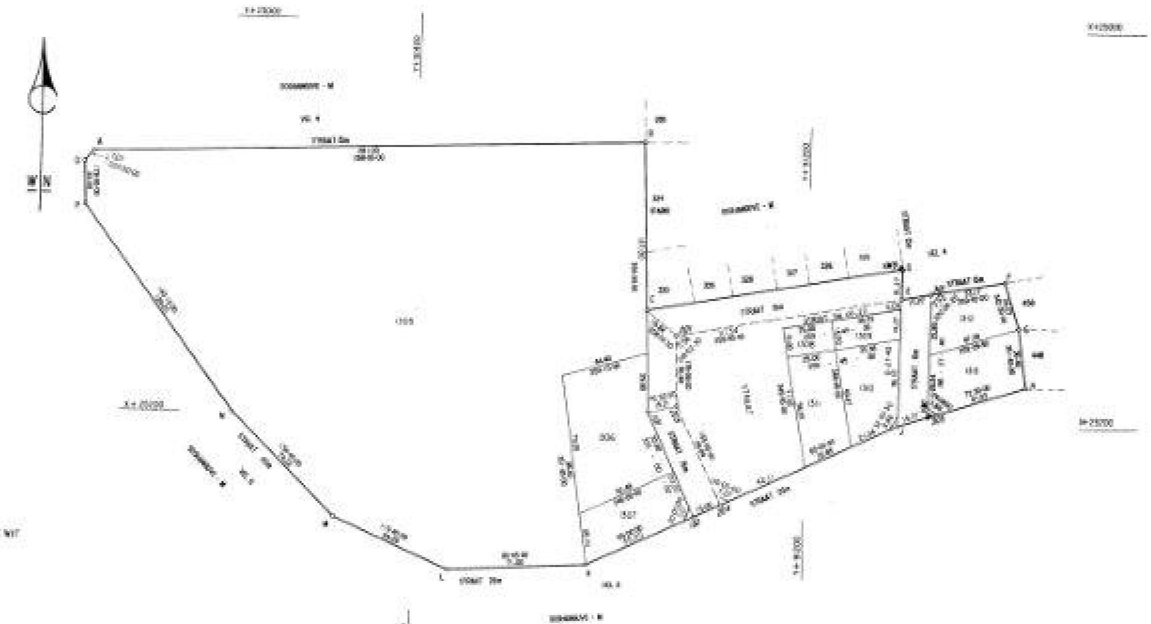
SKAAL 1:1000

* HIERDIE ALGEMENE PLAN BESTAAN UIT VELLE 1-10 EN BEVAT 1290 PERSELE EN 11 PARKE

OPGEMEET IN JANUARIE 1989 DEUR MY

S. GRANT
LANDMETER

P.B. No. 687/1987
VEL No. 10
GOEDGEKEUR
P T [signature]
nms DIREKTEUR-GENERAAL: ONTWIKKELINGSHULP
L.G. No. A 2534/89
VEL No. 10
GOEDGEKEUR
[signature]
nms LANDMETER-GENERAAL 1989-10-26
MEETSTUKKE No. 1290/89
KOMPLASES



GROOTTES	
PERSEEL NOMMER	VIERKANTE METER
1305	4,4002 hektaar
1306	2546
1307	1355
1308	375
1309	522
1310	1341
1311	1330
1312	1148
1313	1493

