

GEORGE KERRIDGE – UISP –TOWN PLANNING, NEMA AND LAND SURVEY
PROCESSES ON PORTION OF ERF 8270 AND ON PORTION 4 OF FARM 132
IN GEORGE KERRIDGE, VREDENBURG



PRELIMINARY DESIGN REPORT



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REPORT NO.:

**TREPO2_Preliminary Design
Report**

George Kerridge – UISP –Town
Planning, NEMA and Land Survey
Processes on Portion of Erf 8270 And
on Portion 4 of Farm 132 In George
Kerridge, Vredenburg

Revision No.: 02

Submission Date:
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RECORDS OF REVISIONS AND APPROVALS

RECORD OF REVISIONS			
REVISION NUMBER	REVISION DATE	REVISED BY WHOM	WHAT WAS REVISED
REV00 - FIRST DRAFT	July 2024	Willie Nel	N/A
REV01	August 2024	Willie Nel	Amended Construction Cost Estimate
REV02	January 2025	Willie Nel	Amended Number of Erven

**Once the report is approved by the client (comments to be provided with regards to further information required), a final revision will be submitted, and the “draft” can be removed.*

The below is the approval of the final revision stated above:

RECORD OF APPROVAL			
TASK	NAME AND SURNAME	SIGNATURE OF APPROVAL	DATE OF APPROVAL
REPORT COMPLETED BY	Willie Nel		17/01/2025
REPORT CHECKED BY	Jurie Brand (Pr. Tech Eng.)		17/01/2025
REPORT APPROVED BY	Norman van der Merwe (Pr. Eng.)		17/01/2025
CLIENT APPROVAL			

This work is intended solely for the Client. The scope of work and related responsibilities are defined in the Conditions of Assignment. Any use which a third party makes of the work, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Decisions made or actions taken as a result of our work shall be the responsibility of the parties directly involved in the decisions or actions.

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1. INTRODUCTION

1.1 GENERAL

WEC-Consult (Pty) Ltd was appointed as consulting Civil Engineers for the George Kerridge – UISP – Town Planning project in June 2023. The project comprises the development of a parcel of land east of Ongegund, Vredenburg in the Western Cape.

This report will cover the design aspects to successfully design, develop and deliver a development consisting of 324 residential erven, 6 public open spaces and 2 erven for a church and a creche. The scope of work includes, but are not limited to, 0.72 ha of earthworks to create an even platform for construction, construction of approximately 2 500 m water, 2 500 m sewer and 2 300 m stormwater network infrastructure with all related structures as well as a stormwater detention pond. To accommodate traffic, approximately 2 800 m asphalt surfaced road will be constructed, and marked with all required road markings for safe operation.

1.2 LOCATION OF THE SITE

The George Kerridge UISP development project is located to the east of Ongegund, east of Vredenburg. This site is bordered to the western and southern side by existing informal settlements and to the eastern and northern side by open land. A railway line, running east-west also borders the development to the southern side. An existing watercourse runs east-west approximately 200 m north of the development.

Please refer to **Figure 1** below for the Site Locality Plan. **Table 1** on the following page summarizes the specific details of the site discussed in this report. The proposed site development plan for the project can be seen under **Annexure B**.



Figure 1: Locality of George Kerridge from Saldanhabay Municipal Offices

Table 1: Proposed Site Development Details

SITE DEVELOPMENT DETAILS	
Location of site	32° 55' 22.10" S / 18° 1' 45.17" E
Classification of residential zone	Single Residential Zone IV / Low Income Housing - High Density
No. of erven	324 units (3.4659 ha)
Public Open Space (x6) - Zone I	0.5782 ha
Institutional Zone II (church)	0.1092 ha
Institutional Zone I (creche)	0.1015 ha
Transport Zone II (public road)	3.0441 ha

1.3 SITE TOPOGRAPHY AND NATURE OF SOIL

Vredenburg is located in a moderate climatic zone of South Africa. The Western Cape Province is typically a winter rainfall region with a Mediterranean climate.

As stated in the geotechnical report, drainage occurs effectively through sheetwash towards the northeast, indicating highly permeable soil. The typical materials encountered on site were sandy. Silty alluvial materials near the surface with the material becoming more gravelly as the depth increase. The classification of the sandy material sampled was classified as G6 to G9 according to the COLTO classification system.

Although none of the refusals encountered were shallow, excavation constraints may be expected in excavations exceeding 800 mm.

An additional observation mentioned in the report is that groundwater was present deeper than 2 m in three of the total test pits tested.

1.4 EXISTING SERVICES ON THE SITE

Information regarding the location of existing services surrounding the site was provided to the Engineer. Details of existing nearby services affecting the development of the site can be summarised as follows:

- 1) Existing housing structures along the western and southern border of the development.
- 2) Existing 160 mm diameter sewer pipelines to the west of the development.
- 3) Existing 110 mm diameter water pipeline to the west of the development.
- 4) Existing electrical cables to the west of the development.

2. WATER RETICULATION

2.1 TOTAL AVERAGE DAILY WATER DEMAND

Based on the engineering services report compiled by WEC-Consult, TREP01_REV01, the proposed annual average daily demand (AADD) is 2.55 ℓ/s which will be used for the design of the sewer network. The minimum fire flow required at one fire hydrant is 25 ℓ/s at 10 m pressure.

2.2 CONNECTION TO EXISTING EXTERNAL NETWORK

The capacity analysis report suggests a 160 mm diameter water pipe of approximately 270 m be constructed to connect the proposed development to the existing “Louville small PRV 1” water network to the west of the development.

2.3 UPGRADING OF EXISTING BULK WATER INFRASTRUCTURE

Elaborated in the engineering services report, additional upgrades are recommended as the current infrastructure is at, or close to capacity. These recommendations include the upgrade the bulk supply line from the Louville reservoir to the new George Kerridge development by means of installing additional pipes parallel to the existing pipes. Construction of a new 6 Mℓ reservoir, as well as the provision of an additional pump set at the Louville pumpstation is also recommended. See **Table 2** below for the full list of recommended upgrades.

Table 2: Recommended Bulk Water Infrastructure Upgrades

RECOMMENDED UPGRADES			
Upgrade Name	Length	Size	Upgrade Method
VBW 1.1	1 460 m	400 mm Ø	Parallel upgrade to 300 mm Ø pipe
VBW 1.2	350 m	450 mm Ø	Parallel upgrade to 300 mm Ø pipe
VBW 1.3	275 m	450 mm Ø	Parallel upgrade to 300 mm Ø pipe
VBW 1.4	500 m	400 mm Ø	Parallel upgrade to 300 mm Ø pipe
VBW 1.5	400 m	315 mm Ø	Parallel upgrade to 250 mm Ø pipe
VBW 1.8	100 m	355 mm Ø	Replace existing 150 mm Ø pipe
VBW 8.1	500 m	200 mm Ø	New supply pipe
VBW 8.2		150 mm Ø	Insert new Valve and close
VBW 8.5	400 m	250 mm Ø	Replace existing 150 mm Ø pipe
VBW 8.6 a	290 m	200 mm Ø	New supply pipe
VBW 8.6 b	215 m	160 mm Ø	New supply pipe
VBW 8.8 a	540 m	200 mm Ø	New supply pipe
VBW 8.8 b	270 m	160 mm Ø	New supply pipe
VBW 8.10			Abandon existing PRV
VBW.B7			New 6 Mℓ reservoir at existing Louville reservoir site
VBW.B9			Additional pump at existing Louville PS

2.4 PRELIMINARY LAYOUT OF INTERNAL WATER NETWORK

Approximately 2 500 m of water pipelines will be constructed, together with all required specials. Each erf will be serviced with a house connection and water meter. Fire hydrants will be installed at such locations to ensure coverage of the entire development.

Refer to **Annexure B** for the plans showing the preliminary layout of the water reticulation network for the proposed site.

The minimum requirements for the water reticulation infrastructure are indicated in **Table 3** below.

Table 3: Water Infrastructure Design Criteria

WATER INFRASTRUCTURE	
Design Criteria	Minimum Requirements
Pipe material	uPVC Class 12
Minimum pipe size	Water supply lines: 110 mm diameter Internal link services: 160 mm diameter
Minimum pipe cover	Under roadways : 900 mm cover Outside roadways : 800 mm cover Open areas : 600 mm cover
Flow velocity in pipes	0.6 m/s – 1.5 m/s (1.0 m/s recommended)
Erf connection size - across roads (single and double)	32 mm reducing to 2 x 20 mm at erf
Erf connection size - near side of road (single)	20 mm
Erf connection size - near side of road (double)	32 mm branching to 2 x 20 mm
Erf connection (public open space)	≤ 1000 m ² - 32 mm > 1000 m ² - 50 mm
Erf connection location	0.5 m inside erf boundary (side and front)
Fire hydrant location	Max. 120 m radius

3. SEWERAGE RETICULATION

3.1 TOTAL AVERAGE DAILY SEWERAGE RUNOFF

Based on the engineering services report compiled by WEC-Consult, TREP01_REV01, the proposed peak day dry weather flow (PDDWF) is 1.20 ℓ/s which will be used for the design of the sewer network.

3.2 UPGRADING OF EXISTING BULK SEWER INFRASTRUCTURE

Elaborated in the engineering services report, an upgrade of a 315 mm diameter sewer pipe of approximately 1 km is to be constructed to connect the proposed development to the existing bulk sewer network to the north of the development. The bulk services report confirmed that the current sewer network infrastructure has sufficient capacity to accommodate the additional discharge from the new development. All additional upgrades recommended to connect the new and future developments to the existing sewer infrastructure network downstream can be seen in **Table 4** below.

Table 4: Recommended Bulk Sewer Infrastructure Upgrades

RECOMMENDED UPGRADES			
Upgrade Name	Length	Size	Upgrade Method
SVS 12.1	1 000 m	315 mm Ø	New gravity sewer
SVS 12.2	510 m	250 mm Ø	New gravity sewer

3.3 PRELIMINARY LAYOUT OF INTERNAL SEWER NETWORK

Approximately 2 500 m of sewer pipelines will be constructed. All erven will receive a house connection point. This point will be located at such a position to ensure that at least 70 % of the erf can drain towards, and connect at this point.

Refer to **Annexure B** for the plans showing the preliminary layout of the sewer reticulation network for the development site.

The minimum requirements for the sewer reticulation network are indicated in **Table 5** below.

