PROPOSED TOWNSHIP

HOMES HAVEN EXT. 65

SITUATED ON PORTION 243

OF THE FARM ROODEKRANS 183 IQ

REPORT:

STORM WATER MANAGEMENT PLAN

REVISION 0: ISSUED FOR COUNCIL APPROVAL

NOVEMBER 2024

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COMLEY PROJECTS (PTY) LTD.

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Founders Hill

Modderfontein

1609

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1. General Information

Property name	Homes Haven Ext. 65
Project number	CP-24-013
Addressed to	Roads & Storm water Department Mogale City
Prepared by	Comley Projects (Pty) Ltd.
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Contact number	+27 83 642 3545
Client Details	
Name	Hunter Theron Inc. Represented by Nita Conradie
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Contact number	+27 11 472 1613
Consulting Civil Engineer details	
Full Name and Surname	Andrew Comley
Professional registration number	Pr Tech (Eng): 200870219
Registered Company Name	Comley Projects (Pty) Ltd.
Physical address	24 High Street Founders Hill Modderfontein 1609
Email address	andrew@comley.co.za
Contact number	+27 83 642 3545

2. Background

The owner of the property, Portion 243 of the farm Roodekrans 183 IQ, intends to establish a two erf. township to be known as Homes Haven Ext. 65. One erf. is to be zoned as Residential 2 with a maximum of 20 dwelling units to be developed while the second erf is to be zoned as Special for restaurant and guest house purposes. The proposed site development plan is attached as **Annexure A**.

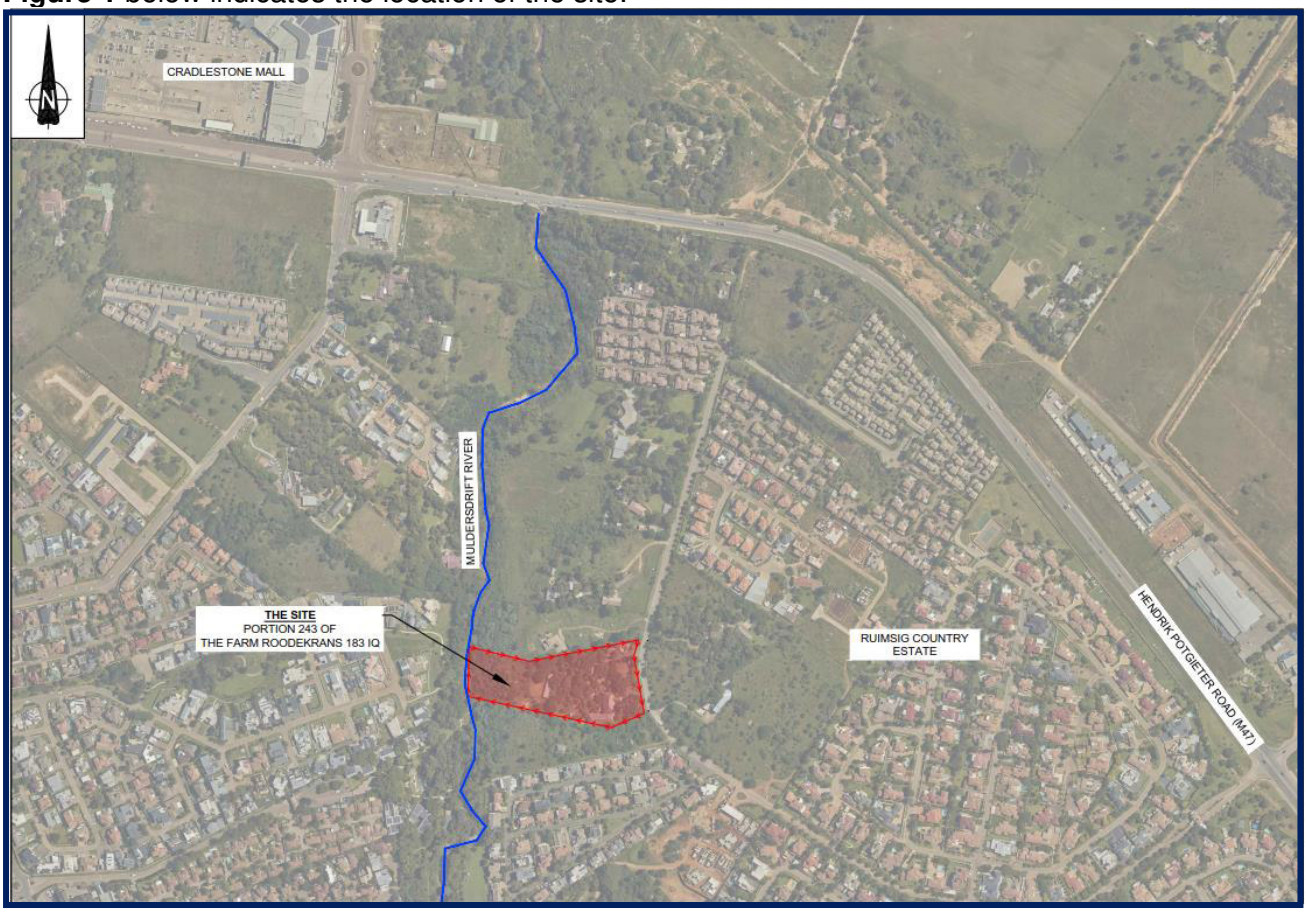
As part of the township application process, a storm water management report is required by Mogale City Local Municipality.

This report has been prepared to comment on the proposed storm water management of the site.

3. Site Locality

The site is situated in Krugersdorp, inside the Ruimsig Country Estate on Portion 243 of the Farm Roodekrans 183 IQ. Access to the estate is off Hendrik Potgieter Road (M47), with access to the site gained along the eastern boundary via a private internal road within the estate. Muldersdrift River can be found along the western boundary of the site with Cradlestone Mall approximately 815 m north west of the site. The site is within the jurisdiction of the Mogale City Local Municipality.

Figure 1 below indicates the location of the site.



4. Site Characteristics

4.1 Rainfall

The area of Krugersdorp has an average annual rainfall of 750 mm with most of the rain falling during January, November, and December.

4.2 Topography

The site measures 15 967 m^2 or 1.5967 ha.

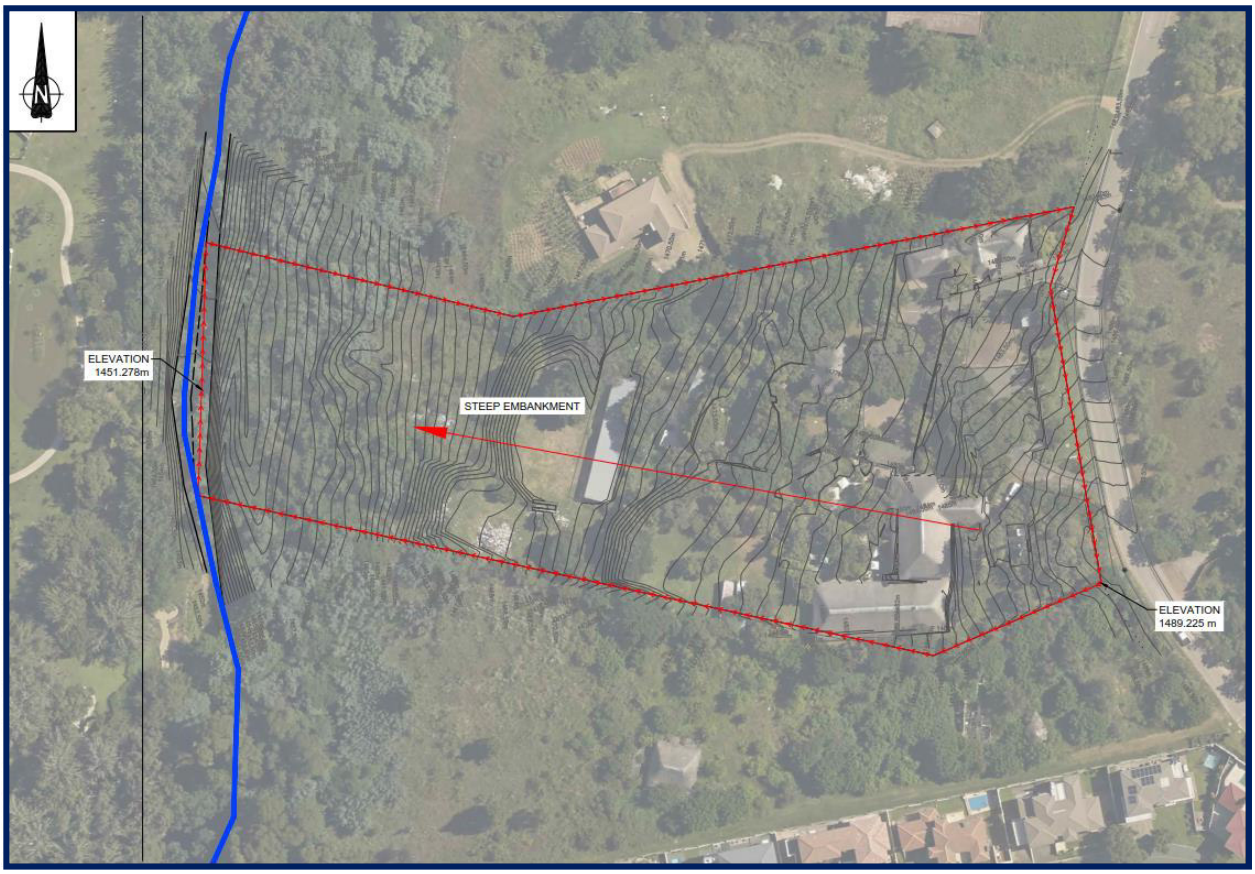
Elevation across the site ranges from 1489.225 m to 1451.278 m.

The natural ground of the site falls in a north westerly direction. The site is at an elevation of 1489.225 m at the south eastern corner and falls to an elevation of 1451.278 m along the western boundary near the Muldersdrift River. The average slope of the natural ground is 17.25 %. Note: There is a steep embankment located approximately 80 east of the river.

The site is affected by a 1:100 year flood line as well as a 32 m riparian buffer as a result of the Muldersdrift River along the western boundary.

There are existing dwellings on the site which will remain as is. There are a number of medium to large trees scattered around the site with the remainder of the site covered in grass.

Figure 2 below indicates the current topography and land use.



