

CENTURY PROPERTY DEVELOPMENT

KYALAMI HILLS EXTENSION 26

WATER AND SEWER SERVICES REPORT

PROPOSED TOWNSHIP SITUATED ON PORTION 73 OF THE FARM
BOTHASFONTEIN 406-JR

CONFIDENTIAL





KYALAMI HILLS EXTENSION 26

WATER AND SEWER SERVICES REPORT

CENTURY PROPERTY DEVELOPMENTS

FIRST VERSION
CONFIDENTIAL

PROJECT NO.: 43103411
DATE: DECEMBER 2025

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BUILDING 1, MAXWELL OFFICE PARK
MAGWA CRESCENT WEST, WATERFALL CITY
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Our ref.: 43103411

CONFIDENTIAL

JOHANNESBURG WATER

Development Control

17 Harrison Street

Marshalltown

Johannesburg

2000

Dear Claudio Bello:

Subject: Engineering Services report for Kylami Hills Extension 26 situated on Portion 73 of the Farm Bothasfontein 406-JR

Herewith, please find attached the Water and Sewer Services Report for the proposed development of Kylami Hills Extension 26 for your approval.

Please do not hesitate to contact myself should you have any questions.

Yours faithfully

Please assess the attached report and do not hesitate to contact myself should you have any questions.

Yours sincerely,

Nico Roets
Principal Associate
Pr Tech Eng

QUALITY MANAGEMENT

ISSUE/REVISION FIRST ISSUE

Remarks	
Date	December 2025
Prepared by	L. Moagi
Signature	
Checked by	N. Roets
Signature	
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Project number	
Report number	
File reference	

SIGNATURES

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PRODUCTION TEAM

CLIENT CENTURY PROPERTY DEVELOPMENT

Developer

Carlo Steenkamp

WSP

Project Civil Engineer

Nico Roets, *PR Tech Eng*

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1 INTRODUCTION

1.1 BACKGROUND

WSP was appointed by Mr Carlo Steenkamp of CENTURY PROPERTY DEVELOPMENT to compile a Water and Sewer Services Report for the proposed township development, Kyalami Hills Extension 26, located on Portion 73 (a portion of Portion 9) of the farm Bothasfontein No. 408 – JR, Gauteng. The development comprises five erven, including educational and private open space land uses

2 LOCATION OF DEVELOPMENT AND FLOODLINES

2.1 LOCALITY

The proposed development is situated to the east of Willaway X6 and Kyalami Hills X17, south of Kyalami Hills X21, west of the proposed extension of Provincial Road K73, and north of Kyalami Hills.

The site measures approximately 8.6375 hectare

See Figure 2-1 below for the locality plan



Figure 2-1: Locality Plan

2.2 FLOODLINES

The 1:100-year flood lines were determined by WSP and were taken into account with the finalization of the layout of the proposed development.

3 LAND USES

3.1 EXISTING LAND USES

The land uses are summarised in Table 3-1 below

Table 3-1: Proposed Land Uses

USE ZONE	AMOUNT OF ERVEN	AREA (HA)	COVERAGE	FAR	FLOOR AREA (M²)
Private Open Space	1	1.2246	N/A	N/A	N/A
Educational	2	0.3822	60	0.6	2293
Educational	3	2.0853	60	0.6	12512
Private Open Space	4	0.4630	N/A	N/A	N/A
Private Open Space	5	4.4824	N/A	N/A	N/A

Please refer to Appendix A for the Proposed Development Layout.

4 GEOTECHNICAL REPORT

A geotechnical report was not available at the time of finalising this report.

5 CIVIL ENGINEERING SERVICES

5.1 DESIGN STANDARDS

The design standards to be followed are in accordance with the standards specified in the “Guidelines for the Provision of Engineering Services and Amenities in Residential Townships” (Red Book).

The design of the water and sewer reticulation will be done in accordance with the latest edition of the Guidelines and Standards for the Design and Maintenance of Water and Sanitation Services issued by Johannesburg Water.

5.2 DESIGN SOFTWARE

The designs of the civil engineering services will be carried out using Autodesk Civil 3D design programs.

5.3 OWNERSHIP OF SERVICES

The internal services will be taken over by City of Johannesburg Municipality they will be responsible for the maintenance of the services.