Table 5: Sewer Infrastructure Design Criteria

SEWER INFRASTRUCTURE	
Design Criteria	Minimum Requirements
Pipe material	uPVC Class 34
Minimum pipe size	Erf connection: 110 mm diameter Sewer main: 160 mm diameter Internal link services: 250 mm diameter External link services: 315 mm diameter
Minimum pipe cover	In road reserve: 800 mm cover Outside road reserve: 600 mm cover
Maximum manhole spacing	90 m
Minimum pipeline velocity	0.7 m/s (full bore)
Erf connection location	1.0 m inside erf boundary (side and front)
Erf connection location	70% of the erf must be able to drain at the connection point
Erf connection slope	1:60

4. STORMWATER RETICULATION

4.1 ROUTES FOR SURFACE DRAINAGE DURING MAJOR STORMS

Stormwater drainage will be handled with newly constructed stormwater infrastructure. All road profiles will be designed with a cross-fall that slope against the slope of the natural ground to increase the stormwater capacity of the road cross-sectional profile. Stormwater run-off will drain into side inlet type stormwater catchpits to the side of the road.

During the detailed design stage, cognisance is to be taken of the nature of the topography, vegetation and soil conditions, which may affect infiltration and run-off.

An existing watercourse runs from west to east and is approximately 200 m to the north of the site. The detention pond, discussed under **Section 4.4**, can discharge towards this low point at a pre-determined discharge rate to reduce the risk of any induced erosion.

4.2 DESIGN PARAMETERS

The Rational Method is recommended for general use for catchments up to 15 km² in extent. This method was therefore used for computing the peak stormwater discharge for the 1:10; 1:50 and 1:100-year rainfall storm events for the catchment area. The characteristics of the proposed development area can be seen in **Table 6** below.

Table 6: Stormwater Infrastructure Design Criteria

EXISTING SITE PARAMETERS	
Parameter	Value
Catchment Area (m ²)	72 989
Average slope (m/m)	1:56 (pre-development)

The area experiences a Mediterranean climate with hot summers and cold, wet winters. The Mean Annual Precipitation (MAP) at the site is in the region of 275 mm.

The following parameters are used to determine the stormwater run-off flow and capacity with their values indicated in **Table 7** on the following page:

- 1) The run-off coefficient (C) reflects the part of the storm rainfall contributing to the peak flood run-off at the outlet of the catchment.
- 2) The time of concentration (T_c) is the time required for run-off from the most remote point of the catchment to contribute to the peak discharge.
- 3) The site-specific rainfall intensity (I) figures were used to calculate the intensity of the catchment area.

Table 7: Stormwater Calculation Parameters

STORMWATER CALCULATION PARAMETERS								
Parameter	Value (pre-development)				Value (post-development)			
Coefficient (c)	0.21				0.45			
Time of concentration (Tc) (hr)	0.66				0.25			
Rainfall intensity (I) (mm/hr)	I ₅	I ₁₀	I ₅₀	I ₁₀₀	I ₅	I ₁₀	I ₅₀	I ₁₀₀
	19.43	19.43	25.39	27.86	47.60	47.60	62.40	68.80

* I_n - rainfall intensity for given return period (years)

4.3 RUNOFF AND STORAGE CALCULATIONS

Using the parameters above, the run-off volume can be calculated for the pre- and post-development of the site. The excess flow generated by the new development is then to be retained and slowly discharged downstream to reduce any risk of erosion that may occur from the excess flow. This excess flow is used to calculate the required capacity of the detention pond. The values for the above-mentioned parameters are detailed in **Table 8 & 9** below.

Table 8: Stormwater Runoff Flow

DEVELOPMENT RUN-OFF (m ³ /s)				
	Q ₅	Q ₁₀	Q ₅₀	Q ₁₀₀
Pre-development	0.05	0.05	0.09	0.12
Post-development	0.24	0.26	0.47	0.63

Table 9: Detention Pond Storage Capacity

REQUIRED STORAGE VOLUME (m ³)		
	Q ₁₀	Q ₅₀
Catchment Area	210.80	384.69

4.4 DETENTION POND DESIGN

A detention pond will be constructed on the most feasible lowest point of the development to accommodate all generated stormwater runoff. Due to the locality of the pond being amidst the residential area, proper fencing and signage will be installed to prevent any unauthorised access into the area.

The available area for the detention pond is 1 024 m². Provision is made for a 1.0 m walkway around the pond which leaves an area of 887 m². Using the maximum recommended depth of 800 mm for a detention pond, the volume of the pond is calculated to 548 m³. Allowing for 150 mm freeboard, the available water volume is reduced to 420 m³.

An outlet will be constructed that will discharge into the nearby watercourse to the north of the development. This outlet will be designed to ensure the pond drains completely after a storm event.

4.5 PRELIMINARY LAYOUT OF INTERNAL STORMWATER NETWORK

Approximately 2 300 m of stormwater pipelines will be constructed. Side inlet type catchpits will be constructed at regular intervals along the roads to increase run-off drainage.

Please refer to **Annexure B** for the plans showing the preliminary layout of the stormwater reticulation network for the development site.

All newly constructed stormwater infrastructure will comply with the requirements set out by the Saldanha Bay Municipality design standards, indicated in **Table 10** below.

Table 10: Stormwater Infrastructure Design Criteria

STORMWATER INFRASTRUCTURE	
Design Criteria	Minimum Requirements
Pipe material	Concrete spigot and socket pipes with rubber ring joints
Minimum pipe size	375 mm Diameter
Minimum pipe class	375 mm – 450 mm: 100 D 525 mm – 600 mm: 75 D 750 mm: 50 D
Pipeline Velocity	0.9 m/s – 3.5 m/s
Maximum manhole spacing	90 m
Open channel across intersections	Not allowed
Catch pit type	Side Inlet with precast concrete cover and frame
Detention pond max depth	800 mm
Detention pond invert slope	1:200
Detention pond bank slope	1:4 (max)

4.6 PROVISION FOR CONNECTION OF FUTURE NETWORKS

With the limited available area for the construction of the detention pond, the capacity of this pond is only sufficient to service this development. No connection points will be allowed for future developments. Any future developments will have to be designed in such a manner to accommodate their own stormwater run-off.

5. ROAD INFRASTRUCTURE

5.1 PRELIMINARY LAYOUT OF ROAD

Roughly 2 800 m asphalted roads will be constructed, with the road-widths varying between of 5.0 m and 5.5 m, depending on the size of the road reserve. Sidewalks of 1.0 m will be constructed with gravel material along all roads.

Annexure B shows the proposed preliminary layout of the road network for the development area. The new roads will connect to the existing roads in the adjacent informal development to the west of the proposed site.

5.2 STRUCTURAL DESIGN PARAMETERS FOR ROADS

According to Table 1 in the TRH4, both road classification types fall under Category C. This suggests a typical pavement Class of ES0.003 – ES3 and an equivalent traffic loading (E80/lane) of $< 3 \times 10^6$. The structural design period ranges between 10 – 20 years. The road design will comply with Saldanha Bay Municipality’s Design Standards and the recommendations made in the Traffic Impact Assessment report.

The proposed development, located in Vredenburg, falls within the Western Cape province, which is classified as a moderate climatic region. This classification, together with an estimated ES1 category, suggests the design road layerworks criteria shown in **Table 11** below. However, to increase the lifespan of the roads, it is recommended to construct a 30 mm asphalt wearing course rather than a seal and slurry surfacing. The actual recommendation for the road construction layerworks is therefore as per **Table 12** on the following page.

Furthermore, the bearing capacity results obtained from the geotechnical report, suggests a subgrade CBR classification SG2 be used. This classification recommends the addition of a 150 mm G7 upper selected layer. It further recommends 150 mm in-situ material be ripped and recompact to a classification of G9 material.

Table 11: Recommended Road Construction Design Layerworks

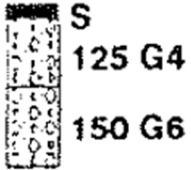
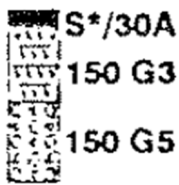
BASIC DESIGN FOR CATEGORY UC ROADS WITH ES1 TRAFFIC CLASS			
Layer	Material	Thickness and Compaction	Illustration
Surfacing	Seal and slurry		
Base	G4 gravel material	125 mm – 98% MOD AASHTO	
Subbase	G6 gravel material	150 mm – 95% MOD AASHTO	
Upper Selected Layer	G7 material	150 mm – 93% MOD AASHTO	
In-situ Material	Rip and re-compact	150 mm – 90% MOD AASHTO	

Table 12: Actual Road Construction Design Layerworks Used

BASIC DESIGN FOR CATEGORY UC ROADS WITH ES1 TRAFFIC CLASS			
Layer	Material	Thickness and Compaction	Illustration
Surfacing	Asphalt	30 mm – 95% MARSHALL	
Base	G3 gravel material	150 mm – 98% MOD AASHTO	
Subbase	G5 gravel material	150 mm – 95% MOD AASHTO	
Upper Selected Layer	G7 material	150 mm – 93% MOD AASHTO	
In-situ Material	Rip and re-compact	150 mm – 90% MOD AASHTO	

5.3 GEOMETRICAL DESIGN PARAMETERS FOR ROADS

For the geometrical design of all new roads, the Saldanha Bay Municipality design standards will be used where applicable. The proposed internal roads will be classified as residential class 5 roads with road reserve widths of 13 m to 10 m respectively. The road designs will comply with minimum design standards for each road classification as seen in **Table 13 – 14** below.

Table 13: 13 m Road Reserve Design Criteria

13 m ROAD RESERVE		
Design Criteria	Minimum Requirements	Design Values Used
Road reserve width	13 m	
Roadway width	5.0 m – 6.0 m	5.5 m (2.75 m / lane)
Crossfall slope	2% - 3%	2%
Design speed	40 km/h (max)	40 km/h
Bellmouth radii (5a – 5a)	4.2 m – 8.0 m	8.0 m

Table 14: 10 m Road Reserve Design Criteria

10 m ROAD RESERVE		
Design Criteria	Minimum Requirements	Design Values Used
Road reserve width	10 m	
Roadway width	4.5 m – 5.5 m	5.0 m (2.5 m / lane)
Crossfall slope	2% - 3%	2%
Design speed	30 km/h (max)	30 km/h
Bellmouth radii (5b – 5b)	4.2 m – 8.0 m	8.0 m

Table 15 below show additional criteria that need to be adhered to for the design of the roads.