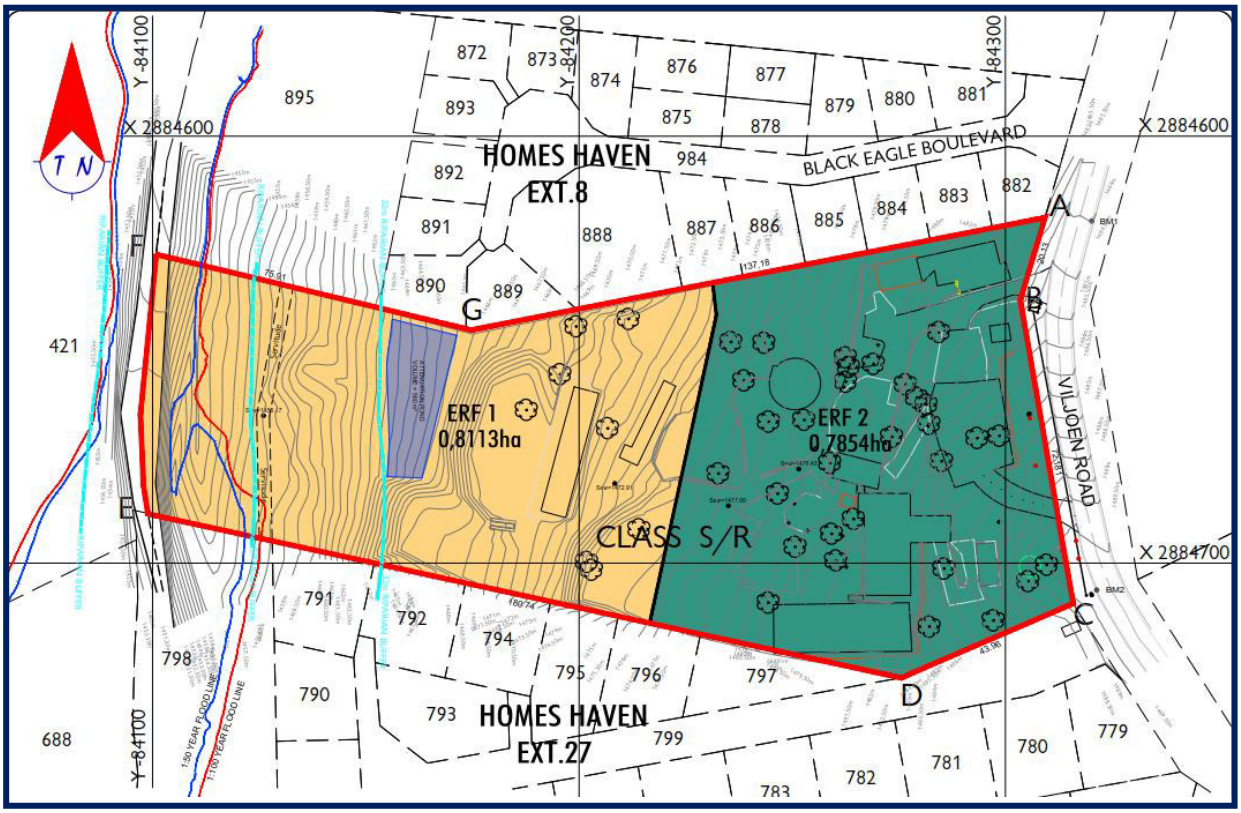
5. Zoning

The site will consist of two erven, namely Erf. 1 and Erf. 2. Erf. 1 will be zoned as Residential 2 and Erf. 2 as Special for Restaurant and Guesthouse. The table below summarises the proposed zoning conditions.

Table 1: Zoning Characteristics

	Erf. 1	Erf. 2
Size	0.8113 ha	0.7854 ha
Zoning	Residential 2	Special
Height	3 storeys	2 storeys
Density	25 units per ha (max. 24 units)	Max. 10 rooms for guesthouse

Figure 3 below indicates the two erven. A larger copy is attached as **Annexure B**.



6. Civil Engineering Services

Information about the existing services in the area was obtained via visual inspection of the site.

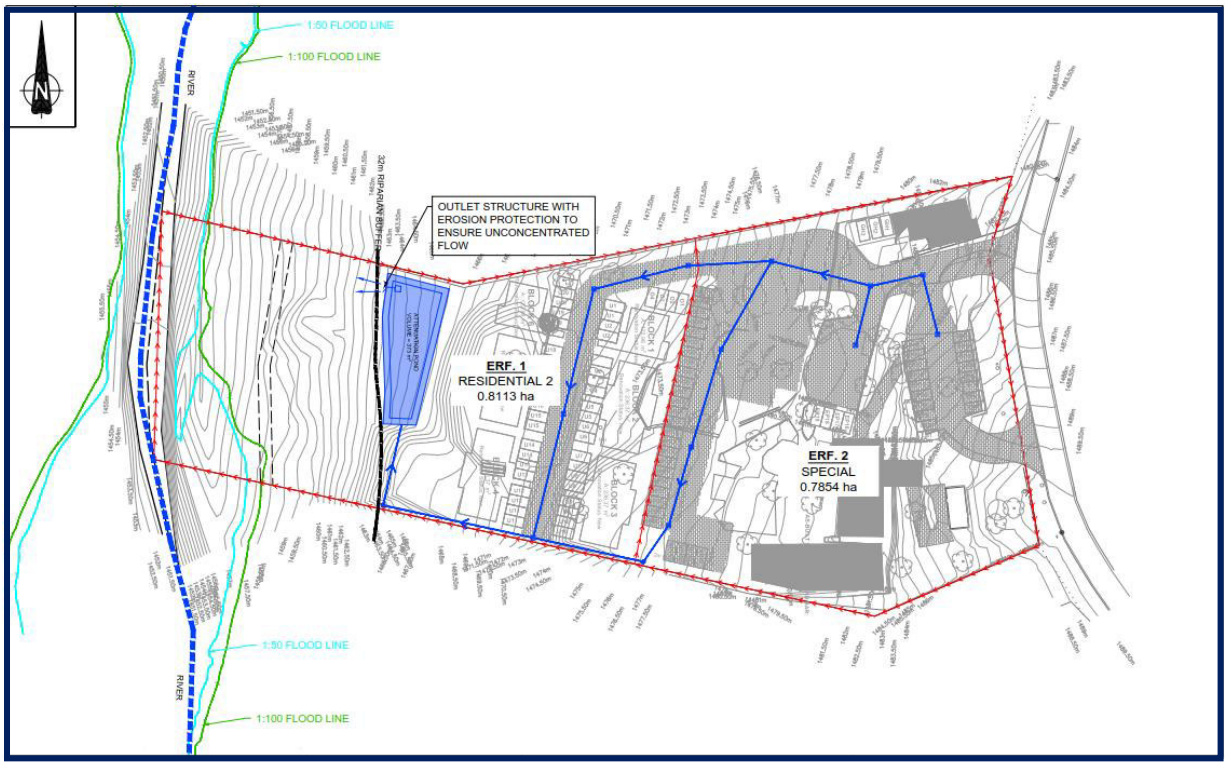
6.1 Existing Storm Water Infrastructure

There is no formal storm water infrastructure that the site can connect into. Run-off flows towards the river.

6.2 Proposed Storm Water Management

Run-off from both Erf. 1 and Erf. 2 will be collected via a conventional piped storm water system and stored in a trapezoidal grass-lined attenuation pond located on Erf. 1. The pond will be sized to accommodate run-off from both Erf. 1 and Erf. 2. Run-off will be released from the attenuation pond via a controlled outlet to discharge onto the flood plain and into the Muldersdrift River. The attenuation control measures will be discussed in detail in section 6.4.

Figure 4 below indicates the proposed storm water layout. A larger copy is attached as **Annexure C**.



6.3 Storm Water Run-Off and Modelling

The Rational method is an accepted method to determine the peak flow in terms of run-off from a site and has been selected to calculate the run-off.

6.3.1 Rational Method Summary

The site has a total area of 15 967 m^2, split into two erven. Erf. 1 used for residential purposes has an area of 8 113 m^2 however due to the flood line and 32 m riparian buffer only 4 777 m^2 can be developed. Erf. 2 will be utilized for a restaurant and guest house and covers 7 854 m^2. The above information has been used to calculate run-off from the site.

The results of the rational method for the site are summarised in the tables below:

Table 2: Site run-off characteristics (Erf. 1)

	Pre-Developed	Post-Developed
Area	4 777 m^2	4 777 m^2
Longest watercourse	96 m	105 m
Average slope	0.181 m/m	0.164 m/m
Roughness C	0.290	0.900

Table 3: Results for Pre-Developed run off (Erf. 1)

Return Period	1:2	1:5	1:10	1:20	1:25	1:50	1:100
Point Intensity mm/hr	81.4	111.9	152.6	178.1	208.6	254.4	307.8
Flow Q m^3/s	0.02	0.03	0.05	0.06	0.07	0.09	0.12

Table 4: Results for Post-Developed run off (Erf. 1)

Return Period	1:2	1:5	1:10	1:20	1:25	1:50	1:100
Point Intensity mm/hr	64.0	88.0	120.0	140.0	164.0	200.0	242.0
Flow Q m^3/s	0.08	0.11	0.14	0.17	0.20	0.24	0.29

The calculation of stormwater run-off for Erf. 1, for both pre and post-development is attached as ***Annexure D***.

Table 5: Site run-off characteristics (Erf. 2)

	Pre-Developed	Post-Developed
Area	7 854 m^2	7 854 m^2
Longest watercourse	96 m	105 m
Average slope	0.164 m/m	0.150 m/m
Roughness C	0.286	0.912

Table 6: Results for Pre-Developed run off (Erf. 2)

Return Period	1:2	1:5	1:10	1:20	1:25	1:50	1:100
Point Intensity mm/hr	79.6	109.5	149.3	174.2	204.0	248.8	301.1
Flow Q m^3/s	0.04	0.05	0.08	0.10	0.12	0.15	0.19

Table 7: Results for Post-Developed run off (Erf. 2)

Return Period	1:2	1:5	1:10	1:20	1:25	1:50	1:100
Point Intensity mm/hr	64.0	88.0	120.0	140.0	164.0	200.0	242.0
Flow Q m^3/s	0.13	0.18	0.24	0.28	0.33	0.40	0.48

The calculation of stormwater run-off for Erf. 2, for both pre and post-development is attached as ***Annexure E***.

Table 8 below summarises the 1:5 pre developed and 1: 25 year post developed flows for the entire site.

	1:5 pre	1:25 post
Erf. 1 (Residential)	0.03 m^3/s	0.20 m^3/s
Erf. 2 (Special)	0.05 m^3/s	0.33 m^3/s
TOTAL	**0.08 m^3/s**	**0.53 m^3/s**

6.4 Attenuation

Mogale Municipality requirements regarding attenuation are that the difference between the 1:5 year pre-developed flow and the 1:25 year post-developed flow be stored on site and released at the 1:5 year pre-developed flow rate. The attenuation pond is designed to be of sufficient capacity to convey:

- storm water without flooding or otherwise damaging any existing or proposed structure.
- any post-development peak stormwater runoff from a development site resulting from a 5-year recurrence interval design storm event of any duration from 0.25 to 24 hours; and
- any existing stormwater runoff upstream from a development site that will be conveyed through the site, taking potential development upstream from the site into account.

Note: Erf. 1 is affected by a 1:100 year flood line as well as a 32m riparian buffer. As a result only 4 777 m ^{2} can be developed. The total area used for attenuation calculations was as follows:

Erf. 1	=	4 777 m^2
Erf. 2	=	7 854 m^2
Total	=	12 631 m^2

6.4.1 Method of Attenuation

The proposed method of attenuation for the site will be:

- Run-off from both Erf. 1 and Erf. 2 will be collected via a conventional piped system and discharged into a grass lined trapezoidal attenuation pond. The pond will be situated above the 32 m riparian buffer zone, on the eastern portion of Erf. 1.
- The pond will be sized to contain the total required storage volume of 373 m^3 as calculated using the Hydrograph Generation and Reservoir Routing calculation.
- The outlet from the pond will be the conventional tower type arrangement with an outlet pipe discharging run-off towards the Muldersdrift River. All infrastructure will be built outside of the 1:100 year flood line as well as the 32 m riparian buffer. An erosion control spreader box is recommended at the end of the outlet pipe to limit erosion to the surrounding area.
- The outlet from the pond is sized to release a flow rate no higher than the combined (Erf. 1 + Erf. 2) 1:5 year pre-developed flow rate of 0.08 m^3/s for storms smaller than the 1:25 year recurrence.
- The grass lined attenuation pond will allow water to infiltrate and recharge ground water resources below the pond.
- All attenuation control measures will be located within the site and maintained by the owner.

6.4.2 Attenuation Calculation

The attenuation volume was calculated using the Hydrograph Generation and Reservoir Routing calculation sheet as made available by Chris Brooker of CBA Specialist Engineers.

In summary:

Catchment area	1.3 ha (Erf. 1 and 2 combined)
Time of Concentration	15 minutes
Run-off C	0.91
Q in	0.492 m^3/s
Q out	0.079 m^3/s
Stored Volume	373 m^3

The calculation of required attenuation is attached as ***Annexure F.***

6.4.3 Effectiveness of the Scheme

The proposal to construct a pond with a throttled outlet is a conventional method that has been successfully constructed at many other similar developments.

The stored volume has been calculated using the method as proposed by Specialist Consultant, Chris Booker and associates and accepted by many local municipalities.