6 WATER

6.1 BULK SERVICES

An existing 200mmØ water main runs parallel to Robyn Street on its southern side.

A 110mmØ supply pipe will be taken directly from this pipeline. The new pipe will be laid internally along the southern boundary of the proposed development and will cross the river via a shared sewer and water pipe bridge, supplying water to the erven located across the river.

Please refer to Appendix B for the Water Layout Plan.

6.2 WATER DESIGN CRITERIA

The design criteria to be used for the analysis and design of the water network are indicated in Table 6-1 below.

Table 6-1: Water design criteria

ITEM NO.	DESIGN ELEMENT	CRITERIA
1	Average Annual Daily Demand (AADD) for residential and recreational sites	Refer to Table 6-2 below
2	Gross Average Annual Daily Demand (GAADD)	Allow 10% losses
3	Instantaneous Peak Factor (IPF)	4.0
4	Design Peak Flow Rate (DPFR) for domestic flows	GAADD x IPF
5	Maximum static head	90m
6	Minimum residual head under conditions of domestic peak flows	24m
7	Maximum linear flow velocity under conditions of domestic peak flows	3.6m/s
8	Pipe type	uPVC pressure pipes
9	Minimum pipe class	Class 16
10	Fire flow at any one hydrant under the condition of domestic peak flows (one hydrant at a time)	25ℓ/s
11	Minimum residual head (fire plus domestic peak flow)	8m

12	Maximum linear flow velocity under conditions of fire-fighting	3.5m/s
13	Boundary roughness (K-Value)	0,1mm
14	Available static head	To be confirmed
15	Available dynamic head under fire flow conditions	To be confirmed
16	Flow formulae	D'Arcy Weissbach
17	Minimum pipe diameter	110mm

6.3 ESTIMATED WATER DEMAND

The estimated water demand for the proposed development is shown in Table 6-2 below.

Table 6-2: Estimated water demand

USE ZONE	KYALAMI HILLS EXTENSION 26				
	Area (ha)	FAR	Floor Area (m²)	Average Annual Daily Demand (AADD)	Water Demand (kℓ/d)
Private Open Space	1.2246	N/A	N/A	N/A	N/A
Educational	0.3822	0.6	2293	0.60 kL/100m²/day	13.76
Educational	2.0853	0.6	12512	0.60 kL/100m²/day	75.07
Private Open Space	0.4630	N/A	N/A	N/A	N/A
Total	8.6375				88.83

Peak Hourly Consumption (PHC) = Water demand x Peak Factor

$$= (88\,830 / 86,400) \times 4$$

$$= 1.028 \text{ ℓ/s}$$

Total water consumption = PHC + Total Fire Flow (TFF_{th})

$$= 1\,028 \text{ ℓ/s} + 25 \text{ ℓ/s}$$

$$= 1\,075 \text{ ℓ/s}$$

7 SEWER

7.1 BULK SERVICES

An existing 160mmØ sewage outfall is situated south of the proposed development, within a servitude between Kyalami Hills Extension 20 and the Kyalami Hills Lifestyle Estate.

A new 160mmØ outfall will be constructed parallel to the eastern side of the 1:100 year floodline, connecting to the existing outfall. In addition, a shared water and sewer pipe bridge will be built to provide service connections across the river.

Please refer to Appendix C for the Existing Sewer Layout Plan.

7.2 SEWER DESIGN CRITERIA

Table 7-1: Sewer Design Criteria

ITEM NO.	DESIGN ELEMENT	CRITERIA
1.	Average Annual Daily flow for special and residential Erven	Refer to Table 7-2 below
2.	Peak Factor	2,5
3.	Allowance for infiltration	15%
4.	Capacity of Sewer	Pipes may run full at the Total Design Flow, which includes the peak and infiltration flows
5.	Sewer pipe type	uPVC Class 34
6.	Minimum velocity	0,7m/s
7.	Minimum pipe diameter	160mm
8.	Minimum depth of cover	1,0m

7.3 ESTIMATED SEWERAGE FLOW

The estimated sewerage flow for the proposed development is shown in Table 7-2 below.