Table 15: Other Design Criteria

OTHER DESIGN REQUIREMENTS	
Design Criteria	Design Values Used
Roadway kerbs	CK5 & MK10
Bellmouth kerbs	BK2 & C1
Dropped kerbs at intersections	1 m flat sloped section on either side
Traffic calming devices	Speed humps

Typical layouts for each road classification can be seen in **Figure 2 & 3** below.

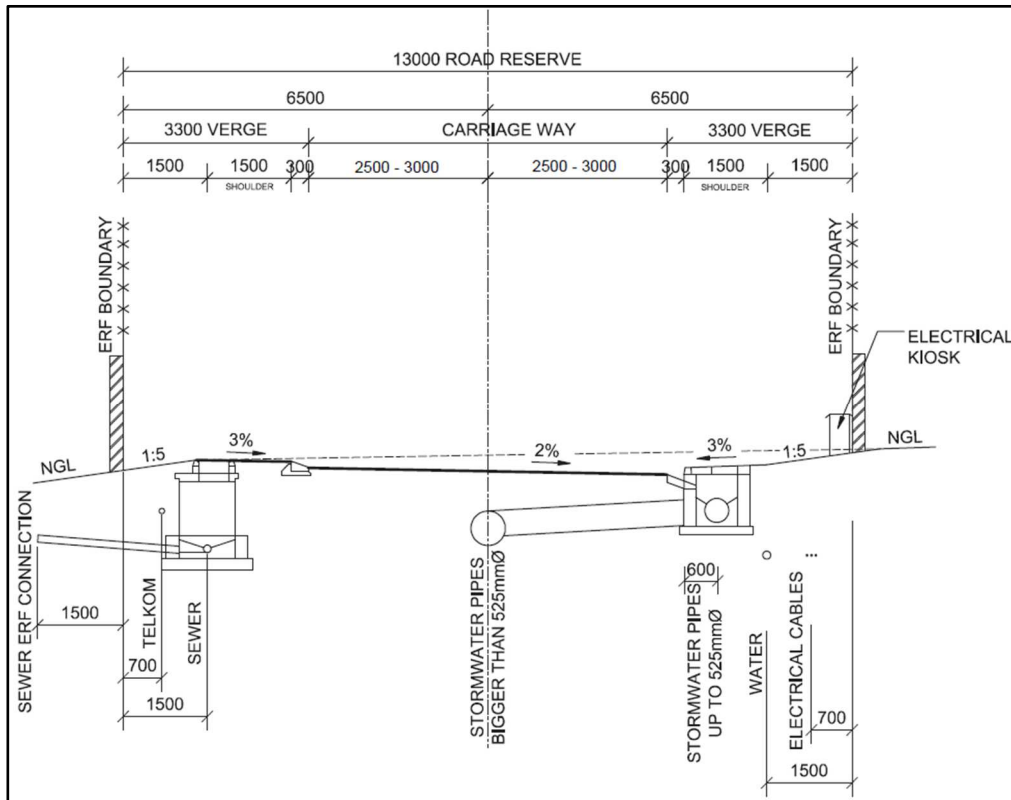


Figure 2: Typical 13m Road Reserve Layout

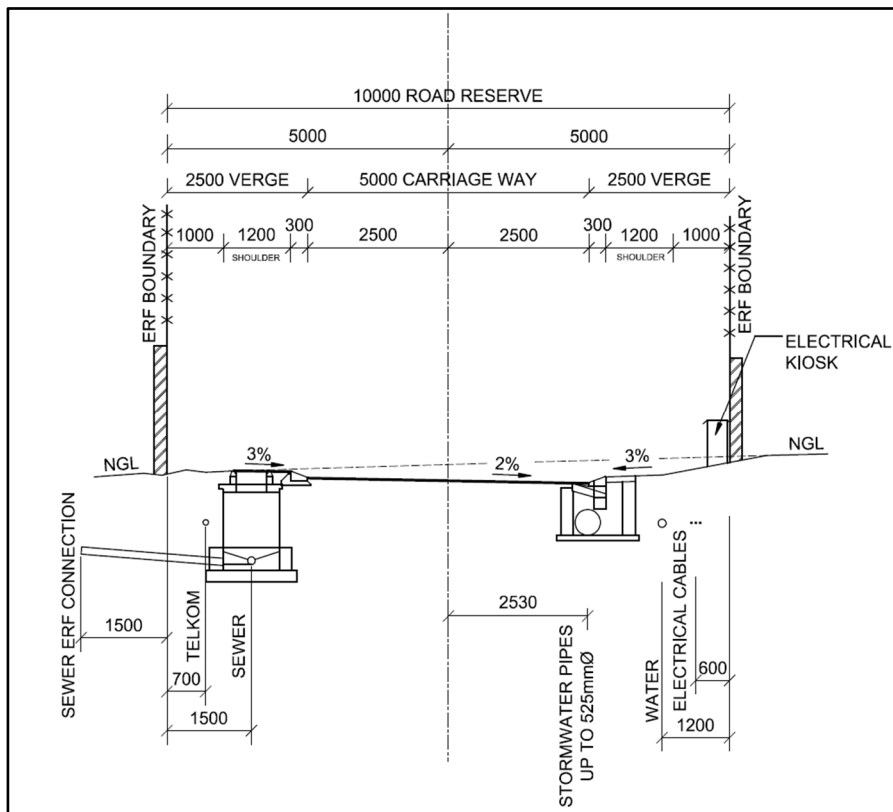


Figure 3: Typical 10m Road Reserve Layout

5.4 ROAD SIGNAGE AND MARKINGS

All road markings, traffic signage and required materials shall conform to the Southern African Development Community Road Traffic Sign Manual 1997 (SARTSM). Road markings shall be done with road marking paint and all traffic signs will have reflective surfaces.

5.5 CONNECTION TO EXISTING ROAD NETWORKS

The proposed internal road network can connect to the adjacent residential areas at Kootjieskloof Road. An additional connection will be made at the western most point of the development to an unnamed road. The proposed road layout can be found under **Annexure B**.

5.6 CABLE DUCTS

To accommodate any future underground infrastructure additions, cable sleeves will be installed at all intersections. Each crossing will be marked on the kerbs above on both sides of the road with a groove in the kerb directly above the sleeve. Each groove represents one sleeve that will be marked with different colours to represent the nature of the sleeve below.

6. PROJECT ESTIMATE

6.1 ESTIMATED CONSTRUCTION COST

A breakdown of the project cost estimate for the project can be seen in **Table 16** on the following page. Refer to **Annexure A** for the detailed bill of quantities.

Table 16: Estimated Construction Cost

CONSTRUCTION COST	
Description	Estimated Cost
Section 1: Preliminary and General	R 2 156 920.00
Section 2: Site Clearance	R 246 250.00
Section 3: Earthworks	R 935 365.00
Section 4: Detention Pond	R 215 700.00
Section 5: Water Reticulation	R 1 304 960.00
Section 6: Sewer Reticulation	R 2 211 350.00
Section 7: Stormwater Drainage	R 2 069 000.00
Section 8: Roadworks	R 738 300.00
Section 9: Subbase	R 984 200.00
Section 10: Base	R 1 222 500.00
Section 11: Asphalt Base and Surfacing	R 2 683 040.00
Section 12: Kerbing and Channeling	R 1 248 000.00
Section 13: Ancillary Roadworks	R 278 400.00
Section 14: Cable Ducts	R 242 400.00
Sub Total	R 16 536 385.00
Add 10% Contingencies	R 1 653 638.50
Sub-Total	R 18 190 023.53
Add 15% VAT	R 2 728 503.53
TOTAL	R 20 918 527.03