The attenuation pond does cater for storms larger than the 1:25 year event by including a 200 mm free board above the outlet tower. An emergency overflow will allow for the run-off from larger storms to exit the pond and discharge onto the flood plain and flow as surface flow towards the Muldersdrift River.

The table below summarizes the outlet flow and storage characteristics for various return periods.

Table 9: Outlet flow and storage characteristics

	1:5 year	1:25 year	1:50 year
Tank Storage (m^3)	218	373	445
Flow in Pipe (m^3/s)	0.059	0.079	0.388

Implementation of the proposed permanent stormwater system within parameters of the specified design and construction standards will ensure adequate and safe drainage of the proposed development.

6.5 Storm Water Management summary

- Run-off from Erf. 1 and Erf. 2 will be collected and attenuated to be released from the grass lined attenuation pond at the combined 1:5 year pre-developed flow (0.079 m^3/s), in line with municipal regulations.
- The attenuation pond caters for run-off from both Erf. 1 and Erf. 2.
- All infrastructure will be built outside the 1:100 year flood line.

7. Flood line

The site is affected by a 1:100 year flood line. The flood line delineation is attached as **Annexure G**.

8. Recommendation

Storm water will be collected and stored in a grass-lined attenuation pond. The attenuation pond will cater for run-off from both Erf. 1 and Erf. 2 and will discharge out of the pond via a 450 mm diameter outlet pipe with head wall and velocity breakers. The pond will be sized to store run-off according to municipal regulations with discharge from the pond being reduced to the combined 1:5 year pre-developed flow of 0.079 m^3/s. All new storm water infrastructure will be constructed outside the 1:100 year flood line.

All applicable design standards and requirements have been considered and we therefore recommend that the township application be approved in accordance with the local Council's development objective for the area.

We trust that this report meets with your approval and avail ourselves should there be clarification needed on any aspect.

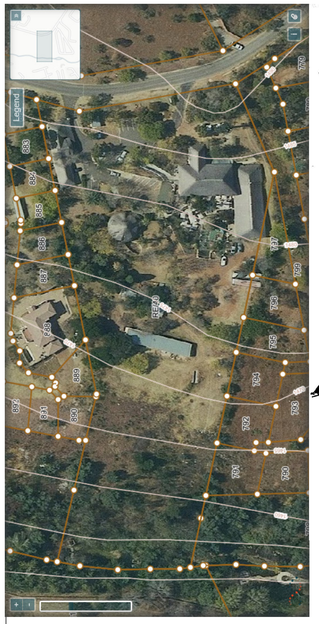
Yours faithfully,

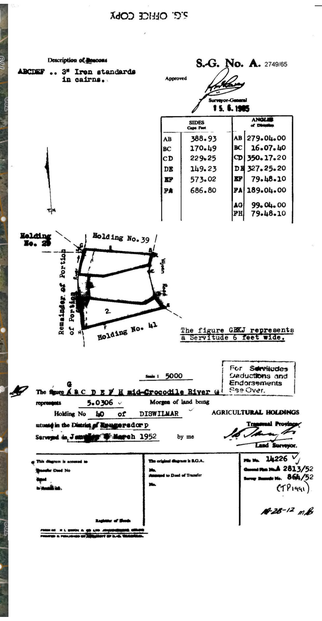


Comley Consulting (Pty) Ltd.
Andrew Comley (Pr Tech Eng)

Annexure A

Proposed Site Development Plan





S.G. OFFICE COPY

Description of Beacons
ABCDEF .. 3" Iron standards in cairns.

S.G. No. A. 2749/65

Approved

Surveyor-General
15.6.1965

SIDES Chain Lks.		ANGLES of Deviation	
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BC	170.49	BC	16.07.40
CD	229.25	CD	350.17.20
DE	149.23	DA	307.25.20
EF	573.02	EF	79.48.10
FA	686.80	FA	189.04.00
		AG	99.04.00
		FH	79.48.10

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Scale 1 : 5000

The figure GHKJ represents a Servitude 6 feet wide.

For Servitudes Deductions and Endorsements See Over.

The figure A B C D E F G H J K L M and Crocodile River W represents 5.0306 Morgen of land being Holding No 40 of DISWILMAR situated in the District of Rengeradorp Surveyed in January to March 1952 by me

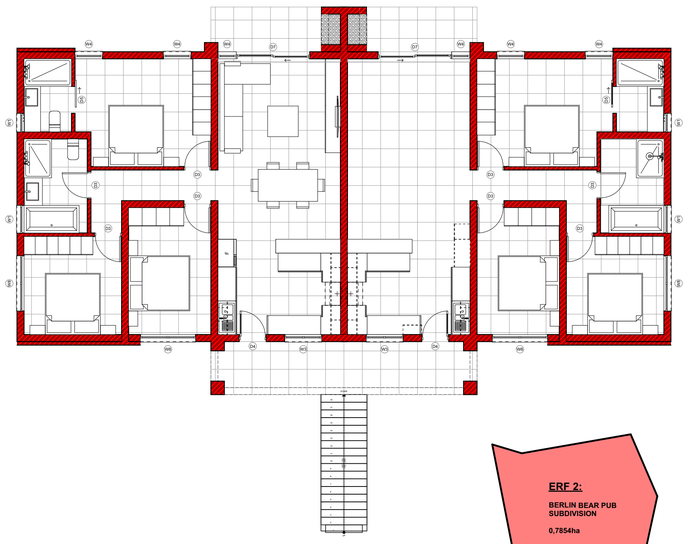
AGRICULTURAL HOLDINGS
Transvaal Province
Land Surveyor.

This diagram is annexed to Transfer Deed No. dated

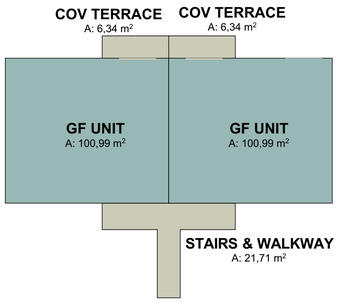
The original diagram is S.G.A. No. Annexed to Deed of Transfer No.

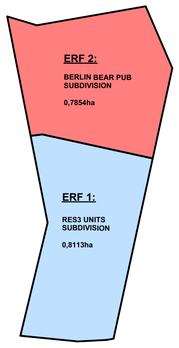
File No. 18226
General Plan No. A 2811/52
Survey Records No. 84A/52
(TPINW)

Registrar of Deeds

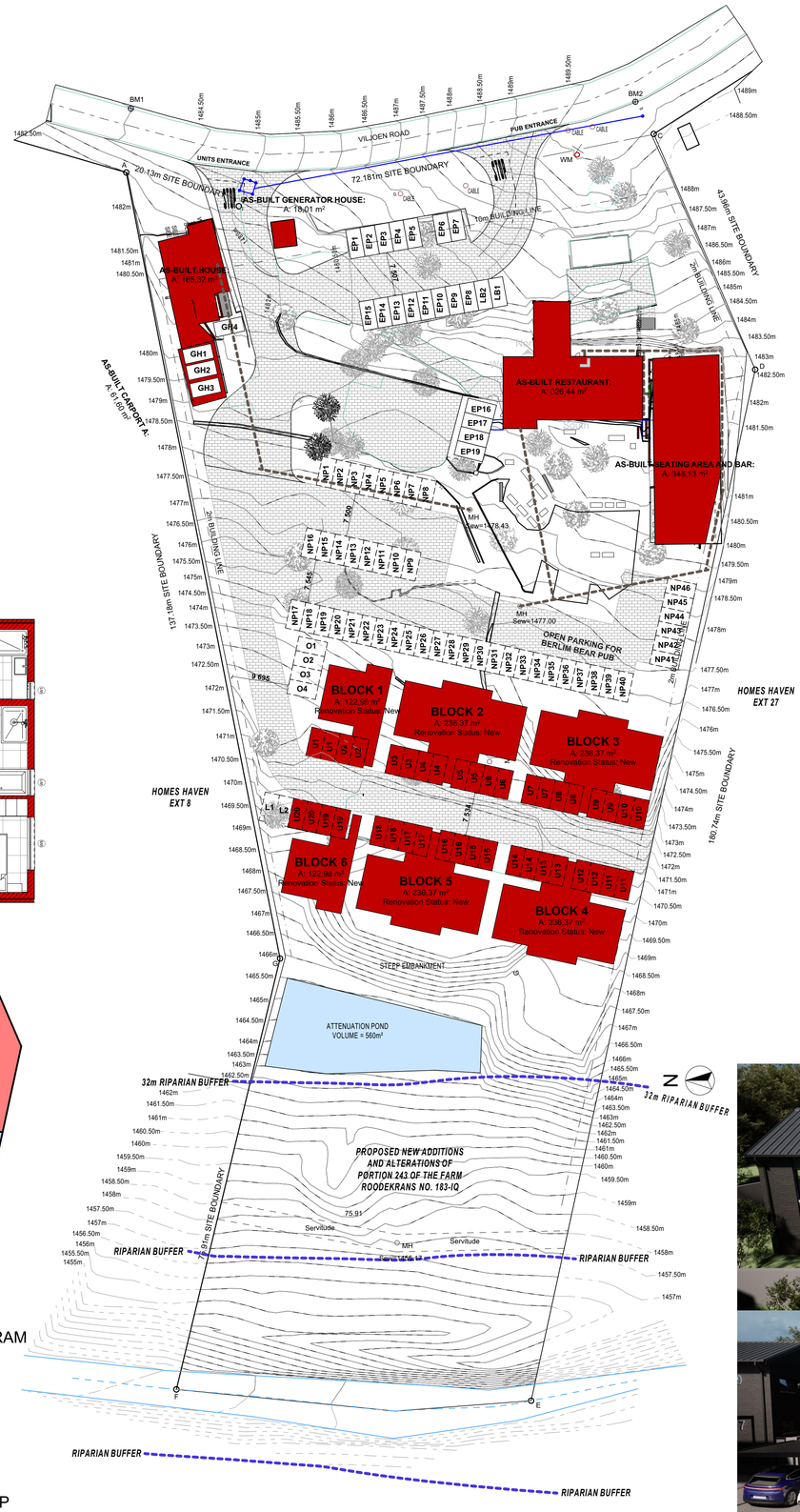


PROPOSED NEW UNITS (16 UNITS IN TOTAL - 4 BLOCKS)
SCALE 1:100





SUBDIVISION DIAGRAM
SCALE 1:2000



SDP
SCALE 1:500

COVERAGE - ERF 1	
ZONE	AREA
GROUND FLOOR	
BLOCK 1	122,98
BLOCK 2	236,37
BLOCK 3	236,37
BLOCK 4	236,37
BLOCK 5	236,37
BLOCK 6	122,98
CARPORT	500,00
	1 691,44 m²

PARKING COUNT: ERF 1	
PARKING TYPE	QUANTITY
COVERED PARKING	40
LOADING BAY	2
OPEN PARKING	4
	46

COVERAGE - ERF 2	
ZONE	AREA
GROUND FLOOR	
AS-BUILT CARPORT A:	61,60
AS-BUILT GENERATOR HOUSE:	18,01
AS-BUILT HOUSE:	165,32
AS-BUILT RESTAURANT:	326,44
AS-BUILT SEATING AREA AND BAR:	348,13
	919,50 m²

VR - PARKING RESTAURANT	
PARKING TYPE	QUANTITY
GUESTHOUSE PARKING	4
LOADING BAY	2
RESTAURANT PARKING	65
	71



SCHEDULE OF RIGHTS
ERF: 1

PROPERTY DESCRIPTION

ERF/PORTION:	ERF 243 ROODEKRANS 183-iq	**SITE AREA:**	8113 (0,8113ha)

ZONING INFORMATION:

TOWNPLANNING SCHEME:	MOGALE CITY	**AMENDMENT SCHEME:**	/
USE ZONE:	RESIDENTIAL 2	**ANNEXURE NO:**	

DEVELOPMENT CONTROL MEASURES

PERMISSIBLE	CONTROL	ACTUAL
3 STOREYS	**HEIGHT ZONE**	2 STOREYS
3 STOREYS	**HEIGHT OF BUILDINGS**	2 STOREYS
	COVERAGE %	20,85%
	COVERAGE M² (FOOTPRINT)	1691,44
	FLOOR AREA RATIO	0,15
0	**FLOOR AREA**	1211,88
25/HA	**DENSITY**	20/HA
24	**NO DWELLINGS UNITS ON ERF**	20

PARKING

TOTAL PARKING BAYS:	REQUIRED BAYS:	PROVIDED BAYS:
1 PARKING BAYS PER 2 BEDROOM UNIT:	20	40
1 OPEN PARKING PER 5 UNITS	4	4
1 LOADING BAY PER 10 UNITS	2	2
TOTAL PARKING BAYS:	24	46
SURPLUS OF PARKING BAYS:	22	

SCHEDULE OF RIGHTS
ERF: 2

PROPERTY DESCRIPTION

ERF/PORTION:	ERF 243 ROODEKRANS 183-iq	**SITE AREA:**	7854 (0,7854ha)

ZONING INFORMATION:

TOWNPLANNING SCHEME:	MOGALE CITY	**AMENDMENT SCHEME:**	/
USE ZONE:	SPECIAL " RESTAURANT & GUESTHOUSE"		

DEVELOPMENT CONTROL MEASURES

PERMISSIBLE	CONTROL	ACTUAL
2 STOREYS	**HEIGHT ZONE**	2 STOREYS
2 STOREYS	**HEIGHT OF BUILDINGS**	2 STOREYS
	COVERAGE %	11,71%
	COVERAGE M² (FOOTPRINT)	919,5
	FLOOR AREA RATIO	0,17
	FLOOR AREA	1336,05
10 ROOMS	**GUESTHOUSE**	4 ROOMS
	NO DWELLINGS UNITS ON ERF	

PARKING

TOTAL PARKING BAYS:	REQUIRED BAYS:	PROVIDED BAYS:
RESTAURANT: 6 BAYS PER 100m²	60	65
GUESTHOUSE: 1 BAY PER ROOM	4	4
1 LOADING BAY FOR FIRST 2000m²	1	2
TOTAL PARKING BAYS:	64	71
SURPLUS OF PARKING BAYS:	7	

COUNCIL APPROVAL STAMP:

COPYRIGHT NOTE:

ALL REQUIREMENTS OF MUNICIPAL AND OTHER AUTHORITIES HAVE TO BE ADHERED TO. COPYRIGHT OF THIS DRAWING IS INVESTED IN VANRICK ARCHITECTURE CC. ONLY WITH PRIOR WRITTEN PERMISSION OF THE AUTHOR MAY THIS DRAWING BE REPRODUCED. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE WORK COMMENCES. REFER ANY DISCREPANCIES TO THE TECHNOLOGIST IMMEDIATELY DRAWINGS NOT TO BE SCALED - REFER TO DIMENSIONS.

GENERAL NOTES:

- THIS DRAWING FORMS PART OF A SET OF DRAWINGS AND SHOULD NOT BE READ INDEPENDENTLY. IT SHOULD BE READ IN CONJUNCTION WITH THE FOLLOWING PROFESSIONAL'S DRAWINGS:
  - STRUCTURAL ENGINEERS DRAWINGS
  - LAND SURVEYOR'S SETTING AND CONTOUR DRAWINGS
  - CONTRACTORS FINISHING SCHEDULE
  - GEOTECHNICAL ENGINEERS SOIL REPORT
  - IMPORTANT: THE LATEST REVISIONS ISSUED BY ARCHITECT SHOULD BE READ IN CONJUNCTION WITH INITIAL SET OF CONTRACT DRAWINGS AND PREVIOUS REVISIONS. (SEE REVISION SCHEDULE)

NO WORK TO COMMENCE UNTIL MUNICIPALITY DRAWINGS HAVE BEEN APPROVED BY LOCAL AUTHORITY.

ALL WORK TO BE IN ACCORDANCE WITH THE NATIONAL BUILDING REGULATIONS AND THE SATISFACTION OF ALL LOCAL AUTHORITIES.

ALL MATERIALS TO BE SANS APPROVED. (OR AGREEMENT CERTIFICATE TO BE AVAILABLE.)

IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE LATEST REVISION IS USED FOR CONSTRUCTION.

CONTRACTOR TO COORDINATE ALL DIMENSIONS (LEVELS/BUILDING LINES/ SERVITUDES/POSITIONS OF ELECTRICAL BOXES AND STREET LAMPS) AND TO ENSURE THAT NO ENCROACHMENTS OCCUR.

FINISHES AND SPECIFICATIONS TO BE CHECKED AND COORDINATED BY THE CONTRACTOR BEFORE ANY ITEMS ARE ORDERED OR MANUFACTURED.

IF ANY DISCREPANCIES ARE FOUND THEN THE ARCHITECT SHOULD BE NOTIFIED IMMEDIATE SO THAT HE MAY CLARIFY IT.

THE SETTING OUT OF THE STRUCTURE REMAINS THE CONTRACTOR'S ENTIRE RESPONSIBILITY.

ALL SERVICES TO BE COORDINATED BY THE CONTRACTOR BEFORE WORK COMMENCES

THE CONTRACTOR AND ENGINEER TO COORDINATE ALL CUT AND FILL FLOOR LEVELS BEFORE WORK COMMENCES AND TO ENSURE ALL FREE FLOW OF ALL STORMWATER AWAY FROM BUILDING AND TO ENABLE EASY ACCESS INTO GARAGE RELATIVE TO ROAD
LEVEL AND ROAD LEVEL TO GARAGE DOOR HEAD HEIGHT.

MAXIMUM SLOPE OF RAMP TO GARAGE NOT TO EXCEED 1:25 RATIO.

WE WILL NOT BE HELD RESPONSIBLE FOR ANY DISCREPANCIES ARISING FROM THE FOLLOWING:

- INCORRECT SG DIAGRAMS ISSUED TO US;
- INCORRECT TOWN PLANNING INFORMATION;
- INCORRECT CONTOUR PLANS;
- INCORRECT SPECIFICATIONS FROM ENGINEER OR ANY OTHER PROFESSIONAL ASSIGNED BY THE OWNER/EMPLOYER.

NO MUNICIPALITY DRAWINGS/CONTRACT DRAWINGS WILL BE RELEASED WITHOUT THE SIGNATURE OF THE FOLLOWING BODIES:

- OWNER OF STAND;
- ENGINEER;
- ESTATE APPROVAL (WHERE APPLICABLE);
- ARCHITECTURAL TECHNOLOGIST

FOR ALL FINISHING NOTES,REFER TO FINISHING CONTRACT WITH DEVELOPER-THIS CONTRACT SUPERCEEDS INFORMATION ON THIS DRAWING AND ALL IT'S REVISIONS.

ARCHITECTURAL TECHNOLOGIST SIGNATURES:

ALWAYS REFER AND CROSS REFERENCE TO CLIENT/TECHNOLOGIST AGREEMENT.

DIVAN VERMEULEN
PROFESSIONAL ARCHITECTURAL TECHNOLOGIST
SACAP NO: T1582
SAIAT NO: 71348

SIGNATURE

BUILDING PROFESSIONALS TO SHAPE THE FUTURE
VOLUNTARY ASSOCIATION

OWNER'S SIGNATURE:

I HEREBY APPROVE THIS DRAWING FOR THE DESIGN CONTAINED HEREIN AND FOR SUBMISSION TO THE LOCAL AUTHORITY FOR THEIR APPROVAL. I ADHERE TO THE CONTENT AND CLAUSES STATED IN THE CLIENT ARCHITECTURAL PROFESSIONAL AGREEMENT AS STATED ON WWW.VANRICK.CO.ZA. I APPROVE ALL DIMENSIONS AND DESIGN AND WILL APPOINT A CONTRACTOR THAT CAN ERECT THE STRUCTURE WITH DUE DILIGENCE.

OWNER'S SIGNATURE/AUTHORIZED REPRESENTATIVE — DATE

MRS JENNY DE VILLIERS
+27835773941
hugo@sfamsa.co.za

ENGINEER'S SIGNATURE:

I ACCEPT MY APPOINTMENT AS ENGINEER ON THIS PROJECT AND WILL ISSUE ENGINEER DRAWINGS TO THE CLIENT TO BE READ IN CONJUNCTION WITH COUNCIL DRAWINGS AND ALL REVISIONS ISSUED. I WILL EXECUTE MY WORK WITH DUE DILIGENCE.

ENGINEERS STAMP AND SIGNATURE — DATE

DRAWING/PROJECT DETAILS:

PROJECT NUMBER:	THE BERLIN BEAR
STAND NUMBER:	PROPOSED ADDITIONAL ALTERATION PTN 243 ROODEKRANS 183-iq RUIMSIG COUNTRY ESTATE
SCALE:	AS INDICATED ON DRAWINGS
SHEET NO:	1
DRAWN BY:	MR DIVAN VERMEULEN
DATE ISSUED:	Wednesday, 18 September 2024 @ 12:29
PRINTING SPEC:	A1 LANDSCAPE (A1 ISO)

DRAWING TYPE:
SEAT COUNT

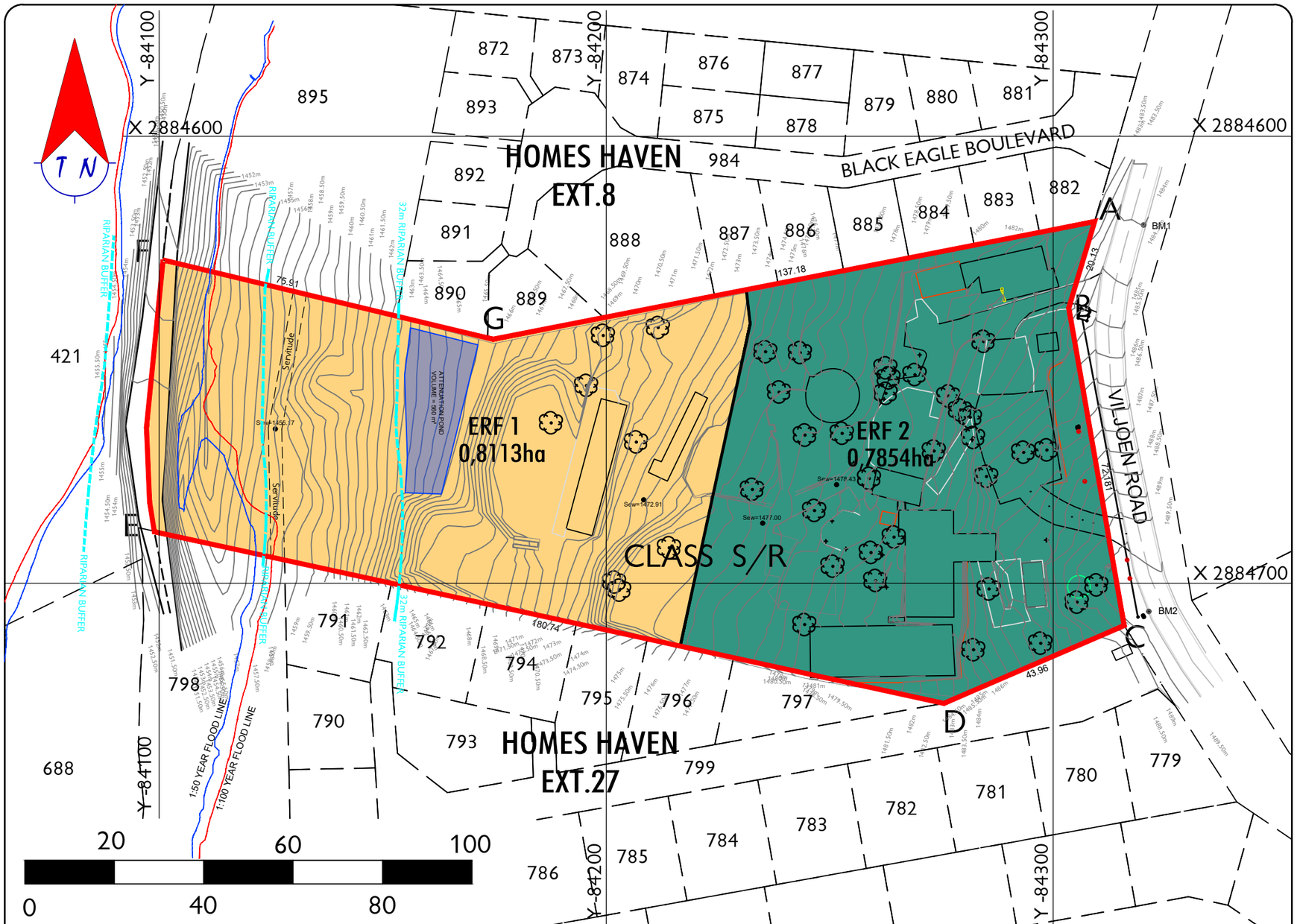
VANRICK
ARCHITECTURE
PROFESSIONAL ARCHITECTURAL TECHNOLOGISTS
CK: 2007/168742/23