Table 7-2: Estimated Sewer Flow

USE ZONE	KYLAMI HILLS EXTENSION 26				
	Area (ha)	FAR	Floor Area (m²)	Average Annual Daily Flow (AADF)	Sewerage Flow (kℓ/d)
Private Open Space	1.2246	N/A	N/A	N/A	N/A
Educational	0.3822	0.6	2293	0.60 kL/100m²/day	13.76
Educational	2.0853	0.6	12512	0.60 kL/100m²/day	75.07
Private Open Space	0.4630	N/A	N/A	N/A	N/A
Total	8.6375				88.83

Peak Flow = Peak Factor x Infiltration allowance (15%)

= 1.028 x 2.5 X 1.15

= 2.955/s

8 BULK SERVICES CONTRIBUTIONS

The amount of Bulk Services Contributions for civil services payable to City of Johannesburg will be determined with compilation of the service agreement.

9 PRELIMINARY COST ESTIMATES

Table 9-1: Cost Estimate

ITEM NO.	DESCRIPTION	AMOUNT (R)
CONSTRUCTION COSTS		
	CIVIL ENGINEERING SERVICES	
1	External Services	
1.1	Preliminary and General	R47 400-00
1.2	Site Clearance	R25 000-00
1.3	Sewer Mains	R325 000-00
1.4	Water Mains	R45 000-00
ESCALATED TOTAL 1 (EXTERNAL SERVICES)		R442 400-00
2		
2.1	Preliminary and General	R76 620-00
2.2	Site Clearance	R30 000-00
2.3	Sewer Mains	R136 000-00
2.4	Water Mains	R472 500-00
ESCALATED TOTAL 2 (INTERNAL SERVICES)		R715 120-00
ESCALATED TOTAL (1 + 2) (VAT Excl)		R1 157 520-00
15% VAT		R173 628-00
TOTAL (VAL Incl)		R1 331 148-00

Please note:

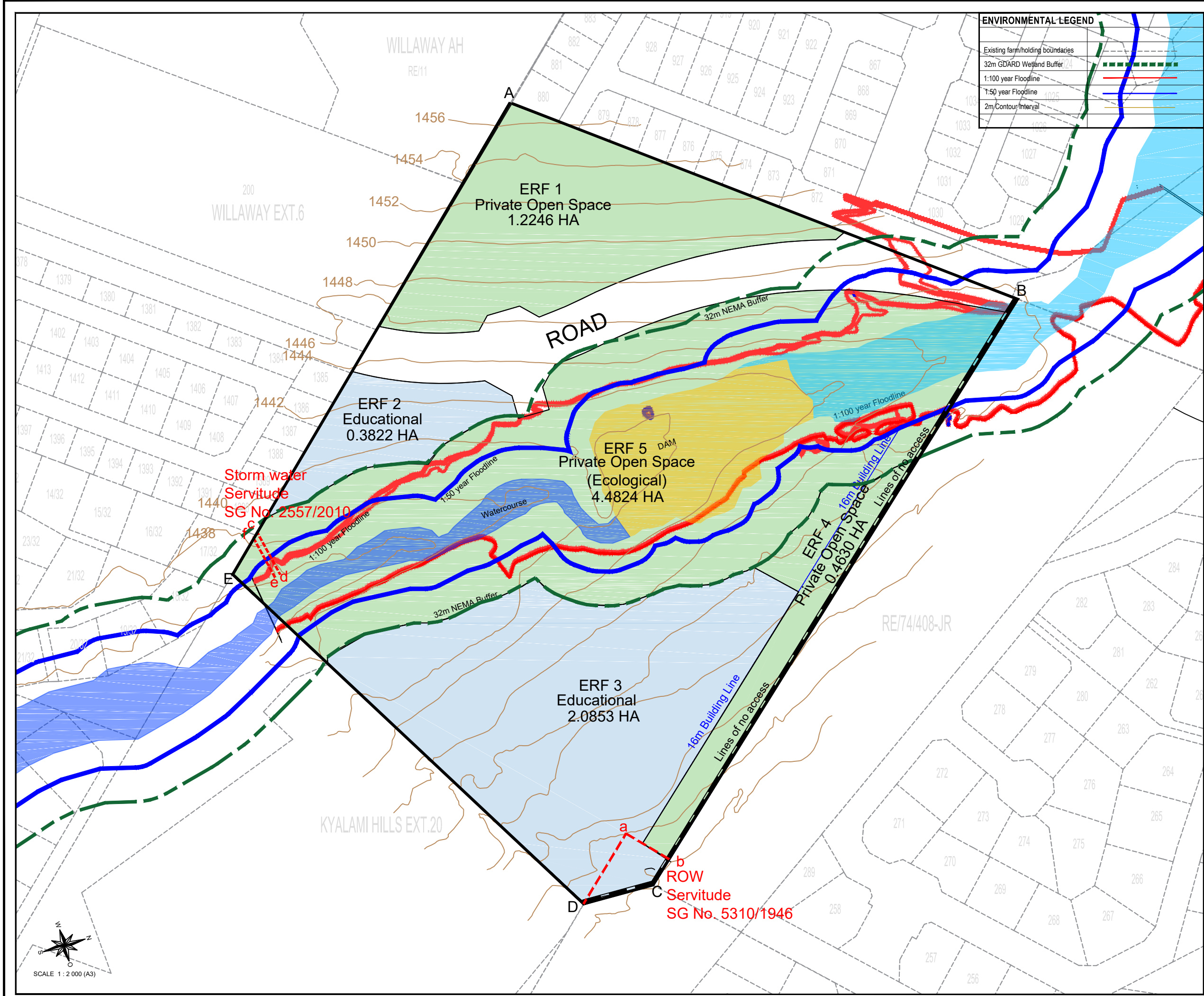
- This estimated value does not include any upgrades Johannesburg Water might require for the existing water and sewer systems. The upgrades can only be confirmed by Johannesburg Water upon approval of this report.