7. ANNEXURE A – BILL OF QUANTITIES

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
1	SANS 1200 A	PRELIMINARY AND GENERAL					
1.1		SCHEDULED FIXED-CHARGE AND VALUE-RELATED ITEMS					
1.1.1	8.3.1	Contractual Requirements	Sum	1.00	2,156,920.00	2,156,920	00
		Establishment of Facilities on the Site					
	8.3.2.1	Facilities for Employer's Agent					
1.1.2		a) Furnished offices	Sum	0.00			
1.1.3		c) Nameboard	No	0.00			
	8.3.2.2	Facilities for Contractor					
1.1.4		a) Offices and storage sheds	Sum	0.00			
1.1.5		b) Workshops	Sum	0.00			
1.1.6		d) Living accommodation	Sum	0.00			
1.1.7		e) Ablution and latrine facilities	Sum	0.00			
1.1.8		f) Tools and equipment	Sum	0.00			
1.1.9		g) Water supplies, electrical power and communication	Sum	0.00			
1.1.10		h) Dealing with water	Sum	0.00			
1.1.11		i) Access to and on site	Sum	0.00			
1.1.12	PSA 8.3.3	Other fixed charge obligations (Tenderer to specify)	Sum	0.00			
1.1.13	8.3.4	Removal of Site Establishment	Sum	0.00			
1.2		SCHEDULED TIME-RELATED ITEMS					
1.2.1	8.4.1	Contractual Requirements	Sum	0.00			
		Operate and maintain facilities on the Site:					
	8.4.2.1	Facilities for Employer's Agent					
1.2.2		a) Furnished offices	Sum	0.00			
1.2.3		c) Nameboard	No	0.00			
Total Carried Forward						2,156,920	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward						2,156,920	00
1.2.4		d) Survey assistants and materials	Sum	0.00			
	8.4.2.2	Facilities for Contractor					
1.2.5		a) Offices and storage sheds	Sum	0.00			
1.2.6		b) Workshops	Sum	0.00			
1.2.7		d) Living accommodation	Sum	0.00			
1.2.8		e) Ablution and latrine facilities	Sum	0.00			
1.2.9		f) Tools and equipment	Sum	0.00			
1.2.10		g) Water supplies, electric power and communications	Sum	0.00			
1.2.11		h) Dealing with water	Sum	0.00			
1.2.12		i) Access to and on site	Sum	0.00			
1.2.13	8.4.3	Supervision for Duration of Construction	Sum	0.00			
1.2.14	8.4.4	Company and Head office Overhead Costs for the Duration of the Contract	Sum	0.00			
1.2.15	8.4.5	Other time-related obligations (Tenderer to specify).....	Sum	0.00			
1.2.16	PSA 8.4.6	Contractors obligations in respect of Health and Safety	Sum	0.00			
1.2.17	PSA 8.4.7	Contractors obligations in terms of the Environmental Management Plan	Sum	0.00			
1.2.18	PSA 8.4.8	a) Contractors obligations in terms of the monthly remuneration to the appointed Community Liaison Officers (CLOs)	day	0.00			
1.2.19	PSA 8.4.8	b) Overheads, charges and profit on (a) above. (Please furnish the quantity for this item to be the same as the sum of line amounts for items 1.2.26 - 1.2.28).	%	0.00			
	PSA 8.4.9	Standing time costs					
1.2.20		a) Plant	day	0.00			
Total Carried Forward						2,156,920	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward						2,156,920	00
1.2.21		b) Labour	day	0.00			
1.2.22		c) Other resources (to be specified by the contractor).....	day	0.00			
1.3	PSA 8.5	SUMS STATED PROVISIONALLY BY EMPLOYERS AGENT					
1.3.1		a) Material testing by commercial laboratories if required by the Employer's Agent	Prov Sum	0.00			
1.3.2		b) Overhead, charges and profit on (a) above	%	0.00			
1.3.3		c) Lowering and moving of existing services	Prov Sum	0.00			
1.3.4		d) Overhead, charges and profit on (c) above	%	0.00			
1.4		DAYWORKS					
		Labour					
1.4.1	PSA 8.7	a) Unskilled labour	hr	0.00			
1.4.2	PSA 8.7	b) Semi skilled labour	hr	0.00			
1.4.3	PSA 8.7	c) Skilled labour	hr	0.00			
		Plant					
1.4.4	PSA 8.7	d) Excavators	hr	0.00			
1.4.5	PSA 8.7	e) Graders	hr	0.00			
1.4.6	PSA 8.7	f) Front-end loaders	hr	0.00			
1.4.7	PSA 8.7	g) Rollers	hr	0.00			
1.4.8	PSA 8.7	h) TLB	hr	0.00			
1.4.9	PSA 8.7	i) Trucks (10m3)	hr	0.00			
Total Carried Forward						2,156,920	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward						2,156,920	00
1.4.10	PSA 8.7	j) Water Truck	hr	0.00			
1.4.11	PSA 8.7	k) Plate Compactor/Rammer Compactor	hr	0.00			
1.4.12	PSA 8.7	l) High-Pressure Water Jetting Truck	hr	0.00			
1.5		TEMPORARY WORKS					
1.5.1	8.8.2	Deal with traffic	Sum	0.00			
		Existing services					
1.5.2	PSA 8.8.4	Supply (or hire) of specialist equipment for the detection of underground services (Prov)	Sum	0.00			
1.5.3	PSA 8.8.4	c) Excavate by hand in soft material to expose existing services	m ³	0.00			
1.5.4	PSA 8.8.4	d) Temporary protection of existing services	Sum	0.00			
		Cost of survey in Terms of the Land Survey Act					
1.5.5	8.8.5	a) Trigonometrical survey and plot boundary pegs - locate and record	Sum	0.00			
Total Carried Forward To Summary						2,156,920	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 2: SITE CLEARANCE

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
2		SITE CLEARANCE					
2.1	SANS 1200C	CLEAR SITE					
2.1.1	PSC 8.2.1	Clear and grub Site (including hauling to licensed dumping site and dumping levy)	ha	7.50	10,000.00	75,000	00
		Remove and grub large trees and tree stumps of girth					
2.1.2	8.2.2	a) over 1 m and up to and including 2 m	No	2.00	600.00	1,200	00
2.1.3	8.2.5	Take down existing fences	m	400.00	15.00	6,000	00
	8.2.7	Dismantle and remove pipelines, electricity transmission lines, cables, etc					
2.1.4		a) Existing sewer pipelines up to 350 mm dia.	m	10.00	25.00	250	00
2.1.5		b) Existing water pipelines up to 250 mm dia.	m	10.00	25.00	250	00
2.1.6		c) Existing stormwater pipelines up to 750 mm dia.	m	10.00	25.00	250	00
2.1.7	PSC 8.2.7	d) Existing overhead cables	m	120.00	40.00	4,800	00
2.1.8	PSC 8.2.7	e) Existing underground cables	m	20.00	40.00	800	00
		Topsoiling					
2.1.9		Remove topsoil to nominal depth of 100 mm and stockpile	m ³	7,500.00	20.00	150,000	00
2.1.10	PSC 8.2.11	Demolish and spoil kerbs	m	10.00	70.00	700	00
2.1.11	PSC 8.2.14	Demolish and removal of existing walls and dispose at an approved dump site	m	100.00	70.00	7,000	00
Total Carried Forward To Summary						246,250	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 3: EARTHWORKS

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
3		EARTHWORKS					
3.1	SANS 1200D	BULK EARTHWORKS (PLATFORM CREATION)					
	PSD 8.3.2	a) Excavate in all materials and use for embankment, backfill or dispose as directed					
3.1.1		i) Cut to Fill compacted to 90% MOD AASHTO	m ³	4,000.00	40.00	160,000	00
3.1.2		ii) Cut to Spoil	m ³	1,800.00	150.00	270,000	00
3.1.3		iii) Cut to Stockpile and maintain	m ³	4,000.00	20.00	80,000	00
3.1.4	PSD 8.3.4	c) Stockpile to Fill compacted to 90% MOD AASHTO (Rate shall include the loading of stockpiled materials, off-loading at the location of placement on the sites as indicated below, and include all hauling, transportation, spreading and compaction costs. Approximate transportation route lengths indicated.)	m ³	4,000.00	40.00	160,000	00
3.1.5	PSD 8.3.4	d) Import to fill of material from commercial sources compacted to 90% MOD AASHTO	m ³	500.00	230.73	115,365	00
	8.3.10	Topsoiling					
3.1.6		Import topsoil from stockpile to final level	m ³	7,500.00	20.00	150,000	00
Total Carried Forward To Summary						935,365	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 4: DETENTION POND

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
4		DETENTION POND					
4.1	SANS 1200 D	BULK EARTHWORKS					
	PSD 8.3.2	a) Excavate in all material and use for embankment, backfill or dispose as directed.					
4.1.1		i) Cut to Fill	m ³	40.00	40.00	1,600	00
4.1.2		ii) Cut to Spoil off site and dispose at approved dump site.	m ³	1,300.00	150.00	195,000	00
		b) Extra-over for:					
4.1.3	8.3.2	2) Hard Rock	m ³	10.00	400.00	4,000	00
4.2	SANS 1200 LE	STORMWATER POND OUTLET STRUCTURE					
4.2.1	PSLE 8.2.17	Construct retention pond outlet structure as per drawing _____, excluding cement supply and transport	No	1.00	12,000.00	12,000	00
4.3	SANS 1200 DM	SURFACE FINISHES					
4.3.1	8.3.3	e) Surface preparation and compaction of in-situ material to a depth of 100mm to minimum of 93% MOD AASHTO maximum density	m ³	40.00	40.00	1,600	00
4.4	SANS 1200 D	EROSION CONTROL					
		Grassing or other Vegetation cover					
4.4.1	PSD 8.3.11	a) Hydroseeding	m ²	250.00	6.00	1,500	00
Total Carried Forward To Summary						215,700	00

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GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 5: WATER RETICULATION

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
5		WATER RETICULATION					
5.1	SANS 1200 DB	EARTHWORKS (PIPE TRENCHES)					
		a) Excavate in all materials for trenches backfill, compact, and dispose of surplus material to:					
		Over and Up to					
	PSDB 8.3.2	0,0 m 1,5 m					
5.1.1		a) For pipes of nominal diameter up to 200 mm	m	1,800.00	50.00	90,000	00
5.1.2		b) For pipes of nominal diameter up to 250 mm	m	750.00	65.00	48,750	00
	PSDB 8.3.5	Existing services that intersect or adjoin a pipe trench					
5.1.3		a) Services that intersect a trench	No	5.00	50.00	250	00
5.1.4		b) Services that adjoin a trench	m	50.00	25.00	1,250	00
5.2	SANS 1200 LB	BEDDING (PIPES)					
	8.2.1	Provision of bedding from trench excavation:					
5.2.1		a) Selected granular material	m ³	610.00	80.00	48,800	00
5.2.2		b) Selected fill material	m ³	140.00	80.00	11,200	00
	8.2.2.3	Supply of bedding by importation from commercial sources					
5.2.3		a) Selected granular material	m ³	30.00	200.00	6,000	00
5.2.4		b) Selected fill material	m ³	70.00	200.00	14,000	00
5.3	SANS 1200 DB	EXCAVATION ANCILLARIES					
	8.3.3.1	Make up deficiency in backfill material					
5.3.1		a) From other necessary excavations within site boundaries	m ³	10.00	40.00	400	00
5.4	SANS 1200 L	MEDIUM PRESSURE PIPELINES					
	8.2.1	Supply, lay, joint, bed (class B), test and disinfect uPVC spigot and socket pipes with rubber ring joints and couplings:					
5.4.1		a) 110 mm dia. Class 12	m	2,000.00	80.00	160,000	00
5.4.2		b) 160 mm dia. Class 12	m	550.00	300.00	165,000	00
Total Carried Forward						545,650	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 5: WATER RETICULATION

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward						545,650	00
		Extra-over items for above for supply, lay and bed Specials complete with couplings:					
	8.2.2	1) Bends					
5.4.3		a) 110 mm dia. x 11.25 deg.	No	2.00	180.00	360	00
5.4.4		b) 110 mm dia. x 22.5 deg.	No	5.00	180.00	900	00
5.4.5		c) 110 mm dia. x 45 deg.	No	12.00	200.00	2,400	00
5.4.6		d) 110 mm dia. x 90 deg.	No	2.00	250.00	500	00
5.4.7		e) 160 mm dia. x 11.25 deg.	No	1.00	200.00	200	00
5.4.8		f) 160 mm dia. x 22.5 deg.	No	1.00	250.00	250	00
	8.2.2	2) Tees					
5.4.9		a) 110 mm equal tees	No	10.00	600.00	6,000	00
5.4.10		b) 160 mm equal tees	No	2.00	2,500.00	5,000	00
5.4.11		c) 110 mm x 260 mm reducing tees	No	10.00	2,500.00	25,000	00
	8.2.2	3) Reducers uPVC-uPVC					
5.4.12		a) 110 mm - 160 mm Reducer	No	2.00	1,200.00	2,400	00
	8.2.2	4) Plain Ended Ranger Coupling to fit FC-uPVC Connection sized:					
5.4.13		a) 100 mm - 110 mm	No	1.00	400.00	400	00
5.4.14		b) 225 mm - 200 mm	No	1.00	900.00	900	00
5.4.15		c) 250 mm - 267 mm	No	1.00	1,000.00	1,000	00
		Extra-over items for above for supply, lay and bed Specials complete with couplings:					
		Extra over item for above for supply, lay, joint, bed and test Class 16 anti-clockwise closing resilient seal gate valves with socketed ends, or equivalent:					
	8.2.3	3) Isolating Valves					
5.4.16		a) 110 mm dia.	No	20.00	3,000.00	60,000	00
5.4.17		b) 160 mm dia.	No	5.00	12,000.00	60,000	00
Total Carried Forward						710,960	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 5: WATER RETICULATION