NOTA

TENSY ANDERS AANGETOON IS ALLE AFSTANDE NA HOEKE STOMPSNY 3,00 METER

BAKENBESKRYWING

HOOFDBAKE

A E F G L Q	12MM YSTERPEN
B C D H J K M N P	20MM YSTERPYP

BLOKBAKE

101	12MM GAT IN ROTS
102 201 204 301 305	20MM YSTERPYP
205	12MM YSTERPEN

PERSEELBAKENS

ALLE BAKENS	12MM YSTERPEN

VERSEKERINGSMERKE

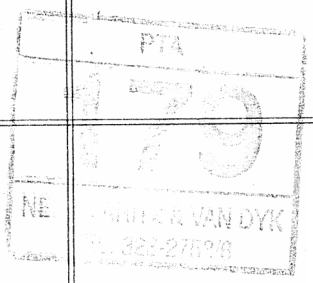
VM 1 VM 8	20MM YSTERPYP IN BETON 450MM ONDERGRONDS

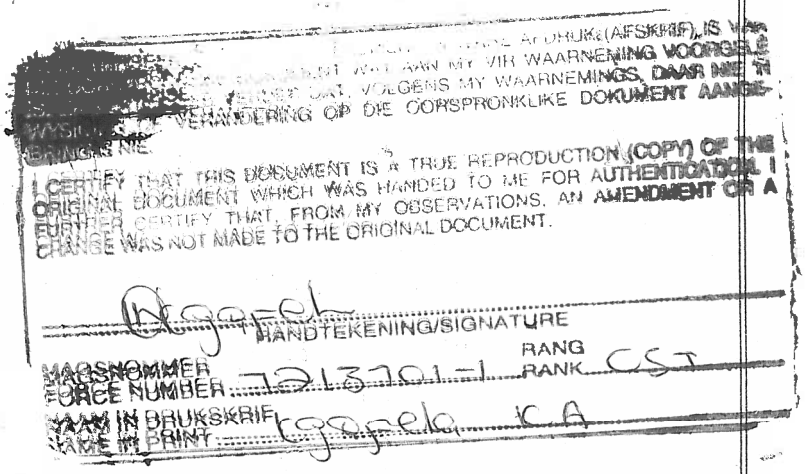
LAER No.
MEETSTUKKE
KOMPLASE

N 24

ANNEXURE E

TITLE DEED





AKTE VAN TRANSPORT

ten gunste van

FG & EM MSIMANGO

STRACHAN KOTZE INC.
POSBUS 40426
ARCADIA 0007

VERW : s1//TS0025
TEL : (012) 323-7696

SEËLF
STAMP DUTY
FOOI
FEES R200-00

CONWP\MERGE\ELAND.TD

PREPARED BY ME

CONVEYANCER
AS KOTZé

VERBIND MORTGAGED

VIR
FOR R 57 000-00

B 68089 2000

2000 10 9

REGISTRATEUR/REGISTRAR

BC 0000006624/2002

CANCELLED
GEKANSELLEER

REGISTRAR
REGISTRATEUR

DATE
DATUM 04 02 2002

BC 6624/02

DEED OF TRANSFER T 000124064/2000

BE IT HEREBY KNOWN

THAT ~~ALEXANDER STRACHAN KOTZé~~ Mamelin Judith Heetz

appeared before me, REGISTRAR OF DEEDS at PRETORIA, he, the said Appearer, being duly authorised thereto by virtue of a Power of Attorney signed at PRETORIA on the 6th JUNE 2000 by

THE SMALL BUILDING CONTRACTORS ASSOCIATION

(An association as envisaged in Section 21 Act 61/1973)

12/10

RAHMAN Z.B.
DATA OPSIT

And the Appearer declared that the transferor had truly and legally sold on 2nd day of June 2000 and that he, the said Appearer, in his capacity aforesaid, did by these presents, cede and transfer in full and free property to and on behalf of -

FUNU GLEN MSIMANGO

Identity Number: 460502 5171 08 5

and

ESTHER MALOYELA MSIMANGO

Identity Number: 521214 0217 08 0

Married in Community of Property to each other

Their Heirs, Executors, Administrators or Assigns,

in full an free property: -
The following property namely:

REMAINING EXTENT OF ERF 1305 SOSHANGUVE-M township;
Registration Division J.R., Province of GAUTENG;

MEASURING: 4,3685 (FOUR COMMA THREE SIX EIGHT FIVE) Hectares;

FIRST transferred and still held by Certificate of Ownership TE 50698/1994 with General Plan L.G. No. A 2534/1989 relating thereto.

SUBJECT TO THE FOLLOWING CONDITIONS:

1. SPECIALLY SUBJECT to the reservation to GORDON BONNIGTON WILLIE MESSUM of one third share of all rights to minerals and the rights thereto on that portion which was originally transferred to JOHANNES WILLEM HORN by Deed of Transfer T 278/1877 dated 4th April 1877 which 1/3 share was ceded to the South African Development Trust by Deed of Cession K 1462/1975 R.M..

2. SPECIALLY SUBJECT to the reservation to JOSEPH JOHANNES FOURIE, JUNIOR, of a one third share of all rights to minerals and rights thereto in respect of the said portion above as will more fully appear from Deed of Cession 10/1902.

3. SUBJECT to Deed of Cession 938/1937-S and 941/1937-S whereby the following rights were ceded to AFRICAN GOLD AND BASE METAL HOLDINGS LIMITED (hereinafter referred to as "the Cessionary Company"):

(i) A one third share of all right to minerals on the above portion.

(ii) All rights which, in terms of the Gold Laws are or may be allotted on the freehold owners, arising from rights to minerals, claims and mynpachts.

(iii) The rights to the use of all water on, under or connected with the said property necessary for prospecting and/or mining purposes, with the full right to develop, conserve and lead the same by any means whatsoever. The Cessionary Company shall, however, not be entitled to any water from the river or spruits running through the property, actually used or required for irrigation purposes on the property or water obtained from or collected in or conducted through any surface works constructed by the owner proir to the commencement of any prospecting or mining operations by the Cessionary Company, its successors or assigns.

(iv) In the event of the owner suffering any direct loss or damage to the surface of the propety by reason of the mining operations of the Cessionary Company, or its successors or assigns, the Cessionary Company, its successors or assigns, shall be responsible for such loss or damage, and shall pay to the owner compensation for such loss or damage, provided that if the amount to be so paid shall not be mutually agreed upon between the Cessionary Company, its successors or

assigns and the owner, the amount of compensation shall be fixed by two competent arbitrators, one of whom shall be chosen by the Cessionary Company, its successors or assigns, and the other by the owner, and such arbitration proceedings shall in all cases be governed by the Arbitration Ordinance (Transvaal), 1904, or any amendment thereof, or any Act passed hereafter in substitution therefor.