- Escalation is the term to describe fluctuations in the price of individual, specific goods, and services. A 7% per annum escalation rate over a period of 6 years was implemented.

APPENDIX

A PROPOSED TOWNSHIP LAYOUT

A large, white, stylized chevron graphic pointing downwards, located in the bottom left corner of the page. It is composed of two overlapping triangular shapes, creating a sense of depth and movement.



ENVIRONMENTAL LEGEND

Existing farm/holding boundaries	
32m GDARD Wetland Buffer	
1:100 year Floodline	
1:50 year Floodline	
2m Contour Interval	

PROPOSED TOWNSHIP
KYALAMI HILLS EXTENSION 26

PORTION 73 OF THE FARM BOTHASFONTEIN 406-JR

LOCALITY



LEGEND

DESCRIPTION	KEY	ERF #	No.	Area
Private Open Space		1	1	1.2246 ha
Educational		2	1	0.3822 ha
Educational		3	1	2.0853 ha
Private Open Space		4	1	0.4630 ha
Private Open Space (Ecological)		5	1	4.4824 ha
TOTAL			5	8.6375 ha

GENERAL NOTES

- Proposed township is located within the City of Johannesburg Metropolitan Municipality.
- All Dimensions and areas are approximate pending final survey
- The Contours are in Accordance with Schedule 1.4(11)(a) of the City of Johannesburg Metropolitan Municipal Planning By-Law, 2016.
- Cadastral survey done by R Nel, Professional Land Surveyor; Coordinate System WG 29
- Township Boundary represented by Figure: A-B-C-D-E-A.

SERVITUDE NOTES

- Figure D,a,b,C,D represents a Right of Way Servitude vide Diagram SG. 5310/4946.
- Figure c,d,e,f,c represents a 3m wide storm water servitude vide diagram SG No 2557/2010.

LEGEND

Township Boundary	
Servitudes	
Building Lines	
Lines of No Access	

FLOOD LINE NOTE

It is hereby certified that the property shown on this diagram is affected by floodwater up to 50 and 100 year recurrence interval event. Determined in accordance with Section 144 of the National Water Act (Act 36 of 1998)