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward						710,960	00
5.4.18	8.2.3	4) Fire Hydrants					
		a) Fire Hydrants as specified off a 110 mm dia. pipe	No	10.00	6,000.00	60,000	00
5.4.19	PSL 8.2.11	Anchor, thrust block and Pedestals, Class 25/19 concrete					
		Concrete	m ³	4.00	1,800.00	7,200	00
5.4.20	8.2.13	Valve and Hydrant Chambers					
		a) Isolating valves	No	25.00	1,100.00	27,500	00
5.4.21		b) Fire Hydrants	No	10.00	2,500.00	25,000	00
5.4.22	PSL 8.2.16	Connection to existing water reticulation up to 250 mm (details as per drawing _____), fittings measured elsewhere:					
		a) Reduced Tee Connection	No	1.00	1,000.00	1,000	00
5.4.23		b) Equal Tee Connection	No	1.00	1,000.00	1,000	00
5.4.24		c) Straight Reduced Connection	No	1.00	1,000.00	1,000	00
5.4.25		d) Straight Equal Connection	No	1.00	1,000.00	1,000	00
5.5	SANS 1200 LF	ERF CONNECTIONS (WATER)					
	8.2.1	Provide erf connections complete					
		1) Off 110 mm dia. pipes					
5.5.1		a) Short (2 m to 6 m), double	No	60.00	2,000.00	120,000	00
5.5.2		b) Short (2 m to 6 m), single	No	25.00	1,500.00	37,500	00
5.5.3		c) Long (6 m to 15 m), double	No	60.00	3,000.00	180,000	00
5.5.4		d) Long (6 m to 15 m), Single	No	20.00	2,000.00	40,000	00
		3) Off 160 mm dia. pipes					
5.5.5		a) Short (2 m to 6 m), double	No	10.00	3,000.00	30,000	00
5.5.6		b) Short (2 m to 6 m), single	No	5.00	1,500.00	7,500	00
5.5.7		c) Long (6 m to 15 m), double	No	10.00	4,000.00	40,000	00
5.5.8		d) Long (6 m to 15 m), Single	No	2.00	3,500.00	7,000	00
Total Carried Forward						1,296,660	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 6: SEWER RETICULATION

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
6		SEWER RETICULATION					
6.1	SANS 1200 DB	EARTHWORKS (PIPE TRENCHES)					
	PSDB 8.3.2	a) Excavate in all materials for trenches backfill, compact, and dispose of surplus/unsuitable material, for pipes up to 160 mm dia. for total trench depth:					
		Over and Up to					
6.1.1		0,0 m 1,5 m	m	1,130.00	100.00	113,000	00
6.1.2		1,5 m 2,5 m	m	600.00	140.00	84,000	00
6.1.3		2,5 m 3,5 m	m	200.00	280.00	56,000	00
6.1.4		3.5 m 4.5 m	m	40.00	700.00	28,000	00
	PSDB 8.3.2	a) Excavate in all materials for trenches backfill, compact, and dispose of surplus/unsuitable material, for pipes up to 250 mm dia. for total trench depth:					
		Over and Up to					
6.1.5		0,0 m 1,5 m	m	300.00	100.00	30,000	00
6.1.6		1,5 m 2,5 m	m	170.00	140.00	23,800	00
6.1.7		2,5 m 3,5 m	m	50.00	280.00	14,000	00
6.1.8		3.5 m 4.5 m	m	10.00	700.00	7,000	00
	PSDB 8.3.5	Existing services that intersect or adjoin a pipe trench					
6.1.9		a) Services that intersect a trench	No	5.00	50.00	250	00
6.1.10		b) Services that adjoin a trench	m	50.00	25.00	1,250	00
6.2	SANS 1200 LB	BEDDING (PIPES)					
	8.2.1	Provision of bedding from trench excavation					
6.2.1		a) Selected granular material	m ³	280.00	80.00	22,400	00
6.2.2		b) Selected fill material	m ³	660.00	80.00	52,800	00
	8.2.2.3	Provision of Bedding by Importation from Commercial sources					
6.2.3		a) Selected granular material	m ³	30.00	200.00	6,000	00
Total Carried Forward						438,500	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 6: SEWER RETICULATION

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward						438,500	00
6.2.4		b) Selected fill material	m ³	80.00	200.00	16,000	00
6.3	SANS 1200 LD	SEWERS					
	8.2.1	Supply, lay, joint, bed and test uPVC (heavy duty) Class 34 sewer pipes with spigot and socket rubber ring joints:					
6.3.1		a) 160 mm dia. Class 34	m	1,840.00	110.00	202,400	00
6.3.2		a) 200 mm dia. Class 34	m	660.00	400.00	264,000	00
		Manholes					
		Supply all materials and construct 1,05 m diameter precast concrete manholes, complete.					
		a) Manholes with Standard hinged cover and frame, as per drawing _____, for depths:					
	8.2.3	Over and Up to					
6.3.3		0,0 m 1,5 m	No	20.00	12,500.00	250,000	00
6.3.4		1,5 m 2,5 m	No	10.00	14,500.00	145,000	00
6.3.5		2,5 m 3,5 m	No	5.00	17,000.00	85,000	00
6.3.6		3.5 m 4.5 m	No	2.00	19,000.00	38,000	00
6.4		ERF CONNECTION (SEWER)					
		Provide and install sewer erf connections complete as per details on drawing no _____:					
	PSLD 8.2.6	1) Off 160 mm dia.:					
6.4.1		a) Short (2 m to 6 m), single	No	160.00	1,500.00	240,000	00
6.4.2		b) Long (6 m to 15 m), Single	No	160.00	3,000.00	480,000	00
	PSLD 8.2.6	2) Off 200 mm dia.:					
6.4.3		b) Long (6 m to 15 m), Single	No	10.00	4,000.00	40,000	00
6.4.4	8.2.9	Marker posts	No	330.00	15.00	4,950	00
6.4.5	PSLD 8.2.11	Connection to existing 150 mm sewer manhole inclusive of all costs	No	1.00	2,500.00	2,500	00
Total Carried Forward						2,206,350	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 7: STORMWATER DRAINAGE

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
7		STORMWATER DRAINAGE					
7.1	SANS 1200 DB	EARTHWORKS (PIPE TRENCHES)					
	PSDB 8.3.2	a) Excavate in all materials for trenches, backfill and dispose of surplus material For pipes with nominal dia up to 450mm Over and Up to					
7.1.1		0,0m 1,5m	m	1,500.00	130.00	195,000	00
7.1.2		1,5m 2,5m	m	800.00	200.00	160,000	00
7.1.3		2,5m 3,5m	m	50.00	280.00	14,000	00
	8.3.2	b) Extra - over item (a) above for:					
7.1.4		2) Hard rock excavation	m ³	5.00	400.00	2,000	00
7.2	SANS 1200 LB	BEDDING (PIPES)					
	8.2.1	Provision of bedding from trench excavation					
7.2.1		a) Selected granular material	m ³	550.00	80.00	44,000	00
7.2.2		b) Selected fill material	m ³	900.00	80.00	72,000	00
	8.2.2.3	Provision of Bedding by Importation from Commercial sources					
7.2.3		a) Selected granular material	m ³	60.00	200.00	12,000	00
7.2.4		b) Selected fill material	m ³	100.00	200.00	20,000	00
7.3	SANS 1200 LE	STORMWATER DRAINAGE					
	8.2.1	Supply, handle, lay, bed in Class B bedding, concrete pipe with spigot and socket joints					
7.3.1		a) 300 mm diameter Class 100D	m	340.00	300.00	102,000	00
7.3.2		b) 375 mm diameter Class 100D	m	2,000.00	350.00	700,000	00
7.3.3		c) 450 mm diameter Class 100D	m	10.00	500.00	5,000	00
	PSLE 8.2.8	Supply and Install Manholes, Catchpits					
		a) Manholes of shallow type as per detail drawing					
Total Carried Forward						1,326,000	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 7: STORMWATER DRAINAGE

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward						1,326,000	00
		i) Precast concrete for up to 450mm pipes - 1m dia manhole					
		Over and Up to					
7.3.4		0,0m 1,5m	No	22.00	8,000.00	176,000	00
7.3.5		1,5m 2,5m	No	17.00	9,000.00	153,000	00
		a) Manholes of deep type as per detail drawing _____					
		iii) Precast concrete for up to 450mm pipes - 1.25m dia manhole					
		Over and Up to					
7.3.6		2,5m 3,5m	No	2.00	17,000.00	34,000	00
	PSLE 8.2.8	b) Side inlet structure complete as per drawing _____ with heavy duty cover and frame:					
		Over and Up to					
7.3.7		0,0m 1,5m	No	35.00	8,000.00	280,000	00
		Subsurface drains					
7.3.8	PSLE 8.2.14	Excavation for subsoil drains	m3	150.00	170.00	25,500	00
7.3.9	PSLE 8.2.15	Supply and Install Subsurface Drains According to the detail on drawing _____	m	250.00	160.00	40,000	00
7.4		CONNECT TO EXISTING					
7.4.1	PSLE 8.2.16	Connecting subsurface drains to manholes, kerb inlets, etc	No	20.00	1,500.00	30,000	00
7.4.2	PSLE 8.2.18	Connection to existing 300mm pipe's stormwater manhole inclusive of all costs	No	1.00	1,500.00	1,500	00
7.4.3	PSLE 8.2.18	Connection to existing 375mm pipe's stormwater manhole inclusive of all costs	No	1.00	1,500.00	1,500	00
7.4.4	PSLE 8.2.18	Connection to existing 600mm pipe's stormwater manhole inclusive of all costs	No	1.00	1,500.00	1,500	00
Total Carried Forward To Summary						2,069,000	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 8: ROADWORKS