CONTACT DETAILS:
MOBILE: 082 210 7229
STUDIO: 011 764 1966
FAX: 086 624 1719
E-MAIL: DIVAN@VANRICK.CO.ZA
WEBSITE: WWW. VANRICK.CO.ZA

PORTFOLIO:

Annexure B

Proposed Erven Layout



PROJECT

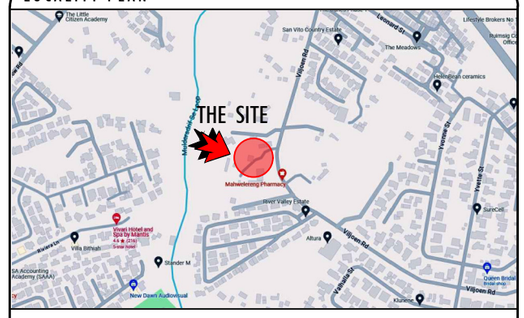
PROPOSED TOWNSHIP

HOMES HAVEN EXT.65

SITUATED ON PORTION 243 OF THE FARM ROODEKRANS 183 I.Q

MOGALE CITY LOCAL MUNICIPALITY

LOCALITY PLAN



LAND USE TABLE

LAND USE	NO. OF STAND	ERF NUMBER	AREA	%
RESIDENTIAL 2	1	ERF 1	0,8113	50,81
SPECIAL FOR RESTAURANT AND GUESTHOUSE	1	ERF 2	0,7854	49,19
TOTAL	2		1,5967ha	100%

FIGURE A - F REPRESENTS PROPOSED TOWNSHIP HOMES HAVEN EXT.65 SITUATED ON PORTION 243 OF THE FARM ROODEKRANS 183 I.Q

Co-ordinate System = WG27

CLIENT

RINGWOOD CC

DESIGNED	HT	APPROVED		SCALE 1:1000 (A3)
DRAWN	CST	DATE	SEPT. 2024	COPYRIGHT RESERVED

DRAWING No. C2422/1

NOTES:

 # BASE PLAN

BASE PLAN AND CONTOURS PROVIDED BY F.J LOOCK PROFESSIONAL LAND SURVEYOR

 # GEOTECH

GEOTECH AS COMPILED BY J. ARKERT
ENGINEERING GEOLOGIST
REPORT No: 0624 DATE: JULY 2024

SITE CLASS S/R:
LESS THAN 10mm CONSOLIDATION SETTLEMENT ANTICIPATED AND SHALLOW BEDROCK

FLOOD LINE CERTIFICATE

IT IS HEREBY CERTIFIED THAT THE LINE SHOWN
1:100 YEAR FLOODLINE
1:50 YEAR FLOODLINE
REPESENT THE LEVELS LIKELY TO BE REACHED BY FLOODWATER ON AVERAGE ONCE IN 100 YEARS, DETERMINED IN ACCORDANCE WITH SECTION 144 OF THE NATIONAL WATER ACT (ACT 36 OF 1998)

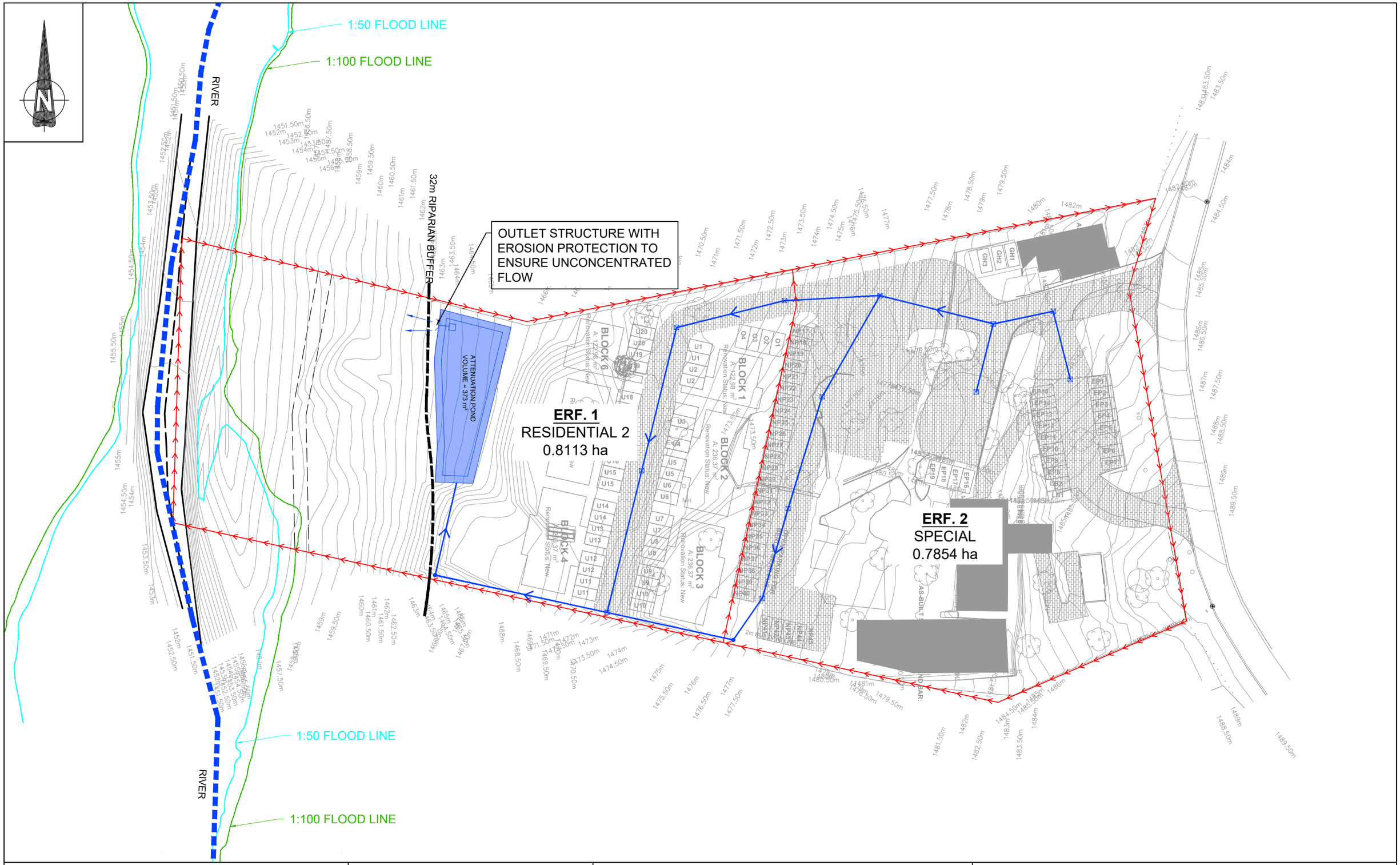
2nd Sept 2024
R.D.HIRST Pr. Tech (Eng) 2018300110 DATE
FOR SIVEST (PTY) LTD

53 Conrad Street
Florida North
E - mail :
httrp@iafrica.com
Tel no:
(011)472 - 1613
Fax:(011)472 - 3454

Hunter Theron Inc
TOWN PLANNERS

Annexure C

Proposed Storm Water Layout



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COMLEY PROJECTS
26 Derwent Avenue Lakeside Village
Modderfontein, 1609
TEL: 083 642 35 45
EMAIL: andrew@comley.co.za

HOMES HAVEN EXT. 65
STORM WATER LAYOUT
SCALE 1:750
NOVEMBER 2024

NEW STORM WATER MANHOLE
ATTENUATION POND
CADASTRAL BOUNDARY
NEW STORM WATER PIPE
NEW GRID INLET

Annexure D

Storm Water Run-off Calculations
Erf. 1 – Residential

Project & Job No. : Homes Haven Ext. 65 (Erf. 1)
Catchment Reference : Pre developed

Calculated by : Jade le Roux
Date : 11 November 2024

INPUT
OUTPUT

Physical Characteristics: (Inland catchments)

Size of catchment, A	0.004777	[km^2]	To be completed only if defined watercourse		
Longest water course, L	0.096	[km]	Calculation of S_{av}		
Average slope, S (Watercourse / overland)	0.18058	[m / m]	$H_{0.85L}$	1476.042	[m]
Dolomitic percentage [%]	0	[%]	$H_{0.10L}$	1463.04	[m]
Overland flow (0) or watercourse (1)	0	[.]	ΔH	13.002	[m]
Roughness coefficient, r (overland flow)	0.4	[.]	0.75L	72	[m]
Rainfall region (winter / summer)	Summer	[.]	S_{av}	0.18058	[m / m]
Mean annual precipitation, MAP	750	[mm]			
Steep & impermeable (0), flat & permeable (1)	0				

Time of Concentration, T_c [hrs]	
Overland Flow	0.197
Watercourse	0.000

Areal Distribution Factors						
Rural		Urban		Lakes		
α	1.0000	β	0.0000	φ	0.0000	∑ = 1

Rural

Surface Slope	%	**Permeability**	%	**Vegetation**	%
Vleis & pans(<3%)	0.0	Very permeable	0.0	Thick bush & plantation	0.0
Flat areas (3-10%)	100.0	Permeable	60.0	Light bush & farm lands	30.0
Hilly (10-30%)	0.0	Semi permeable	40.0	Grass lands	70.0
Steep areas(>30%)	0.0	Impermeable	0.0	No vegetation	0.0
∑ = 100	100	∑ = 100	100	∑ = 100	100

Urban

	% split
Lawns & Parks	0.0
Industrial Areas	0.0
Residential Areas	0.0
Business	0.0
∑ = 100	0

Urban

Lawns & Parks	%	**Industrial Areas**	%	**Residential Areas**	%	**Business**	%
Sandy, flat (<2%)	0.0	Light industry	0.0	Houses (Res 1)	0.0	City centre	0.0
Sandy, steep (>7%)	0.0	heavy industry	0.0	Flats (Res 2 +)	0.0	Suburban	0.0
Heavy soil, flat (<2%)	0.0					Streets	0.0
heavy soil, steep (>7%)	0.0					Maximum Flood	0.0
∑ = 100	0	∑ = 100	0	∑ = 100	0	∑ = 100	0

Rural, C_1

Component	Classification	Assigned Runoff Coefficient	Weighted C	C_1
Surface Slope, C_h	Vleis & pans(<3%)	0.01	0.060	**0.290**
	Flat areas (3-10%)	0.06		
	Hilly (10-30%)	0.16		
	Steep areas(>30%)	0.26		
Permeability, C_d	Very permeable	0.03	0.084	
	Permeable	0.06		
	Semi permeable	0.12		
	Impermeable	0.26		
Vegetation, C_p	Thick bush & plantation	0.04	0.146	
	Light bush & farm lands	0.09		
	Grass lands	0.17		
	No vegetation	0.28		