(v) The right to take any of the land the Cessionary Company, its successors or assigns, may from time to time require for the erection of buildings, works, machinery and dwelling-houses for its or their employees, for the construction of dams, and the laying of pipe and electric lines; for depositing sites for or and/or tailings; and for all other purposes directly or indirectly connected with prospecting, exploiting or mining on the said land; the land so taken shall, if the Cessionary Company, its successors or assigns, so require, be transferred to the Cessionary Company, its successors or assigns, at its or their expense, and upon transfer, it or they shall pay to the owner in respect of any such area a price to be mutually agreed upon, provided that if any dispute shall arise as to the price to be so paid, the same shall be submitted to arbitration as set forth in the previous paragraph. It is, however, distinctly understood that in the event of any dispute as above arising, the arbitrator or arbitrators shall take into consideration the agricultural value only of any land which the Cessionary Company, its successors or assigns, may desire to re-take, which agricultural value shall be in an way effected by any mineral values attachable to such land.

(vi) The full right of way over the said property for all the purposes aforesaid to and from the place of such prospecting or mining from or to the nearest public road and the nearest convenient point on the railway line, either by an existing road or by any which the Cessionary Company, its successors or assigns, may construct, which it or they shall the rights to do.

(vii) The Cessionary Company, its successors or assigns, shall at any time hereafter be entitled to call upon the owner, his successors in title or assigns to take cession of all or any of the rights ceded to the Cessionary Company, its successors or assigns, without cost to the owner, his successors in title or assigns, except costs of cession (including transfer and stamp duty) which he shall pay, and after notice to this effect given to the owner, his successors in title or assigns the later shall refund to the Cessionary Comapany, its successors or assigns, any rates or taxes, which may be levied on any of such rights after notice given, welke voorbehou uitgereik is ten opsigte van Gedeelte 2 van die plaas BOEKENHOUTFONTEIN 261, groot 2581,0807 hektaar, welke regte gesedeer is aan die Suid-Afrikaanse Ontwikkelingstrust kragtens Notariële Akte van Sessie van Minerale Regte K40/1969 en K41/1969 R.M.

AND SUBJECT FURTHER to such conditions as are mentioned or referred to in the aforesaid Deeds.

WHEREFORE the Appearer, renouncing all the right and title which the transferor heretofore had to the property, did in consequence also acknowledge he/she/them to be entirely dispossessed of and disentitled to the same and that by virtue of these presents the said FUNU GLEN MSIMANGO and ESTHER MALOYELA MSIMANGO their Heirs, Executors, Administrators or Assigns now is/are and henceforth shall be entitled thereto conformably to local custom; the State, however, reserving its rights and finally acknowledging that the purchase price amounts to the sum of R92 000,00 (NINETY TWO THOUSAND RAND) and the date of sale to be the 2nd day of June 2000.

IN WITNESS WHEREOF I, the said REGISTRAR, together with the Appearer q.q., have subscribed to these presents and have caused the Seal of Office to be affixed thereto.

THUS DONE AND EXECUTED at the Office of the REGISTRAR OF DEEDS AT PRETORIA ON

q.q.

In my presence, 200010 9

REGISTRAR OF DEEDS

PTA
179
NELL MARITZ & VAN DYK
TEL. 323-2753/6

(3 kp

NPMSS

Northern Pretoria Metropolitan Substructure

Akasia - Soshanguve - Rosslyn

ATO
No 27780

DIREKTORAAT FINANSIËLE DIENSTE
DIRECTORATE FINANCIAL SERVICES

SKRIFTELIKE VERKLARING UITGEREIK INGEVOLGE ARTIKEL 50 - ORDONNANSIE OP PLAASLIKE BESTUUR, 1939
WRITTEN STATEMENT ISSUED IN TERMS OF SECTION 50 - LOCAL GOVERNMENT ORDINANCE, 1939

Hiermee word gesertifiseer dat alle bedrae wat ingevolge artikel 50 van die Ordonnansie op Plaaslike bestuur, 1939, aan die NPMSS verskuldig is ten opsigte van die grond of die reg in grond hieronder beskryf, aan die Raad betaal is.
This is to certify that all sums due in terms of section 50 of the Local Government Ordinance, 1939, to the NPMSS in respect of or the right in land described hereunder, have been paid to the Council.

Beskrywing van grond of reg in grond:
Description of land or right in Land: 1305/99 BLOCK M SOSHANGUVE

Hierdie sertifikaat is geldig tot
This certificate is valid until 31 OCTOBER 2000

Gegee onder my hand te NPMSS op hede die 14 dag van SEPTEMBER 2000
Given under my hand at NPMSS this day of

vir die Direkteur Finansiële Dienste / for the Director Financial Services
Plaaslike Bestuur van NPMSS Local Authority

Die geldigheid van hierdie sertifikaat is verleng tot:
The validity of this certificate is extended to:

1. _____ Datum/Date _____ vir die Direkteur Finansiële Dienste / for the Director Financial Services

2. _____ Datum/Date _____ vir die Direkteur Finansiële Dienste / for the Director Financial Services

Quo Vadis Tel: 541-1531/2 (b4819)

PTA 179
NELL MARITZ VAN DYK
TEL. 323-2753/6

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF FINANCE

INLAND REVENUE

Rev.684

PART I

TRANSFER DUTY --- FORM B
DECLARATION BY PURCHASER

TRANSFEROR (Seller)