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
8		ROADWORKS					
8.1	SANS 1200 DM	EARTHWORKS (ROADS, SUBGRADE)					
		Treatment of roadbed					
	8.3.3	a) Roadbed preparation and compaction of material to a depth of 150 mm:					
8.1.1		2) Roads: to minimum of 93% MOD AASHTO maximum density	m ³	2,590.00	40.00	103,600	00
	8.3.4	Cut to fill					
8.1.2		a) Cut to fill on site compacted to 93% MOD AASHTO maximum density	m ³	400.00	38.00	15,200	00
	8.3.7	Cut to stockpile from:					
8.1.3		a) Soft excavations	m ³	100.00	40.00	4,000	00
	8.3.7	Stockpile to fill from:					
8.1.4		a) Soft excavations	m ³	100.00	55.00	5,500	00
	8.3.6	Cut to spoil from:					
8.1.5		a) Soft excavation	m ³	5,900.00	100.00	590,000	00
8.1.6	PSDM 8.3.17	Shaping and trimming of road reserve	m ²	5,000.00	4.00	20,000	00
Total Carried Forward To Summary						738,300	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 9: SUBBASE

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
9		SUBBASE					
9.1	SANS 1200 ME	SUBBASE					
	8.3.3	Construct Subbase with material from commercial sources					
9.1.1		a) Roads: 150mm G5 natural material compacted to 95% of MOD AASHTO maximum density	m ³	2,590.00	380.00	984,200	00
Total Carried Forward To Summary						984,200	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 10: BASE

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
10		BASE					
10.1	SANS 1200 MF	BASE					
	8.3.3	Construct base with material from commercial sources:					
10.1.1		a) Roads: 150mm G3 natural material compacted to 98% of MOD AASHTO maximum density	m ³	2,445.00	500.00	1,222,500	00
Total Carried Forward To Summary						1,222,500	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 12: KERBING AND CHANNELLING

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
12		KERBING AND CHANNELLING					
12.1	SANS 1200MK	KERBING AND CHANNELLING					
	8.2.1	Supply and lay kerbing and edging complete with bedding					
12.1.1		a) Type CK5 Mountable kerbing with radius greater than 20m	m	2,000.00	220.00	440,000	00
12.1.2		b) Type CK5 Mountable kerbing with radius less than 20m	m	500.00	280.00	140,000	00
12.1.3		c) Type MK10 Mountable kerbing with radius greater than 20m	m	2,000.00	150.00	300,000	00
12.1.4		d) Type MK10 Mountable kerbing with radius less than 20m	m	500.00	200.00	100,000	00
12.1.5		e) Type E1 edging with radius greater than 20m	m	50.00	100.00	5,000	00
12.1.6		f) Type E1 edging with radius less than 20m	m	10.00	100.00	1,000	00
12.1.7		h) Type BK2 kerbing with radius less than 20m	m	400.00	220.00	88,000	00
12.1.8		g) Type BK2/C1 combination kerbing with radius less than 20m	m	400.00	320.00	128,000	00
12.1.9		h) Type C2 Flat Channel dropped kerbing for Universal Access Ramp buffer zone	m	30.00	200.00	6,000	00
		Ancillaries:					
	8.2.6.1	Supply and install 1m long 25MPa precast kerbing transition sections:					
12.1.10		a) Type CK5 kerbing to Type MK10 kerbing	No	40.00	500.00	20,000	00
12.1.11		b) Type CK5 kerbing to BK2/C1 combination channel kerbing	No	20.00	500.00	10,000	00
12.1.12		c) Type MK10 kerbing to BK2 barrier kerbing	No	20.00	500.00	10,000	00
Total Carried Forward To Summary						1,248,000	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 13: ANCILLARY ROADWORKS

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
13		ANCILLARY ROADWORKS					
13.1	SANS 1200 MM	PERMANENT ROAD SIGNS					
	8.3.6	Statutory signs supplied and erected complete on 80mm diameter galvanised steel supports:					
13.1.1		i) 600mm Type R1 Stop Sign	No	50.00	950.00	47,500	00
13.1.2		ii) 600mm Type R2.1 Sign	No	4.00	1,100.00	4,400	00
13.1.3		iii) 600mm Type W332 and IN11.1 combined	No	14.00	1,100.00	15,400	00
13.1.4		iv) 600mm Type W401	No	10.00	500.00	5,000	00
13.1.5		v) 600mm Type W402	No	10.00	500.00	5,000	00
		Construction of speed hump as per drawing _____ complete, including saw cutting, breaking out & remove existing, tack coat & asphaltting for:					
13.1.6		Speed hump with a 5.0m road width	No	5.00	12,000.00	60,000	00
13.1.7		Raised T-Intersection on 5.5m & 6.4m wide intersecting roads	No	1.00	20,000.00	20,000	00
13.2		STREET NAME KERBS					
13.2.1	8.3.6	Street Name Kerb Details as per drawing _____	No	100.00	800.00	80,000	00
13.3		ROAD MARKINGS					
		Non-reflectorized paint applied at nominal rate of 0,42 l/m2 for:					
	8.4.1	a) White lines (broken or unbroken)					
13.3.1		i) 100mm wide	m	500.00	10.00	5,000	00
13.3.2		iii) 300mm wide	m	150.00	30.00	4,500	00
13.3.3		iv) RTM11 'Zig-zag'	m	120.00	40.00	4,800	00
13.3.4		v) RTM4 Pedestrian Crossing to 6.4 m Road Width	No	4.00	5,500.00	22,000	00
13.3.5		b) Yellow characters and symbols	m ²	10.00	120.00	1,200	00
13.3.6		c) White characters and symbols	m ²	30.00	120.00	3,600	00
Total Carried Forward To Summary						278,400	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

SECTION 14: CABLE DUCTS

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
14		CABLE DUCTS					
14.1	SANS 1200 LC	CABLE DUCTS					
		Excavation					
	8.2.2	a) Excavate in all materials for trenches, select, backfill, compact and dispose of all surplus material for ducts:					
		i) Three 110mm and one 160mm diameter for depths:					
14.1.1		Exceeding 0m but not exceeding 1.5m	m	140.00	90.00	12,600	00
		ii) One 110mm and one 160mm diameter for depths:					
14.1.2		Exceeding 0m but not exceeding 1.5m	m	500.00	70.00	35,000	00
14.2	SANS 1200 LB	BEDDING (PIPES)					
	8.2.1	Supply only of bedding from trench excavation					
14.2.1		a) selected granular material	m ³	320.00	80.00	25,600	00
14.2.2		b) selected fill material	m ³	640.00	80.00	51,200	00
14.3	SANS 1200 LC	CABLE DUCTS					
	PSLC 8.2.5	a) Supply and lay the following class 34 uPVC ducts on a class C bedding and prove, including provision of draw wire:					
14.3.1		i) 110mm diameter pipes	m	920.00	50.00	46,000	00
14.3.2		ii) 160mm diameter pipes	m	640.00	110.00	70,400	00
14.3.3	PSLC 8.2.8	a) Cable route markers, complete, installed, and record submitted	No.	160.00	10.00	1,600	00
Total Carried Forward To Summary						242,400	00

CONTRACT No.: 23-SBM-016

GEORGE KERRIDGE - UISP - TOWN PLANNING

COST ESTIMATE

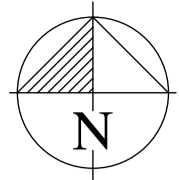
SUMMARY OF SECTIONS

SECTION	DESCRIPTION	AMOUNT (RAND)
1	SECTION 1: PRELIMINARY AND GENERAL	2,156,920.00
2	SECTION 2: SITE CLEARANCE	246,250.00
3	SECTION 3: EARTHWORKS	935,365.00
4	SECTION 4: DETENTION POND	215,700.00
5	SECTION 5: WATER RETICULATION	1,304,960.00
6	SECTION 6: SEWER RETICULATION	2,211,350.00
7	SECTION 7: STORMWATER DRAINAGE	2,069,000.00
8	SECTION 8: ROADWORKS	738,300.00
9	SECTION 9: SUBBASE	984,200.00
10	SECTION 10: BASE	1,222,500.00
11	SECTION 11: ASPHALT BASE AND SURFACING	2,683,040.00
12	SECTION 12: KERBING AND CHANNELLING	1,248,000.00
13	SECTION 13: ANCILLARY ROADWORKS	278,400.00
14	SECTION 14: CABLE DUCTS	242,400.00
	Sub-total	<u>16,536,385.00</u>
1	10% Contingencies	<u>1,653,638.50</u>
	Sub-total	<u>18,190,023.50</u>
2	15% VAT	<u>2,728,503.53</u>
	Total Carried Forward To Summary Of Schedules	<u>20,918,527.03</u>

8. ANNEXURE B – DRAWINGS

The following drawings form part of this document.