Dolomitic effect on Rural surface slope C factor	
C_{1D}	**0.290**

Return Period	Adjusted rural runoff factor
2	0.218
5	0.232
10	0.247
20	0.261
25	0.264
50	0.276
100	0.290

Urban, C_2

Component	Classification	Assigned Runoff Coefficient	Weighted C	C_2
Lawns	Sandy, flat (<2%)	0.00	0.000	**0.000**
	Sandy, steep (>7%)	0.00		
	Heavy soil, flat (<2%)	0.00		
	heavy soil, steep (>7%)	0.00		
Industrial areas	Light industry	0.00	0.000	
	heavy industry	0.00		
Residential	Houses (Res 1)	0.00	0.000	
	Flats (Res 2 +)	0.00		
Business	City centre	0.00	0.000	
	Suburban	0.00		
	Streets	0.00		
	Maximum Flood	0.00		

Return Period	**Adjusted Rural Runoff Coefficient incl Dolomitic Influence**	**Urban Runoff Coefficient**	**Combined runoff coefficient**
2	0.218	0.000	0.218
5	0.232	0.000	0.232
10	0.247	0.000	0.247
20	0.261	0.000	0.261
25	0.264	0.000	0.264
50	0.276	0.000	0.276
100	0.290	0.000	0.290

Return Period	**Q_T [m^3/s]**
2	**0.02**
5	**0.03**
10	**0.05**
20	**0.06**
25	**0.07**
50	**0.09**
100	**0.12**

Return Period [yrs]	2	5	10	20	25	50	100
Point precipitation, P_t (*.dwg) [mm]	16.0	22.0	30.0	35.0	41.0	50.0	60.5
Point intensity Pi [mm/hr]	81.40	111.93	152.63	178.07	208.59	254.38	307.80
ARF (*.dwg) [%]	100	100	100	100	100	100	100
Average rainfall intensity [mm/hr]	**81.4**	**111.9**	**152.6**	**178.1**	**208.6**	**254.4**	**307.8**

Project & Job No. : Homes Haven Ext. 65 (Erf. 1) **Calculated by** : Jade le Roux

Catchment Reference : Post Developed **Date** : 11 November 2024

INPUT
OUTPUT

Physical Characteristics: (Inland catchments)

Size of catchment, A	0.004777	[km^2]	To be completed only if defined watercourse		
Longest water course, L	0.1056	[km]	Calculation of S_{av}		
Average slope, S (Watercourse / overland)	0.1642	[m / m]	$H_{0.85L}$	1476.042	[m]
Dolomitic percentage [%]	0	[%]	$H_{0.10L}$	1463.04	[m]
Overland flow (0) or watercourse (1)	1	[.]	ΔH	13.002	[m]
Roughness coefficient, r (overland flow)	0.02	[.]	0.75L	79.2	[m]
Rainfall region (winter / summer)	summer	[.]	S_{av}	0.16417	[m / m]
Mean annual precipitation, MAP	750	[mm]			
Steep & impermeable (0), flat & permeable (1)	0				

Time of Concentration, T_c [hrs]	
Overland Flow	0.000
Watercourse	0.024

Tc taken as 0.25 (recommended minimum)

Areal Distribution Factors						
Rural		Urban		Lakes		
α	0.0000	β	1.0000	φ	0.0000	∑ = 1

Rural

Surface Slope	%	**Permeability**	%	**Vegetation**	%
Vleis & pans(<3%)	0.0	Very permeable	0.0	Thick bush & plantation	0.0
Flat areas (3-10%)	0.0	Permeable	0.0	Light bush & farm lands	0.0
Hilly (10-30%)	0.0	Semi permeable	0.0	Grass lands	0.0
Steep areas(>30%)	0.0	Impermeable	0.0	No vegetation	0.0
∑ = 100	0	∑ = 100	0	∑ = 100	0

Urban

	% split
Lawns & Parks	0.0
Industrial Areas	0.0
Residential Areas	100.0
Business	0.0
∑ = 100	100

Urban

Lawns & Parks	%	**Industrial Areas**	%	**Residential Areas**	%	**Business**	%
Sandy, flat (<2%)	0.0	Light industry	0.0	Houses (Res 1)	0.0	City centre	0.0
Sandy, steep (>7%)	0.0	heavy industry	0.0	Flats (Res 2 +)	100.0	Suburban	0.0
Heavy soil, flat (<2%)	0.0					Streets	0.0
heavy soil, steep (>7%)	0.0					Maximum Flood	0.0
∑ = 100	0	∑ = 100	0	∑ = 100	100	∑ = 100	0

Rural, C_1

Component	Classification	Assigned Runoff Coefficient	Weighted C	C_1
Surface Slope, C_h	Vleis & pans(<3%)	0.00	0.000	**0.000**
	Flat areas (3-10%)	0.00		
	Hilly (10-30%)	0.00		
	Steep areas(>30%)	0.00		
Permeability, C_d	Very permeable	0.00	0.000	
	Permeable	0.00		
	Semi permeable	0.00		
	Impermeable	0.00		
Vegetation, C_p	Thick bush & plantation	0.00	0.000	
	Light bush & farm lands	0.00		
	Grass lands	0.00		
	No vegetation	0.00		

Dolomitic effect on Rural surface slope C factor	
C_{1D}	**0.000**

Return Period	Adjusted rural runoff factor
2	0.000
5	0.000
10	0.000
20	0.000
25	0.000
50	0.000
100	0.000

Urban, C_2

Component	Classification	Assigned Runoff Coefficient	Weighted C	C_2
Lawns	Sandy, flat (<2%)	0.08	0.000	**0.900**
	Sandy, steep (>7%)	0.18		
	Heavy soil, flat (<2%)	0.15		
	heavy soil, steep (>7%)	0.30		
Industrial areas	Light industry	0.65	0.000	
	heavy industry	0.75		
Residential	Houses (Res 1)	0.90	0.900	
	Flats (Res 2 +)	0.90		
Business	City centre	0.83	0.000	
	Suburban	0.56		
	Streets	0.83		
	Maximum Flood	1.00		

Return Period	**Adjusted Rural Runoff Coefficient incl Dolomitic Influence**	**Urban Runoff Coefficient**	**Combined runoff coefficient**
2	0.000	0.900	0.900
5	0.000	0.900	0.900
10	0.000	0.900	0.900
20	0.000	0.900	0.900
25	0.000	0.900	0.900
50	0.000	0.900	0.900
100	0.000	0.900	0.900

Return Period	**Q_T [m^3/s]**
2	**0.08**
5	**0.11**
10	**0.14**
20	**0.17**
25	**0.20**
50	**0.24**
100	**0.29**

Return Period [yrs]	2	5	10	20	25	50	100
Point precipitation, P_t (*.dwg) [mm]	16.0	22.0	30.0	35.0	41.0	50.0	60.5
Point intensity Pi [mm/hr]	64.00	88.00	120.00	140.00	164.00	200.00	242.00
ARF (*.dwg) [%]	100	100	100	100	100	100	100
Average rainfall intensity [mm/hr]	**64.0**	**88.0**	**120.0**	**140.0**	**164.0**	**200.0**	**242.0**

Annexure E

Storm Water Run-off Calculations
Erf. 2 – Special

Project & Job No. : Homes Haven Ext. 65 (Erf. 2)
Catchment Reference : Pre developed

Calculated by : Jade le Roux
Date : 11 November 2024

INPUT
OUTPUT

Physical Characteristics: (Inland catchments)

Size of catchment, A	0.007854	[km^2]	To be completed only if defined watercourse		
Longest water course, L	0.096	[km]	Calculation of S_{av}		
Average slope, S (Watercourse / overland)	0.16431	[m / m]	$H_{0.85L}$	1488.053	[m]
Dolomitic percentage [%]	0	[%]	$H_{0.10L}$	1476.223	[m]
Overland flow (0) or watercourse (1)	0	[.]	ΔH	11.83	[m]
Roughness coefficient, r (overland flow)	0.4	[.]	0.75L	72	[m]
Rainfall region (winter / summer)	Summer	[.]	S_{av}	0.16431	[m / m]
Mean annual precipitation, MAP	750	[mm]			
Steep & impermeable (0), flat & permeable (1)	0				

Time of Concentration, T_c [hrs]	
Overland Flow	0.201
Watercourse	0.000

Areal Distribution Factors						
Rural		Urban		Lakes		
α	1.0000	β	0.0000	φ	0.0000	∑ = 1

Rural

Surface Slope	%	Permeability	%	Vegetation	%
Vleis & pans(<3%)	10.0	Very permeable	0.0	Thick bush & plantation	0.0
Flat areas (3-10%)	90.0	Permeable	65.0	Light bush & farm lands	25.0
Hilly (10-30%)	0.0	Semi permeable	35.0	Grass lands	75.0
Steep areas(>30%)	0.0	Impermeable	0.0	No vegetation	0.0
∑ = 100	100	∑ = 100	100	∑ = 100	100

Urban

	% split
Lawns & Parks	0.0
Industrial Areas	0.0
Residential Areas	0.0
Business	0.0
∑ = 100	0

Urban

Lawns & Parks	%	Industrial Areas	%	Residential Areas	%	Business	%
Sandy, flat (<2%)	0.0	Light industry	0.0	Houses (Res 1)	0.0	City centre	0.0
Sandy, steep (>7%)	0.0	heavy industry	0.0	Flats (Res 2 +)	0.0	Suburban	0.0
Heavy soil, flat (<2%)	0.0					Streets	0.0
heavy soil, steep (>7%)	0.0					Maximum Flood	0.0
∑ = 100	0	∑ = 100	0	∑ = 100	0	∑ = 100	0

Rural, C_1

Component	Classification	Assigned Runoff Coefficient	Weighted C	C_1
Surface Slope, C_h	Vleis & pans(<3%)	0.01	0.055	**0.286**
	Flat areas (3-10%)	0.06		
	Hilly (10-30%)	0.16		
	Steep areas(>30%)	0.26		
Permeability, C_d	Very permeable	0.03	0.081	
	Permeable	0.06		
	Semi permeable	0.12		
	Impermeable	0.26		
Vegetation, C_p	Thick bush & plantation	0.04	0.150	
	Light bush & farm lands	0.09		
	Grass lands	0.17		
	No vegetation	0.28		

Dolomitic effect on Rural surface slope C factor	
C_{1D}	**0.286**

Return Period	Adjusted rural runoff factor
2	0.215
5	0.229
10	0.243
20	0.257
25	0.260
50	0.272
100	0.286

Urban, C_2

Component	Classification	Assigned Runoff Coefficient	Weighted C	C_2
Lawns	Sandy, flat (<2%)	0.00	0.000	**0.000**
	Sandy, steep (>7%)	0.00		
	Heavy soil, flat (<2%)	0.00		
	heavy soil, steep (>7%)	0.00		
Industrial areas	Light industry	0.00	0.000	
	heavy industry	0.00		
Residential	Houses (Res 1)	0.00	0.000	
	Flats (Res 2 +)	0.00		
Business	City centre	0.00	0.000	
	Suburban	0.00		
	Streets	0.00		
	Maximum Flood	0.00		

Return Period	Adjusted Rural Runoff Coefficient incl Dolomitic Influence	Urban Runoff Coefficient	Combined runoff coefficient
2	0.215	0.000	0.215
5	0.229	0.000	0.229
10	0.243	0.000	0.243
20	0.257	0.000	0.257
25	0.260	0.000	0.260
50	0.272	0.000	0.272
100	0.286	0.000	0.286

Return Period	Q_T [m^3/s]
2	**0.04**
5	**0.05**
10	**0.08**
20	**0.10**
25	**0.12**
50	**0.15**
100	**0.19**

Return Period [yrs]	2	5	10	20	25	50	100
Point precipitation, P_t (*.dwg) [mm]	16.0	22.0	30.0	35.0	41.0	50.0	60.5
Point intensity Pi [mm/hr]	79.63	109.49	149.30	174.18	204.04	248.83	301.09
ARF (*.dwg) [%]	100	100	100	100	100	100	100
Average rainfall intensity [mm/hr]	**79.6**	**109.5**	**149.3**	**174.2**	**204.0**	**248.8**	**301.1**