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXX THE SMALL BUILDING CONTRACTORS ASSOCIATION
(An association as envisaged in Section 21 Act 61/1973

RECEIVER OF REVENUE
ONTVANGER VAN INKOMSTE
PRETORIA

TRANSFEREE (Purchaser)

FUNU GLEN MSIMANGO Identity number: 460502 5171 08 5 and
ESTHER MALOYELA MSIMANGO Identity number: 521214 0217 08 0
Married in community of property to each other

DESCRIPTION OF PROPERTY

REMAINING EXTENT OF ERF 1305 SOSHANGUVE-M township;
Registration Division J.R., Province of GAUTENG;

MEASURING 4,3685 (FOUR COMMA THREE SIX EIGHT FIVE) hectares

21133

Date of transaction: 2nd June 2000	Consideration: R92 000,00

TRANSFER DUTY PAID BY STRACHAN KOTZé INC.

Postal Address: P O BOX 40426 ARCADIA 0007 Ref: sv//TS0025

FOR OFFICIAL USE

Transfer duty paid on R 92000 - 00 Act under which duty charged	Being Purchase Price

4049

Steel-defacing stamp of office of issue	Receiver of Revenue / Ontvanger van Inkomste PRETORIA	CASH REGISTER RECEIPT
		2000-09-15 A2139 (Transfer Duty) R 1,800.00 Cheque Cash

ANNEXURE F

GLS REPORT

D24-15

19 June 2024

Divisional Head: Water and Sanitation
City of Tshwane Metropolitan Municipality
PO Box 6338
PRETORIA, 0001

ATTENTION: Mr/Ms Nkosinathi Ntombela

Sub Section: System Development

Sir,

WATER MASTER PLAN: DEVELOPMENT OF PROPOSED TOWNSHIP/REZONING – SOSHANGUVE-M ERF1305 PTN 2 TO 101

The attached request from Civilconsult (Pty) Ltd (Marten Tiemensma) dated 23rd of February 2024 with regards to accommodating the proposed development in the Tshwane water systems has reference.

Although the City of Tshwane has water master plans, you requested this further analysis and report because:

- ✓ The development is considered a large development i.e. > than 250 housing units.
- ✓ The development has large fire flow requirements (e.g. 20ℓ/s or 50ℓ/s which is usually the case for higher density cluster developments, industry, and general business).
- ✓ The development has a substantially higher water demand than used in the master plan.

GLS Consulting (Pty) Ltd

T +27 21 880 0388
E info@gls.co.za
W gls.co.za

Stellenpark, Block D North
Cnr R44 and School Road
Stellenbosch, 7600

Willow Creek Office Park
90 Florence Ribeiro Avenue
Brooklyn, Pretoria, 0181

PO Box 814
Stellenbosch, 7599
South Africa

1 INTRODUCTION

1.1 Brief

This report is a technical report stating upgrades required in the water and/or sewer networks in the vicinity of the proposed development. The City of Tshwane engineering professional (yourself) will make a final decision on works to be implemented by the proposed development.

The latest master plans used in this analysis were the m2022-12 master plans (based on the 2020 RSDF update).

1.2 Disclaimer

The investigation has been performed and this report has been compiled based on the information made available to GLS. All efforts, within budget constraints, have been made during the gathering of information to ensure the highest degree of data integrity. The information supplied to GLS by City of Tshwane and other Consultants at the outset of this assessment is assumed to be the most accurate representation of the existing system up to date hereof.

GLS hereby confirms that any contributions of the developer to the required construction of infrastructure and/or the upgrading of existing infrastructure, whether it be in the form of a capital contribution or in the form of constructing sections of new infrastructure, is a matter to be discussed and agreed upon between the developer and the City of Tshwane (CoT).

All costs shown in this report are year 2023/24 Rand value **estimates** and **include** 45% surcharge for P&Gs, contingencies and fees but **exclude** VAT

1.3 Version control

Document Control				
Issue Date	**Type**	**Number**	**Version**	**Remarks**
2024/06/19	Draft	D24-15	1	Issued for comments and approval

2 WATER DEMAND & SEWER FLOWS

2.1 *Impact of the proposed development*

The proposed development was not taken into consideration in the water master plan as part of any future development area but was taken into account as existing stands with a land use of high-density low-cost housing.

The water demand flow contribution of the proposed development is outlined in the table below:

Comment/ Reference	Anticipated Landuse	New Dev. Area (ha)	Density (Units/ ha)	No. of Units	UWD Type	UWD Tshwane (incl.UAW)		AADD inc. UAW (kl/d)
	NEW DEVELOPMENT							
Soshanguve-M Erf1305 Ptn 2 to 101	Living units ,student housing, tenement buildings, Orphanages and hostels-According to bed	4,37	595	2600	unit	0,38	kL/bed	975
	New Master Plan Total	**4,368**	**-**	**2 600**	**-**	**-**	**-**	**975**

2.2 *Revised Water Demand*

The combined AADD for the proposed development as originally calculated and used in the analysis of the water distribution network in the master plan was 58 kℓ/d.