- 23-SBM-016_SUR101-01_Existing Site Layout Plan
- 23-SBM-016_SUR102-01_Proposed Site Development Plan
- 23-SBM-016_R201-01_Proposed Road Layout Plan
- 23-SBM-016_SW301-01_Proposed Stormwater Layout Plan
- 23-SBM-016_S401-01_Proposed Sewer Layout Plan
- 23-SBM-016_W501-01_Proposed Water Layout Plan



LEGEND

SYMBOL	DESCRIPTION
	EXISTING OVERHEAD ELECTRICAL LINE AND POLE
	EXISTING FENCE
	EXISTING STRUCTURES
	EXISTING BERM
	PROPOSED DEVELOPMENT AREA

DRAWING APPROVAL

AMENDMENTS

NO.	DATE	INITIALS	DESCRIPTION

REVISION 00 PHASE
WORKING



PROJECT

GEORGE KERRIDGE -
UISP - TOWN PLANNING

DRAWING TITLE

EXISTING SITE LAYOUT PLAN



UNIT 24, OEWERPARK PO BOX 12861
ROKEWOOD ROAD DIE BOORD
STELLENBOSCH 7813
7800 TEL: 021 886 6885
EMAIL: STELLENBOSCH@WEC-CONSULT.CO.ZA

DESIGNED BY WN DRAWN BY WN
DESIGNED CHECKED JB DRAWING CHECKED JB

APPROVED BY

JJ BRAND - P/TechEng - 2022301240 DATE

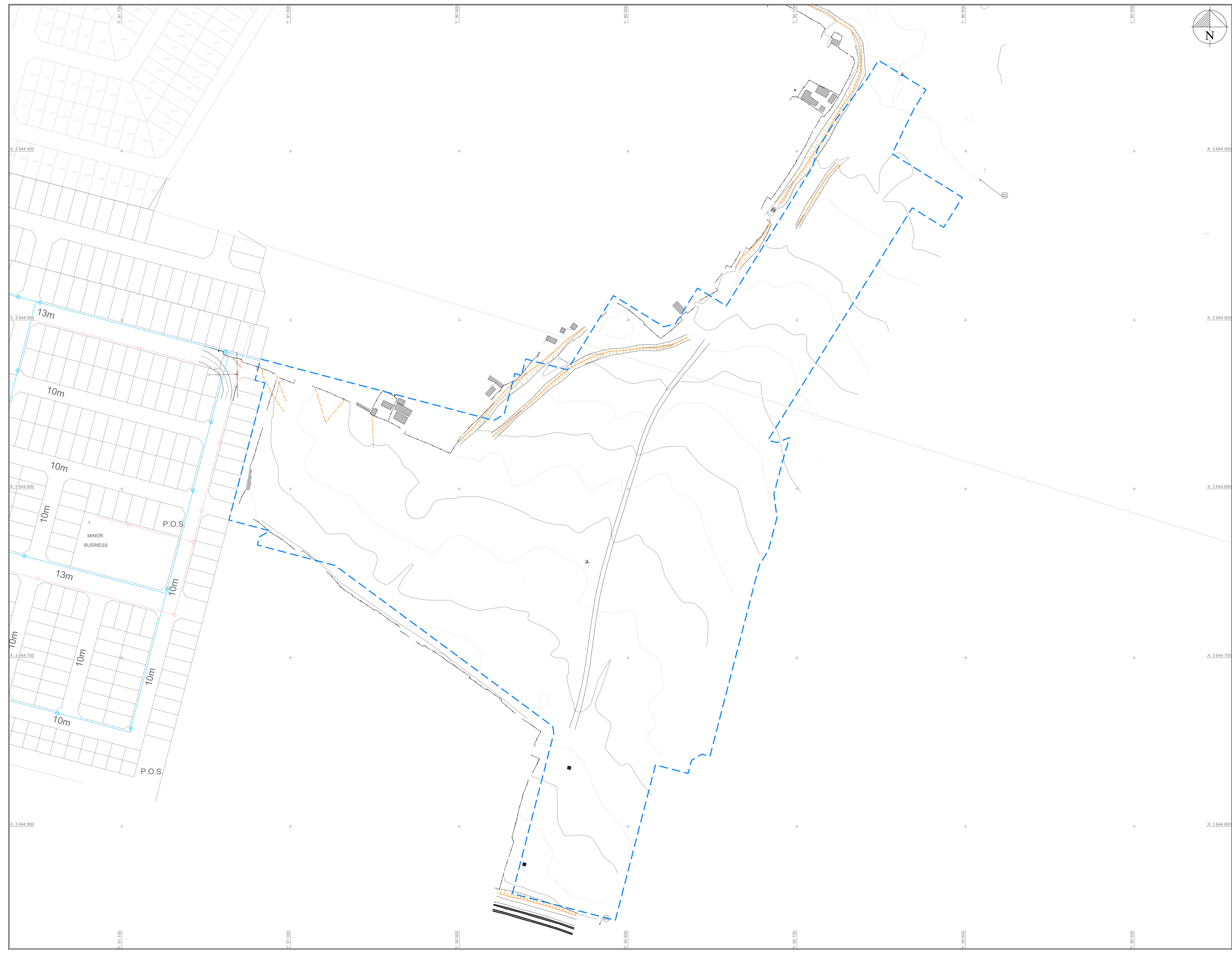
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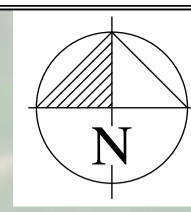
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23-SBM-016/DRW/WORKING

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DATE
JANUARY 2025

DRAWING NO.
23-SBM-016/SUR101/00





LEGEND

SYMBOL	DESCRIPTION
	EXISTING OVERHEAD ELECTRICAL LINE AND POLE
	EXISTING FENCE
	EXISTING STRUCTURES
	EXISTING BERM
	PROPOSED DEVELOPMENT AREA

DRAWING APPROVAL

AMENDMENTS

NO.	DATE	INITIALS	DESCRIPTION

REVISION 00 PHASE WORKING

CLIENT



PROJECT

GEORGE KERRIDGE -
UISP - TOWN PLANNING

DRAWING TITLE

EXISTING SITE LAYOUT PLAN



UNIT 24, OEWERPARK
ROKEWOOD ROAD
STELLENBOSCH
7600

PO BOX 12861
DIE BOORD
7813
TEL: 021 886 6885
EMAIL: STELLENBOSCH@WEC-CONSULT.CO.ZA

DESIGNED BY: WN DRAWN BY: WN
DESIGNED CHECKED: JB DRAWING CHECKED: JB

APPROVED BY

JJ BRAND - P/TechEng - 2022301240 DATE

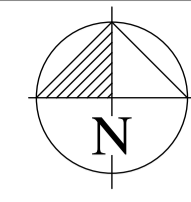
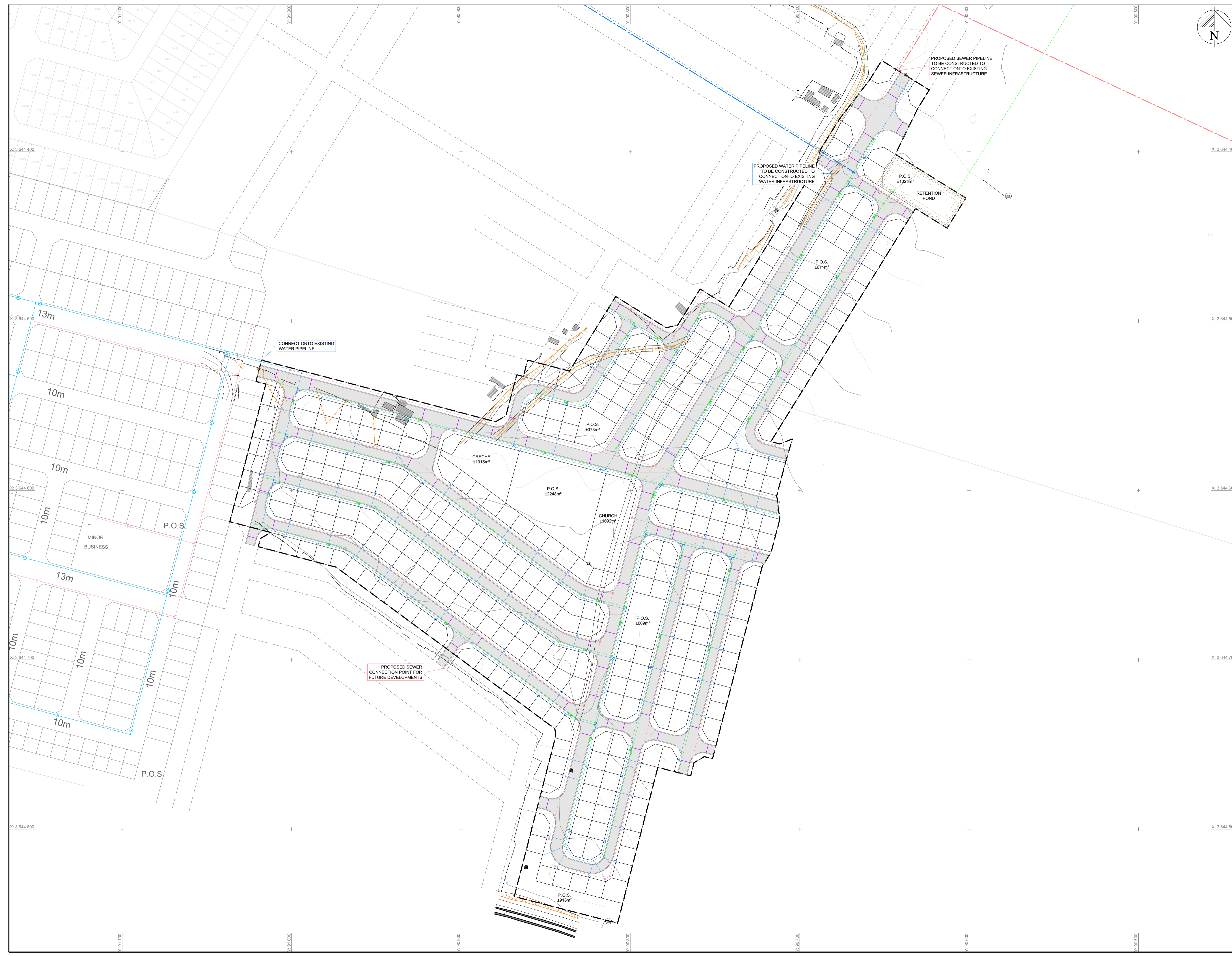
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FILE NO.
23-SBM-016/DRW/WORKING

SCALE
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DATE
JANUARY 2025

DRAWING NO.
23-SBM-016/SUR101/00



LEGEND

SYMBOL	DESCRIPTION
	EXISTING OVERHEAD ELECTRICAL LINE AND POLE
	EXISTING FENCE
	EXISTING STRUCTURES
	EXISTING BERM
	PROPOSED FUTURE DEVELOPMENT
	PROPOSED DEVELOPMENT AREA
	PROPOSED ROADS
	PROPOSED STORMWATER PIPELINE AND MANHOLE
	PROPOSED STORMWATER SIDE INLET
	PROPOSED STORMWATER HEADWALL
	PROPOSED SEWER PIPELINE AND MANHOLE
	PROPOSED WATER PIPELINE
	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT
	PROPOSED CABLE DUCTS

DRAWING APPROVAL

AMENDMENTS

NO.	DATE	INITIALS	DESCRIPTION

REVISION 00 PHASE WORKING

CLIENT



PROJECT

GEORGE KERRIDGE -
UISP - TOWN PLANNING

DRAWING TITLE

PROPOSED SITE DEVELOPMENT PLAN



UNIT 24, OEWERPARK
ROKEWOOD ROAD
STELLENBOSCH
7600

PO BOX 12861
DIE BOORD
7813
TEL: 021 886 6885
EMAIL: STELLENBOSCH@WEC-CONSULT.CO.ZA

DESIGNED BY: WN DRAWN BY: WN
DESIGNED CHECKED: JB DRAWING CHECKED: JB

APPROVED BY

JJ BRAND - P/TechEng - 2022301240 DATE: _____

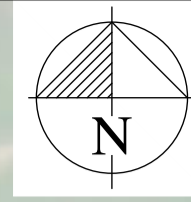
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FILE NO.
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DATE
JANUARY 2025