Project & Job No.	:	Homes Haven Ext. 65 (Erf. 2)	**Calculated by**	:	Jade le Roux
Catchment Reference	:	Post Developed	**Date**	:	11 November 2024

INPUT
OUTPUT

Physical Characteristics: (Inland catchments)

Size of catchment, A	0.007854	[km^2]	To be completed only if defined watercourse		
Longest water course, L	0.1056	[km]	Calculation of S_{av}		
Average slope, S (Watercourse / overland)	0.1494	[m / m]	$H_{0.85L}$	1488.053	[m]
Dolomitic percentage [%]	0	[%]	$H_{0.10L}$	1476.223	[m]
Overland flow (0) or watercourse (1)	1	[.]	ΔH	11.83	[m]
Roughness coefficient, r (overland flow)	0.02	[.]	0.75L	79.2	[m]
Rainfall region (winter / summer)	summer	[.]	S_{av}	0.14937	[m / m]
Mean annual precipitation, MAP	750	[mm]			
Steep & impermeable (0), flat & permeable (1)	0				

Time of Concentration, T_c [hrs]	
Overland Flow	0.000
Watercourse	0.024

Tc taken as 0.25 (recommended minimum)

Areal Distribution Factors						
Rural		Urban		Lakes		
α	0.0000	β	1.0000	φ	0.0000	∑ = 1

Rural

Surface Slope	%	**Permeability**	%	**Vegetation**	%
Vleis & pans(<3%)	0.0	Very permeable	0.0	Thick bush & plantation	0.0
Flat areas (3-10%)	0.0	Permeable	0.0	Light bush & farm lands	0.0
Hilly (10-30%)	0.0	Semi permeable	0.0	Grass lands	0.0
Steep areas(>30%)	0.0	Impermeable	0.0	No vegetation	0.0
∑ = 100	0	∑ = 100	0	∑ = 100	0

Urban

	% split
Lawns & Parks	0.0
Industrial Areas	0.0
Residential Areas	0.0
Business	100.0
∑ = 100	100

Urban

Lawns & Parks	%	**Industrial Areas**	%	**Residential Areas**	%	**Business**	%
Sandy, flat (<2%)	0.0	Light industry	0.0	Houses (Res 1)	0.0	City centre	0.0
Sandy, steep (>7%)	0.0	heavy industry	0.0	Flats (Res 2 +)	0.0	Suburban	20.0
Heavy soil, flat (<2%)	0.0					Streets	0.0
heavy soil, steep (>7%)	0.0					Maximum Flood	80.0
∑ = 100	0	∑ = 100	0	∑ = 100	0	∑ = 100	100

Rural, C_1

Component	Classification	Assigned Runoff Coefficient	Weighted C	C_1
Surface Slope, C_h	Vleis & pans(<3%)	0.00	0.000	**0.000**
	Flat areas (3-10%)	0.00		
	Hilly (10-30%)	0.00		
	Steep areas(>30%)	0.00		
Permeability, C_d	Very permeable	0.00	0.000	
	Permeable	0.00		
	Semi permeable	0.00		
	Impermeable	0.00		
Vegetation, C_p	Thick bush & plantation	0.00	0.000	
	Light bush & farm lands	0.00		
	Grass lands	0.00		
	No vegetation	0.00		

Dolomitic effect on Rural surface slope C factor	
C_{1D}	**0.000**

Return Period	Adjusted rural runoff factor
2	0.000
5	0.000
10	0.000
20	0.000
25	0.000
50	0.000
100	0.000

Urban, C_2

Component	Classification	Assigned Runoff Coefficient	Weighted C	C_2
Lawns	Sandy, flat (<2%)	0.08	0.000	**0.912**
	Sandy, steep (>7%)	0.18		
	Heavy soil, flat (<2%)	0.15		
	heavy soil, steep (>7%)	0.30		
Industrial areas	Light industry	0.65	0.000	
	heavy industry	0.75		
Residential	Houses (Res 1)	0.90	0.000	
	Flats (Res 2 +)	0.90		
Business	City centre	0.83	0.912	
	Suburban	0.56		
	Streets	0.83		
	Maximum Flood	1.00		

Return Period	Adjusted Rural Runoff Coefficient incl Dolomitic Influence	Urban Runoff Coefficient	Combined runoff coefficient
2	0.000	0.912	0.912
5	0.000	0.912	0.912
10	0.000	0.912	0.912
20	0.000	0.912	0.912
25	0.000	0.912	0.912
50	0.000	0.912	0.912
100	0.000	0.912	0.912

Return Period	Q_T [m^3/s]
2	**0.13**
5	**0.18**
10	**0.24**
20	**0.28**
25	**0.33**
50	**0.40**
100	**0.48**

Return Period [yrs]	2	5	10	20	25	50	100
Point precipitation, P_t (*.dwg) [mm]	16.0	22.0	30.0	35.0	41.0	50.0	60.5
Point intensity Pi [mm/hr]	64.00	88.00	120.00	140.00	164.00	200.00	242.00
ARF (*.dwg) [%]	100	100	100	100	100	100	100
Average rainfall intensity [mm/hr]	**64.0**	**88.0**	**120.0**	**140.0**	**164.0**	**200.0**	**242.0**

Annexure F

Attenuation Calculations

Project **Homes Haven Ext. 65** **2024/11/15**
Engineer A. Comley
Summary of Results No data input on this sheet

Developed by Chris Brooker PrEng
Version 5.0
Chris Brooker & Associates
cbrooker@iafrica.com

cba SPECIALIST ENGINEERS

	Input		Computed			
Region						
MAP	750	mm/year	Storm Td	15.4 min	0.3	hr
RI	**5**	**year**	= concentration time plus time to start runoff			
Catchment			Average Rainfall Intensity			
Area	1.3	ha	Op ten Noord & Stephenson	Inland		
Conc time Tc	15	min	99.7 mm/h			
Rational C	0.91		Peak Rainfall Intensity Triangular Hyetograph			
			199.3 mm/h	At time	5	mins
Storm						
Time to peak	0.3	ratio	Runoff Vol	294 m^3	= C x P x A	
Time step	1	min				

Reservoir and Outlet Data

Pipe	**U/S**	**D/S**		**Tower**				
No off	1	1	No	Crest Len	4.4	m	$C_{d(unsub)}$	0.75
Dia	0.200	0.45	m	Crest Lvl	1.1	m	$C_{d(sub)}$	0.62
Invert Lvl	0	0	m				C_h	0.85

Spillway			**Crest**		
Cd	1.60	for Q = Cd x L x $h^{1.5}$	Cd	1.40	for Q = Cd x L x $h^{1.5}$
Width	4.0		Width	100.0	
Invert Lvl	1.30		Invert Lvl	1.50	
Free board	0.20		Free board	0.20	

Reservoir Data

Stage	Depth	Area	Volume
0.00	0.00	294	0
0.30	0.30	340	95
0.60	0.60	380	203
0.90	0.90	425	324
1.20	1.20	465	457
1.50	1.50	505	603
4.80	4.80	545	2335
2.10	2.10	585	810

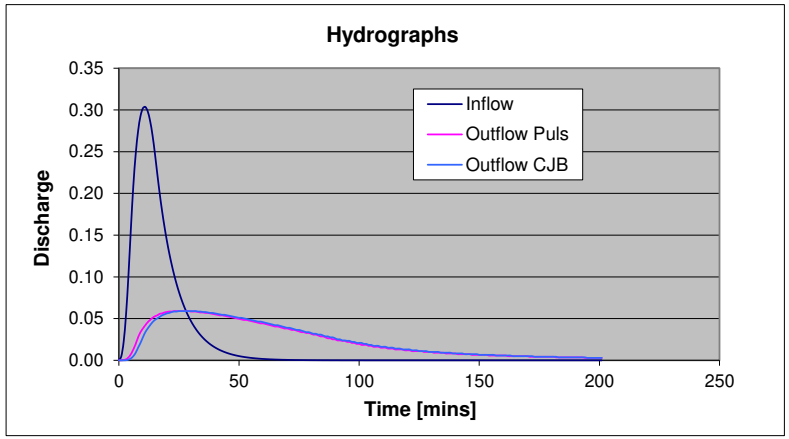
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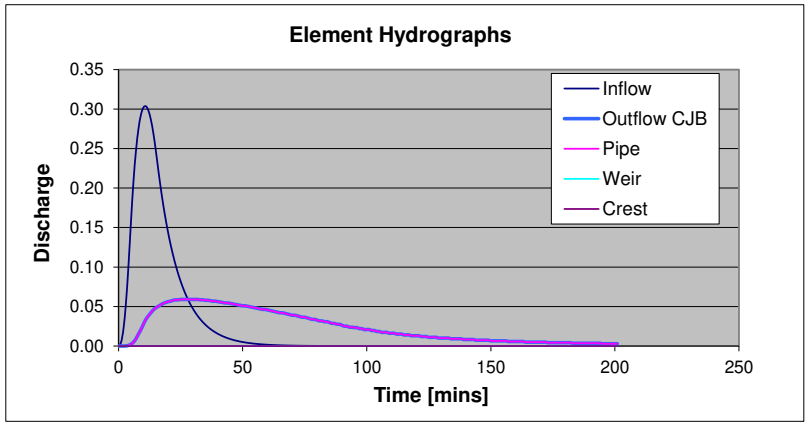
Stage	0.00	m
Depth	0.00	m
Vol	0	m^3
Area	294	m^2
Discharge	0.00	m^3/s

Results Summary

Peaks

Q_{in}	0.304 m^3/s			
Q_{out} CJB	0.059 m^3/s	Q_{pipe}	0.059	m^3/s
Q_{out} Puls	0.059 m^3/s	Q_{weir}	0.000	m^3/s
Stage	0.645 m	Q_{crest}	0.000	m^3/s
Stored Vol	218 m^3			





Project **Homes Haven Ext. 65** **2024/11/15**

Engineer A. Comley

Summary of Results No data input on this sheet

Developed by Chris Brooker PrEng
Version 5.0
Chris Brooker & Associates
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	Input		Computed			
Region						
MAP	750	mm/year	Storm Td	15.4 min		0.3 hr
RI	**25**	**year**	= concentration time plus time to start runoff			
Catchment			Average Rainfall Intensity			
Area	1.3	ha	Op ten Noord & Stephenson		Inland	
Conc time Tc	15	min	161.5 mm/h			
Rational C	0.91		Peak Rainfall Intensity Triangular Hyetograph			
			323.0 mm/h	At time		5 mins
Storm						
Time to peak	0.3	ratio	Runoff Vol	477 m^3	= C x P x A	
Time step	1	min				

Reservoir and Outlet Data

Pipe	**U/S**	**D/S**		**Tower**			
No off	1	1	No	Crest Len	4.4 m	$C_{d(unsub)}$	0.75
Dia	0.200	0.45	m	Crest Lvl	1.1 m	$C_{d(sub)}$	0.62
Invert Lvl	0	0	m			C_h	0.85

Spillway			**Crest**		
Cd	1.60	for Q = Cd x L x $h^{1.5}$	Cd	1.40	for Q = Cd x L x $h^{1.5}$
Width	4.0		Width	100.0	
Invert Lvl	1.30		Invert Lvl	1.50	
Free board	0.20		Free board	0.20	

Reservoir Data

Stage	Depth	Area	Volume
0.00	0.00	294	0
0.30	0.30	340	95
0.60	0.60	380	203
0.90	0.90	425	324
1.20	1.20	465	457
1.50	1.50	505	603
4.80	4.80	545	2335
2.10	2.10	585	810