The revised AADD, peak flow and fire flow calculated for the proposed development and used in this re-analysis of the water distribution network was 975 kℓ/d.

- Peak flow using zone peak hour factor of: 3.0‡ = 33.9 ℓ/s
- Fire flow for type: {High-Density Flats ≥ 4 Storeys} = 50.0 ℓ/s @ 15 m

‡ Higher peak flow factors might be applicable for internal networks.

3 WATER DISTRIBUTION NETWORK

3.1 Water Resources

The City of Tshwane (CoT) straddles two primary water catchments namely: - the Crocodile River basin in the west and the Olifants River basin in the east. The dividing line between these two catchments runs in a north-south direction approximately through Cullinan. Water resources in the Crocodile River basin in the west, together with imports from the Vaal River basin via the Rand Water system, are sufficient to supply CoT reservoirs in this basin. However, water resources in the Olifants River basin in the east are fully committed and cannot supply **additional** water to any existing or future CoT reservoirs without additional Rand Water supply through new pipelines, especially to the Cullinan WTP and Bronkhorstspruit WTP.

The CoT Water **Resources** Master Plan (2014) indicates that the proposed development is supplied from the water source shown in the table below. Rand Water (RW2880) must confirm whether this water source is adequate/inadequate to cater for the proposed development.

Catchment	Water Source	%	Comment
Vaal River basin	Rand Water (connection number **RW2880**)	100%	The master plan calculates the water volumes required at all Rand Water connections to supply applicable reservoirs. These calculations are supplied by the CoT to Rand Water and the City obtains agreements from Rand Water for these volumes.

3.2 Distribution Zone

The master plan indicates that the proposed development falls in the Soshanguve L reservoir zone as shown in **Figure 1 (Water)** attached.

3.3 Categorisation of required upgrades

The items* are categorised as follows:

- General system specific MP Items – required to address capacity issues and backlogs in the bulk and reticulation systems serving the proposed development, but not specifically required for the development per sé.
- Development specific MP Items – new additions to (or deviations from) the existing Master Plan, required specifically for the proposed development, as a result of more accurate information relative to the original estimate of future development.

---

* ***It is important to note that all proposed items are schematic in nature, final size and location is subject to a complete design by a suitably qualified engineer. The final locality in particular is subject to legislative requirements including but not limited to pipes not crossing private stands, no servitudes registered in private stands and no pipes in stands with an area less than 400m^2.***

3.4 Bulk Water Supply

Reservoir storage capacity

One of the main considerations in bulk water supply is reservoir storage capacity and in the assessment of storage capacity, two demand scenarios are considered.

The first (Actual Current Demand) scenario represents the demand in the system as it is currently experienced, i.e. it only includes the demand for stands that are developed (vacant stands are ignored), and only due to land use rights currently being exercised. An allowance for 20% water losses is also included in the scenario.

The second (Theoretical – fully occupied – Current Demand) scenario is the planning scenario and represents the demand of all the existing stands, irrespective of whether they are developed or vacant. Most importantly, the demand is based on the zoning of each stand i.e. the maximum demand allowed for under existing land use rights (known as zoning rights). Ideally the existing system should have sufficient capacity for this scenario which represents all existing development rights. An allowance for 20% water losses is also included in this scenario.

The difference between the two demand scenarios becomes relevant when there is “perceived” spare storage capacity in the Actual Current Demand scenario and no storage capacity in the Theoretical Current Demand scenario. This means that the storage capacity allotted to all existing stands (in the Theoretical Demand scenario) is currently not utilised in the Actual Current Demand scenario, it is however still committed to the water demands derived from the zoning rights.

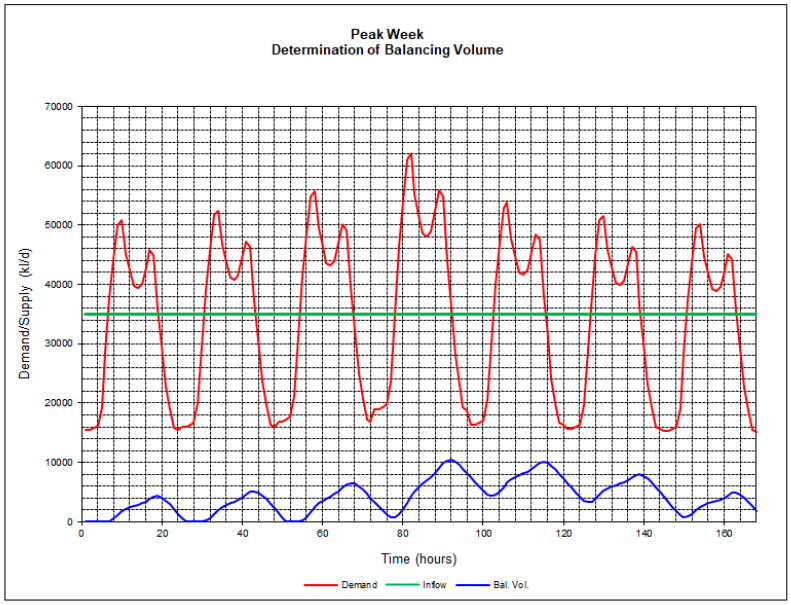
Reservoir capacity assessment (Actual Current Demand)

The current Soshanguve L reservoir zone AADD plus UAW (Actual Current Demand) in the m2022-12 Tshwane water model is 26 210 kℓ/d. The capacity of the existing Soshanguve L reservoir is 40 000 kℓ. The existing FCV is set at 405 ℓ/s. Using these three input variables in a reservoir sizing analysis, it shows that the remaining spare capacity is 9 944 kℓ.