DRAWING NO.
23-SBM-016/SUR102/00



LEGEND

SYMBOL	DESCRIPTION
	EXISTING OVERHEAD ELECTRICAL LINE AND POLE
	EXISTING FENCE
	EXISTING STRUCTURES
	EXISTING BERM
	PROPOSED FUTURE DEVELOPMENT
	PROPOSED DEVELOPMENT AREA
	PROPOSED ROADS
	PROPOSED STORMWATER PIPELINE AND MANHOLE
	PROPOSED STORMWATER SIDE INLET
	PROPOSED STORMWATER HEADWALL
	PROPOSED SEWER PIPELINE AND MANHOLE
	PROPOSED WATER PIPELINE
	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT
	PROPOSED CABLE DUCTS

DRAWING APPROVAL

AMENDMENTS

NO.	DATE	INITIALS	DESCRIPTION

REVISION	00	PHASE WORKING
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CLIENT

GEORGE KERRIDGE -
UISP - TOWN PLANNING

DRAWING TITLE

PROPOSED SITE DEVELOPMENT PLAN



UNIT 24, OEWERPARK
ROKEWOOD ROAD
STELLENBOSCH
7600

PO BOX 12861
DIE BOORD
7813
TEL: 021 886 6895
EMAIL: STELLENBOSCH@WEC-CONSULT.CO.ZA

DESIGNED BY: WN DRAWN BY: WN
DESIGNED CHECKED: JB DRAWING CHECKED: JB

APPROVED BY

JJ BRAND - P/TechEng - 2022301240 DATE: _____

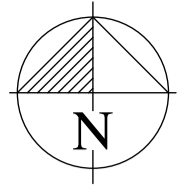
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DATE
JANUARY 2025

DRAWING NO.
23-SBM-016/SUR102/00



LEGEND

SYMBOL	DESCRIPTION
	PROPOSED DEVELOPMENT AREA
	PROPOSED ROADS
	PROPOSED STORMWATER PIPELINE AND MANHOLE
	PROPOSED STORMWATER SIDE INLET
	PROPOSED STORMWATER HEADWALL

NOTES

AMENDMENTS

NO.	DATE	INITIALS	DESCRIPTION

REVISION 00 PHASE WORKING



CLIENT

GEORGE KERRIDGE - UISP - TOWN PLANNING

DRAWING TITLE

PROPOSED STORMWATER INFRASTRUCTURE LAYOUT PLAN



UNIT 24, OEWERPARK
ROKEWOOD ROAD
STELLENBOSCH
7600

PO BOX 12861
DIE BOORD
7813
TEL: 021 886 6885
EMAIL: STELLENBOSCH@WEC-CONSULT.CO.ZA

DESIGNED BY: WN DRAWN BY: WN
DESIGNED CHECKED: JB DRAWING CHECKED: JB

APPROVED BY

JJ BRAND - P/TechEng - 2022301240 DATE _____

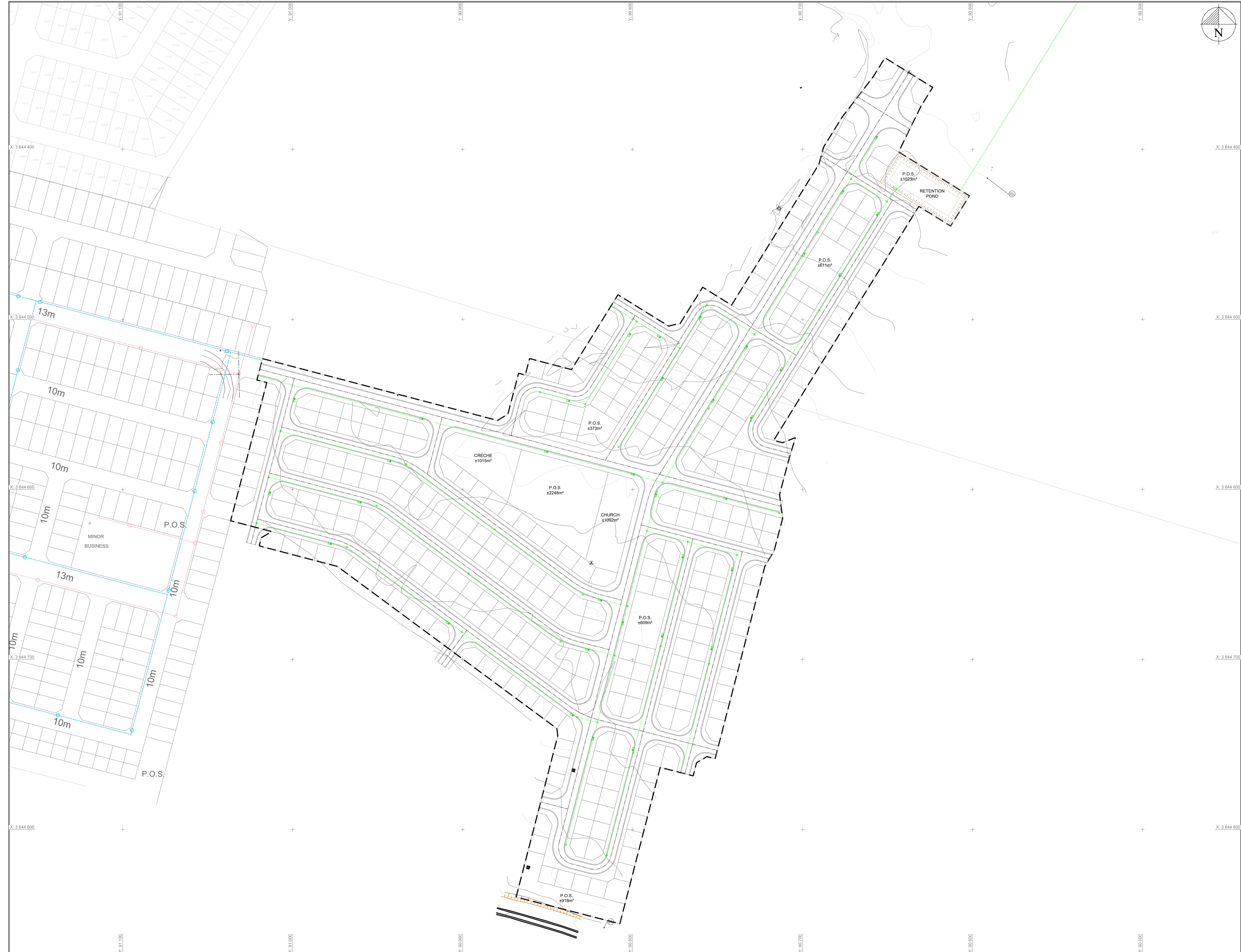
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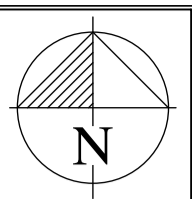
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23-SBM-016/DRW/WORKING

SCALE
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DATE
JANUARY 2025

DRAWING NO.
23-SBM-016/SW301/00





LEGEND

SYMBOL	DESCRIPTION
	PROPOSED DEVELOPMENT AREA
	PROPOSED ROADS
	EXISTING SEWER PIPELINE AND MANHOLE
	PROPOSED SEWER PIPELINE AND MANHOLE

NOTES

AMENDMENTS

NO.	DATE	INITIALS	DESCRIPTION

REVISION 00 PHASE WORKING

CLIENT



PROJECT

GEORGE KERRIDGE -
UISP - TOWN PLANNING

DRAWING TITLE

PROPOSED SEWER
INFRASTRUCTURE LAYOUT PLAN



UNIT 24, OEWERPARK
ROKEWOOD ROAD
STELLENBOSCH
7600

PO BOX 12861
DIE BOORD
7813
TEL: 021 886 6885
EMAIL: STELLENBOSCH@WEC-CONSULT.CO.ZA

DESIGNED BY: WN DRAWN BY: WN
DESIGNED CHECKED: JB DRAWING CHECKED: JB

APPROVED BY

JJ BRAND - P/TechEng - 2022301240 DATE

CONTRACT NO.
T 23-SBM-016

FILE NO.
23-SBM-016/DRW/WORKING

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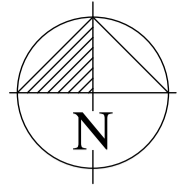
DATE
JANUARY 2025

DRAWING NO.
23-SBM-016/S401/00

PROPOSED SEWER PIPELINE
TO BE CONSTRUCTED TO
CONNECT ONTO EXISTING
SEWER INFRASTRUCTURE

PROPOSED SEWER
CONNECTION POINT FOR
FUTURE DEVELOPMENTS





LEGEND

SYMBOL	DESCRIPTION
	PROPOSED DEVELOPMENT AREA
	PROPOSED ROADS
	EXISTING WATER PIPELINE
	PROPOSED WATER PIPELINE
	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT WITH 60m RADIUS
	PROPOSED WATER HOUSE CONNECTION AND WATER METER

NOTES

AMENDMENTS

NO.	DATE	INITIALS	DESCRIPTION

REVISION 00 PHASE WORKING

CLIENT



PROJECT

GEORGE KERRIDGE - UISP - TOWN PLANNING

DRAWING TITLE

PROPOSED WATER INFRASTRUCTURE LAYOUT PLAN



UNIT 24, OEWERPARK
ROKEWOOD ROAD
STELLENBOSCH
7600

PO BOX 12861
DIE BOORD
7813
TEL: 021 886 6885
EMAIL: STELLENBOSCH@WEC-CONSULT.CO.ZA

DESIGNED BY: WN DRAWN BY: WN
DESIGNED CHECKED: JB DRAWING CHECKED: JB

APPROVED BY

JJ BRAND - P/TechEng - 2022301240 DATE

CONTRACT NO. T 23-SBM-016

FILE NO. 23-SBM-016/DRW/WORKING

SCALE 1:1000 (A1)

DATE JANUARY 2025

DRAWING NO. 23-SBM-016/W501/00