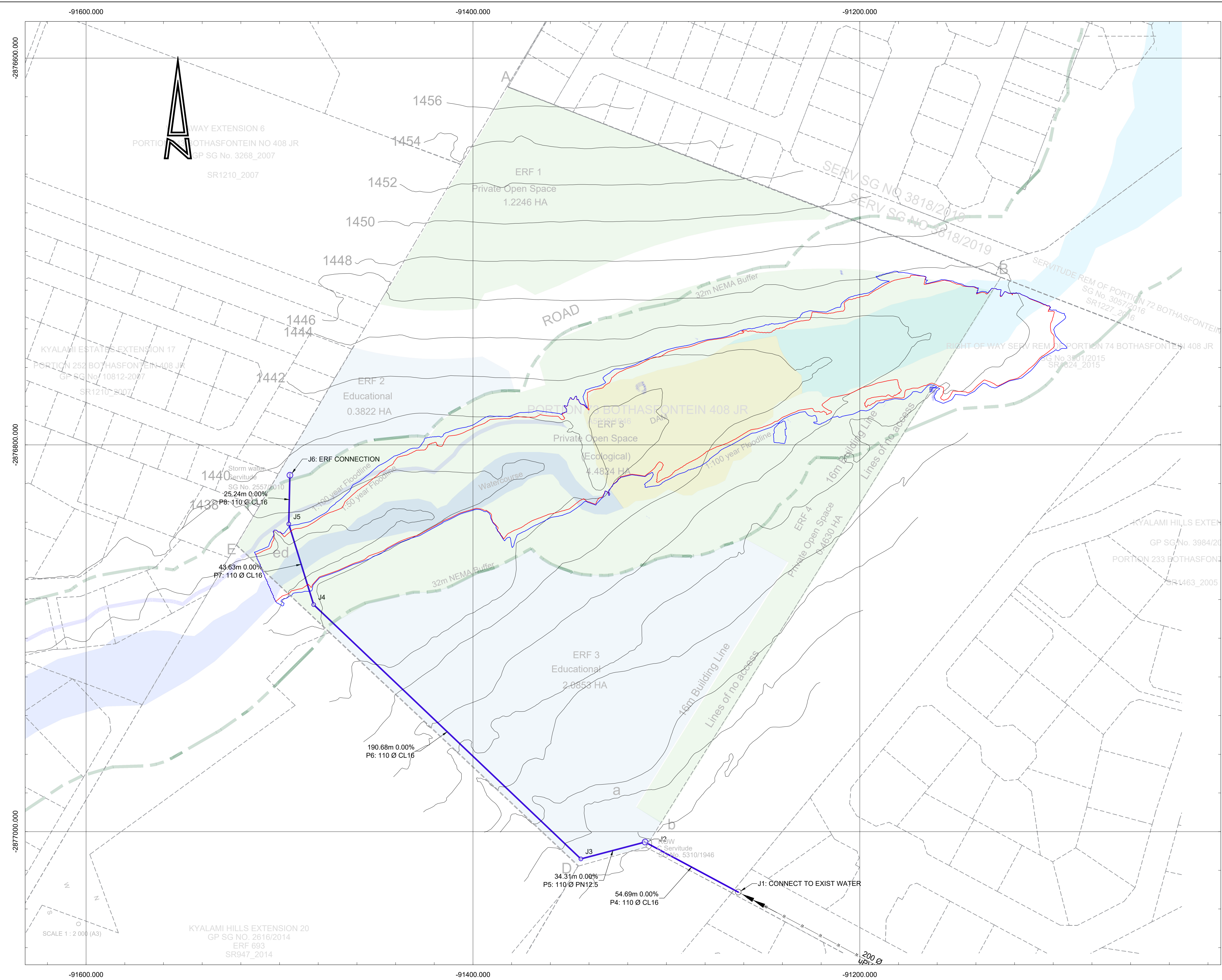
H. Schreurs
Name Signature Pr. Number 960262

DATE: 2025/12/02	DRAWN BY: UI	JOB NUMBER: TP047
PLAN NUMBER: L01/01	REVISION NUMBER: 01	CLIENT NAME: CPD
FAX: 086 6939 973	TEL: 011 300 8700	
EMAIL: lauren@century.co.za	CEL: 072 318 5110	
POSTAL ADDRESS: P.O. Box 70406 Bryanston 2010	STREET ADDRESS: Holding 5 Lynx Road Treesbank Midrand	