DETERMINATION OF RESERVOIR BALANCING VOLUME and/or REQUIRED SUPPLY RATE

Soshanguve L Reservoir

AADD	**26210**	kl/d	
PDF	**1,50**	* AADD	
PWF	**1,30**	* AADD	
P3DF	1,38	* AADD	
Supply	**1,335**	* AADD	
=	34990,4	kl/d	
=	405,0	l/s	Pipe @ 1.8m/s
			0,535
Bal.Vol.	10398,0	kl	
=	9,5	h*AADD	
			%
Pattern 1 Residential		Large	**78,0%**
Pattern 2 Residential		Medium	**0,0%**
Pattern 3 Residential		Small	**0,0%**
Pattern 4 LC Housing			**1,0%**
Pattern 5 B/C-Indust.		Medium	**0,0%**
Pattern 6 B/C-Indust.		Large	**21,0%**
Pattern7 Even		To a res.	**0,0%**
Must add up to 100 --> check			100,0%



VOLUME ANALYSIS (applies only to area directly supplied, I.e. not to the Pattern 7 supply)

					Guideline
Capacity	**40000**	kl	=	36,6 h x AADD	24h - 48h
Required balancing	10398	kl	=	9,5 h x AADD	6h - 12h
Available volume	29602	kl	=	27,1 h x AADD	-
Required emergency	19658	kl	=	**18,0** h x AADD	18h
Spare capacity	**9944**	kl	=	9,1 h x AADD	

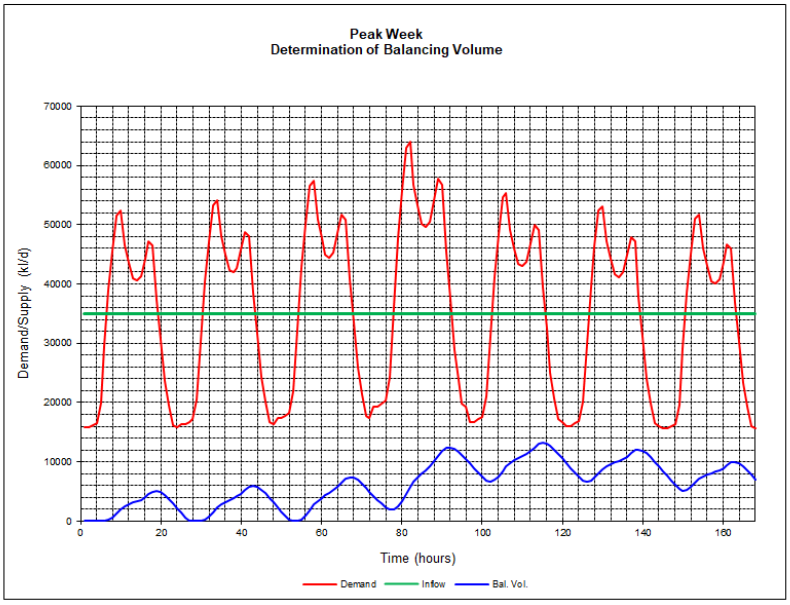
Reservoir capacity assessment (Theoretical Current Demand)

The current Soshanguve L reservoir zoning AADD (Theoretical Current Demand) in the m2022-12 Tshwane water model is 27 034 kℓ/d. The capacity of the existing Soshanguve L reservoir is 40 000 kℓ. The existing FCV is set at 405 ℓ/s. Using these three input variables in a reservoir sizing analysis, it shows that the remaining spare capacity of 6 534 kℓ is sufficient to cater for the proposed development.

DETERMINATION OF RESERVOIR BALANCING VOLUME and/or REQUIRED SUPPLY RATE

Soshanguve L Reservoir

AADD	**27034**	kl/d	
PDF	**1,50**	* AADD	
PWF	**1,30**	* AADD	
P3DF	1,38	* AADD	
Supply	**1,295**	* AADD	
=	35009,0	kl/d	
=	405,2	l/s	Pipe @ 1.8m/s
			0,535
Bal.Vol.	13190,8	kl	
=	11,7	h*AADD	
			%
Pattern 1 Residential		Large	**77,0%**
Pattern 2 Residential		Medium	**0,0%**
Pattern 3 Residential		Small	**0,0%**
Pattern 4 LC Housing			**0,0%**
Pattern 5 B/C-Indust.		Medium	**0,0%**
Pattern 6 B/C-Indust.		Large	**23,0%**
Pattern7 Even		To a res.	**0,0%**
Must add up to 100 --> check			100,0%



VOLUME ANALYSIS (applies only to area directly supplied, I.e. not to the Pattern 7 supply)

					Guideline
Capacity	**40000**	kl	=	35,5 h x AADD	24h - 48h
Required balancing	13191	kl	=	11,7 h x AADD	6h - 12h
Available volume	26809	kl	=	23,8 h x AADD	-
Required emergency	20276	kl	=	**18,0** h x AADD	18h
Spare capacity	**6534**	kl	=	5,8 h x AADD	

3.4.1 *Existing bulk water system considerations*

Items presented here are for the attention of the City of Tshwane engineering professional (yourself) so as to highlight existing shortfalls or the imminent potential thereof.

Items required to alleviate existing problems in the bulk water systems:

Item No	Description	Extent	Size	Cost
None				
			Total	**R -**
			Replacement Total	*R -*

3.4.2 *Accommodation of the proposed development in the bulk water system*

Items required to accommodate the proposed development in the bulk water systems:

Item No	Description	Extent	Size	Cost
None				
			Total	**R -**
			Replacement Total	*R -*

3.5 *Water Reticulation System*

Accommodation of the proposed development, with its revised AADD, requires implementation of the following additions and adjustments to the *existing* water system as indicated in **Figure 1 (Water)**:

3.5.1 *Existing water reticulation system considerations*

Items presented here are for the attention of the City of Tshwane engineering professional (yourself) so as to highlight existing shortfalls or the imminent potential thereof.

ɔ alleviate existing problems in the water reticulation systems:

Item No	Description	Extent	Size	Cost
None				
			Total	**R -**
			Replacement Total	*R -*

3.5.2 *Accommodation of the proposed development in the water reticulation system.*

Items required to accommodate the proposed development (**excluding** fire flow requirements):

Item No	Description	Extent	Size	Cost
SLR.144	Pipe to install	6 m x	160 mm Ø	R 49 000
SLR.145	Pipe to install	17 m x	110 mm Ø	R 48 000
			Sub-Total	R 97 000
			Replacement Total	*R 97 000*

Adjustments required to accommodate the proposed development (**including** fire flow requirements):

Item No	Description	Extent	Size	Cost
None				
			Sub-Total	R -
			Total	**R 97 000**
			Replacement Total	*R 97 000*

The proposed connection points to the existing water distribution system are shown in **Figure 1 (Water)**.

3.6 *Internal Reticulation*

The internal network design on the property of the proposed development is beyond the scope of this report. However, the consulting engineer for the development is required to allow for the fire flow demand as listed in 2.2 above on the internal networks.

For internal network design purposes the water distribution network provides the following energy gradelines (EGLs) at the proposed connection point (see **Figure 1 (Water)**):

Energy gradelines (EGLs) at the proposed connection point

Connection Point	Static		Residual		Fire Flow		Ground Level
	EGL (m a.s.l.)	Head (m)	EGL (m a.s.l.)	Head (m)	EGL (m a.s.l.)	Head (m)	(m a.s.l.)
Point A	1355	31,5	1345,4	21,9	1349,0	25,5	1323,5
Point B	1355	45,0	1347,3	37,3	1343,2	33,2	1310,0

3.7 *Adjustments to the Master Plan*

The revised AADD of the proposed development and/or existing issues require the following additions and adjustments to the *master plan*:

3.7.1 Bulk Items

Adjustments required to accommodate the development in the Master Plan:

Item No	Description	Extent	Size	Cost
None				
			Total	**R -**
			Replacement Total	*R -*

3.7.2 Reticulation Items

Adjustments required to accommodate the development in the Master Plan (**excluding** fire flow requirements):

Item No	Description	Extent	Size	Cost
SLR.144	Pipe to install	6 m x	160 mm Ø	R 49 000
SLR.145	Pipe to install	17 m x	110 mm Ø	R 48 000
			Sub-Total	R 97 000
			Replacement Total	*R 97 000*

Adjustments required to accommodate the development in the Master Plan (**including** fire flow requirements):

Item No	Description	Extent	Size	Cost
None				
			Sub-Total	R -
			Total	**R 97 000**
			Replacement Total	*R 97 000*

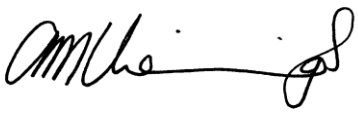
4 SUMMARY

Development water supply

Accommodation of the proposed development area (as per section 3.5.2) requires the implementation of a 160 mm Ø and 100 mm Ø pipe to the development.

Summary of costing:		Cost
Existing bulk water system considerations	R	-
Accommodation of the proposed development in the bulk water system	R	-
Existing water reticulation system considerations	R	-
Accommodation of the proposed development in the water reticulation system (incl. fire flow)	R	97 000
Total	**R**	**97 000**
Replacement Total	*R*	*97 000*