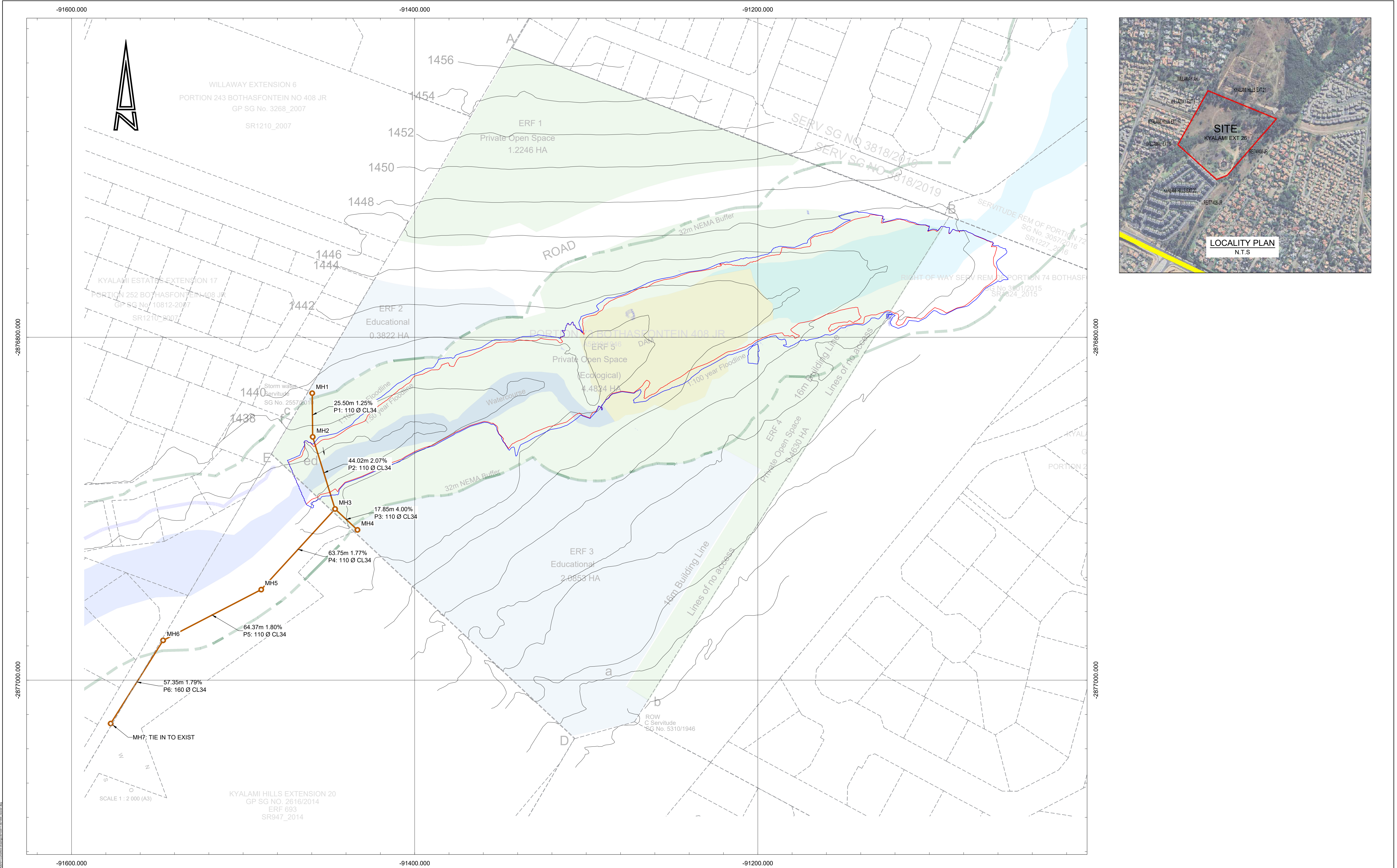


APPENDIX

B WATER LAYOUT PLAN

[illegible]

C SEWER LAYOUT PLAN



				ARCHITECT:		CLIENT:		PROJECT:		SCALE: 1:1000		CHECKED: N. ROETS	APPROVED: N. ROETS
						CENTURY PROPERTY DEVELOPMENTS Century Property Developments (Pty) Ltd 5 Lynx St, Treestbank AH, Midrand, 1683		WSP WSP Group Africa (Pty) Ltd Enabling Infrastructure Building 1, Maxwell Office Park, Mayega Crescent West, Waterfall City, Midrand, 2191, South Africa PO Box 98807, Sloane Park 2152 Tel: +27(0)11-361-1300 Fax: +27(0)11-361-1301 www.wsp.com		DESIGN: L. MOAGI		DRAWN: L. MOAGI	DATE: 2025/12/11
								TITLE:		PROJECT No: 43103411		DRAWING No: WSP-DR-CV-SE1000	REV: A
								PROPOSED SEWER LAYOUT PLAN		© COPYRIGHT RESERVED			
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