Yours sincerely,



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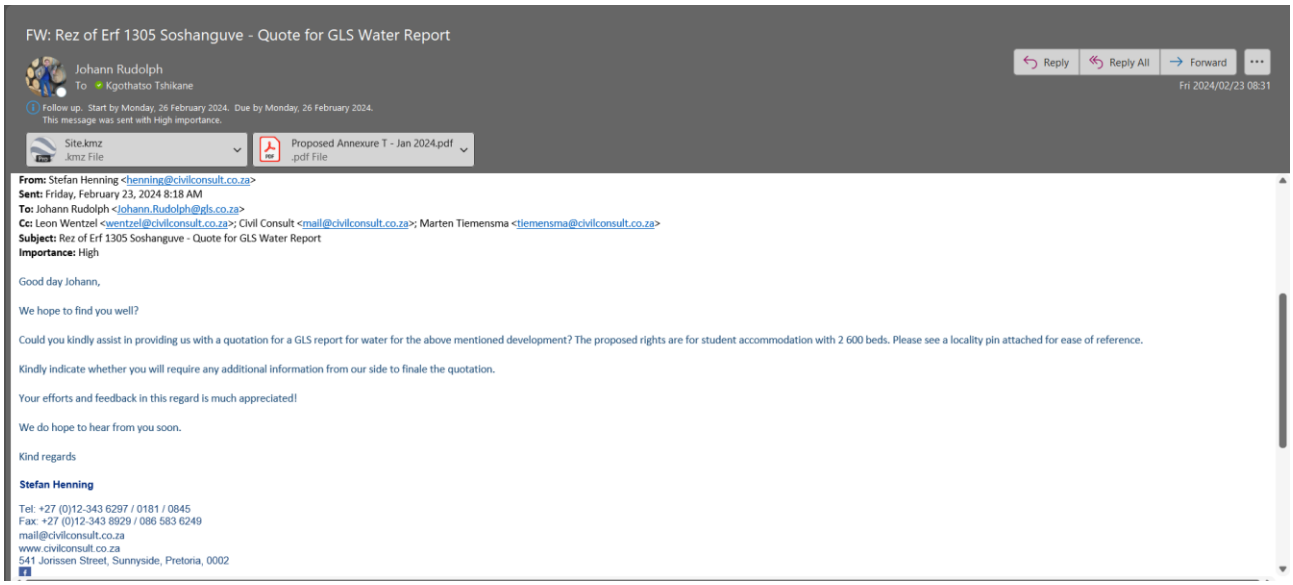
Per: A Vienings (Pr. Eng.)
GLS Consulting

REQUEST FROM CONSULTANT TO GLS



FW: Rez of Erf 1305 Soshanguve - Quote for GLS Water Report

Johann Rudolph
To Kgothatso Tshikane

Reply | Reply All | Forward | ...
Fri 2024/02/23 08:31

Follow up. Start by Monday, 26 February 2024. Due by Monday, 26 February 2024.
This message was sent with High importance.

Site.kmz
.kmz File

Proposed Annexure T - Jan 2024.pdf
.pdf File

From: Stefan Henning <henning@civilconsult.co.za>
Sent: Friday, February 23, 2024 8:18 AM
To: Johann Rudolph <Johann.Rudolph@gls.co.za>
Cc: Leon Wentzel <wentzel@civilconsult.co.za>; Civil Consult <mail@civilconsult.co.za>; Marten Tiemensma <tiemensma@civilconsult.co.za>
Subject: Rez of Erf 1305 Soshanguve - Quote for GLS Water Report
Importance: High

Good day Johann,

We hope to find you well?

Could you kindly assist in providing us with a quotation for a GLS report for water for the above mentioned development? The proposed rights are for student accommodation with 2 600 beds. Please see a locality pin attached for ease of reference.

Kindly indicate whether you will require any additional information from our side to finale the quotation.

Your efforts and feedback in this regard is much appreciated!

We do hope to hear from you soon.

Kind regards

Stefan Henning

Tel: +27 (0)12-343 6297 / 0181 / 0845
Fax: +27 (0)12-343 8929 / 086 583 6249
mail@civilconsult.co.za
www.civilconsult.co.za
541 Jorissen Street, Sunnyside, Pretoria, 0002

Connection Point B

100 ï (SLR.145)

160 ï (SLR.144)

Connection Point A

Proposed Development
Soshanguve M Erf 1305
Ptn 2 to 101

0 75 150 300 m

Scale 1:3500

LEGEND

Pipe Diameters (mm)
- <= 110
- >110 - 160
- >160 - 200
- >200 - 250
- >250 - 315
- >315 - 355
- >355 - 400
- >400 - 450
- >450 - 500
- >500 - 600
- >600

Valves
- Flow Control Valve
- Presure Reducing Valve
- Pressure Break Valve
- Pressure Sustaining Valve
- Throttle Control Valve
- Non-Return Valve
- Closed Valve

Pumps
- Pump
- Closed Pump

Other Pipes
- Bulk Water
- Rand/Magalies Water
- Private Pipes
- Master Plan Bulk
- Master Plan
- Future Main Pipes
- Future Schematic

Structures
- RW Connection
- Reservoir
- Water Tower
- Borehole
- Water Tank
- Water Treatment Plant

Boundary Layers
- Land Boundaries
- Future Development Areas
- Present Distribution Zones
- Future Distribution Zones
- Road Reserves
- Servitudes & Restrictions

CITY OF TSHWANE
IGNITING EXCELLENCE

December 2022
WATER/SEWER MIS
Tshwane:
Analysis and Master Planning
of Water and Sewerage System

GLS Infrastructure planning

FIGURE 1 (Water)
Required Works for
Soshanguve M Erf1305 Ptn 2 to 101
Date: 18 June 2024