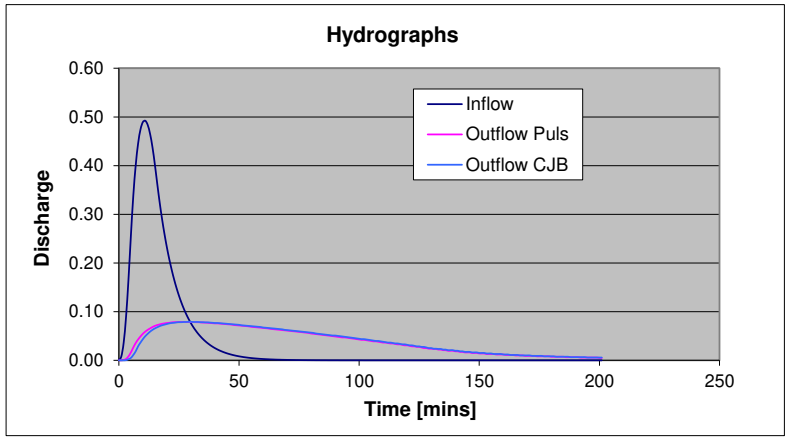
Initial Conditions

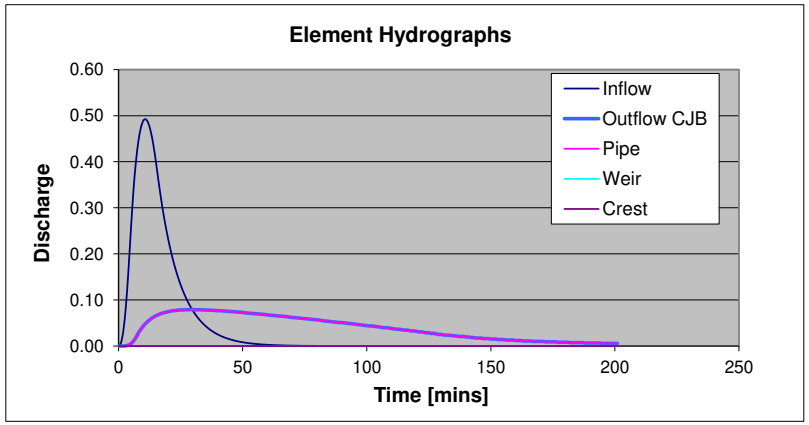
Stage	0.00	m
Depth	0.00	m
Vol	0	m^3
Area	294	m^2
Discharge	0.00	m^3/s

Results Summary

Peaks

Q_{in}	0.492 m^3/s			
Q_{out} CJB	0.079 m^3/s	Q_{pipe}	0.079	m^3/s
Q_{out} Puls	0.079 m^3/s	Q_{weir}	0.000	m^3/s
Stage	1.012 m	Q_{crest}	0.000	m^3/s
Stored Vol	373 m^3			





Project **Homes Haven Ext. 65** **2024/11/15**
Engineer A. Comley
Summary of Results No data input on this sheet

Developed by Chris Brooker PrEng
Version 5.0
Chris Brooker & Associates
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cba SPECIALIST ENGINEERS

	Input		Computed			
Region						
MAP	750	mm/year	Storm Td	15.4 min		0.3 hr
RI	**50**	**year**	= concentration time plus time to start runoff			
Catchment			Average Rainfall Intensity			
Area	1.3	ha	Op ten Noord & Stephenson		Inland	
Conc time Tc	15	min	198.8 mm/h			
Rational C	0.91		Peak Rainfall Intensity Triangular Hyetograph			
			397.7 mm/h	At time		5 mins
Storm						
Time to peak	0.3	ratio	Runoff Vol	587 m^3	= C x P x A	
Time step	1	min				

Reservoir and Outlet Data

Pipe	**U/S**	**D/S**		**Tower**				
No off	1	1	No	Crest Len	4.4	m	$C_{d(unsub)}$	0.75
Dia	0.200	0.45	m	Crest Lvl	1.1	m	$C_{d(sub)}$	0.62
Invert Lvl	0	0	m				C_h	0.85

Spillway			**Crest**		
Cd	1.60	for Q = Cd x L x $h^{1.5}$	Cd	1.40	for Q = Cd x L x $h^{1.5}$
Width	4.0		Width	100.0	
Invert Lvl	1.30		Invert Lvl	1.50	
Free board	0.20		Free board	0.20	

Reservoir Data

Stage	Depth	Area	Volume
0.00	0.00	294	0
0.30	0.30	340	95
0.60	0.60	380	203
0.90	0.90	425	324
1.20	1.20	465	457
1.50	1.50	505	603
4.80	4.80	545	2335
2.10	2.10	585	810

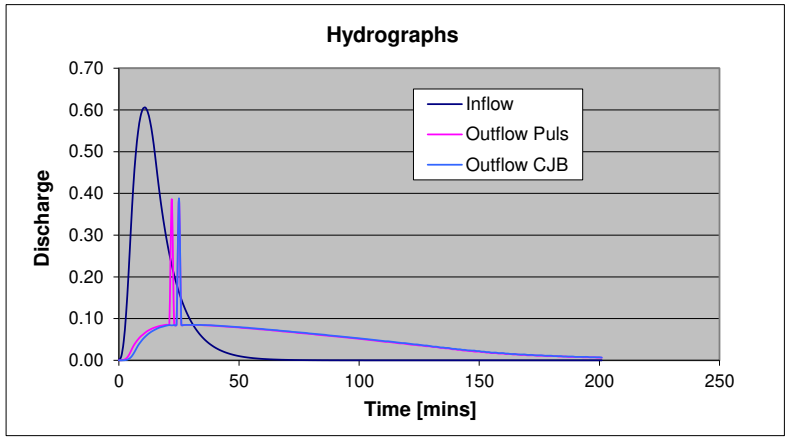
Initial Conditions

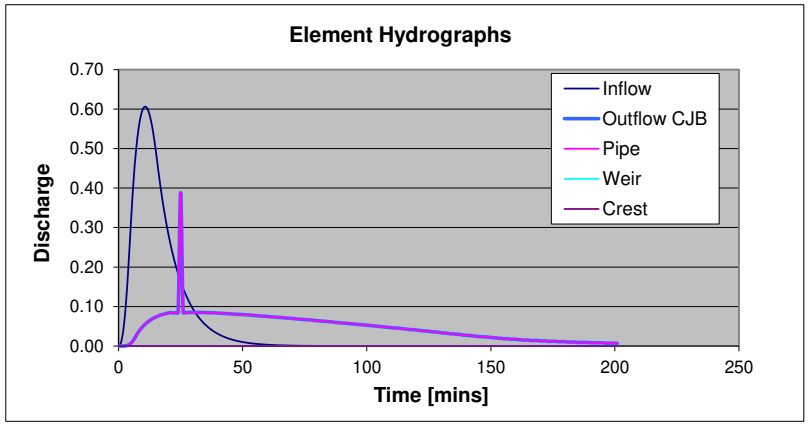
Stage	0.00	m
Depth	0.00	m
Vol	0	m^3
Area	294	m^2
Discharge	0.00	m^3/s

Results Summary

Peaks

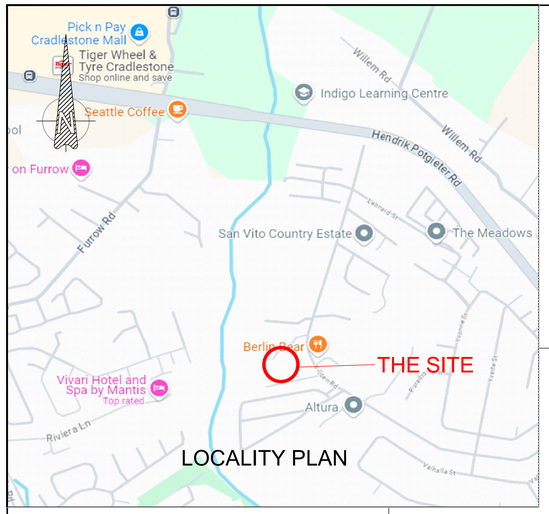
Q_{in}	0.606 m^3/s			
Q_{out} CJB	0.388 m^3/s	Q_{pipe}	0.388	m^3/s
Q_{out} Puls	0.386 m^3/s	Q_{weir}	0.000	m^3/s
Stage	1.178 m	Q_{crest}	0.000	m^3/s
Stored Vol	445 m^3			



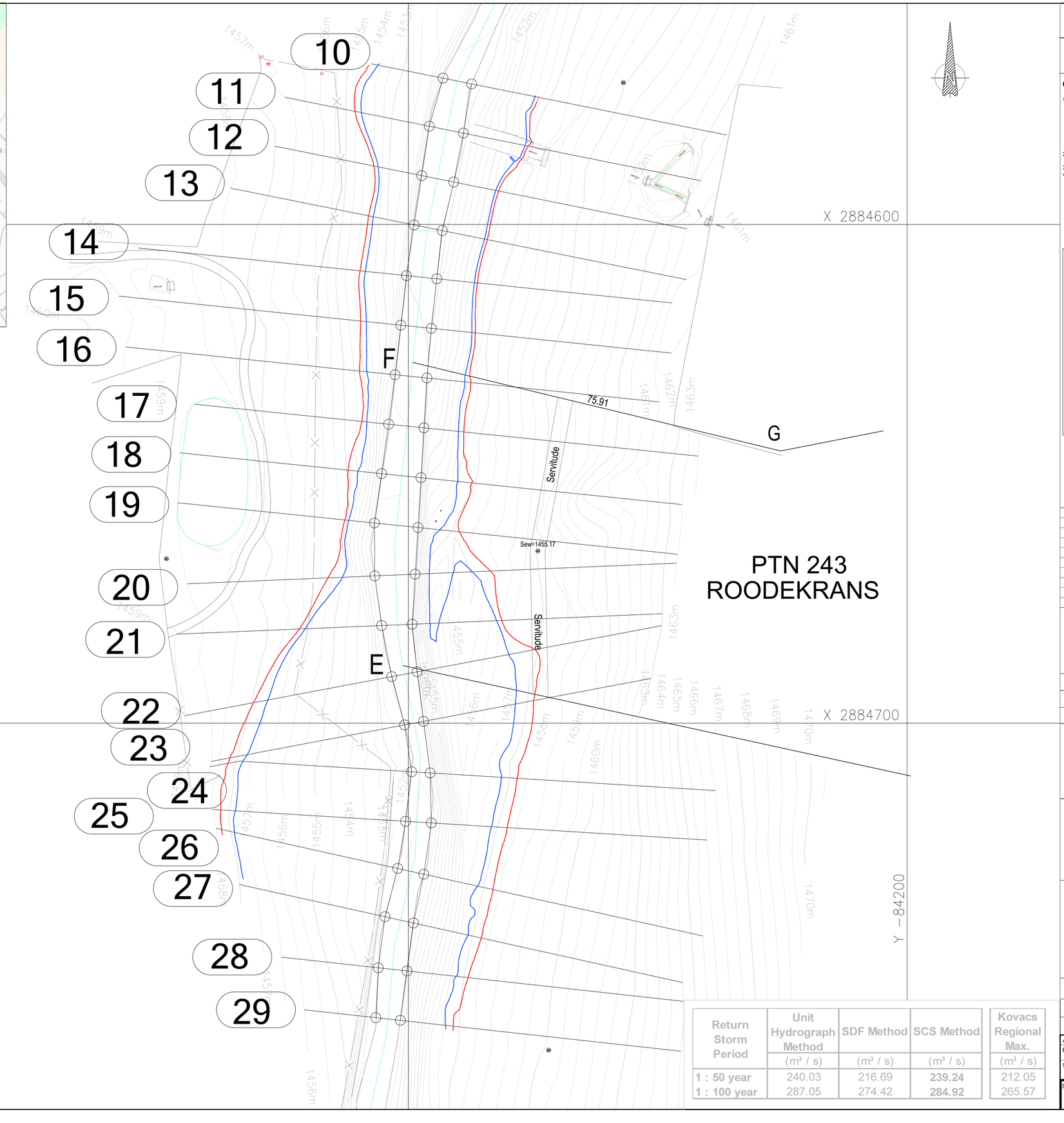


Annexure G

Flood line delineation



LOCALITY PLAN



PTN 243 ROODEKRANS

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FLOOD LINE CERTIFICATE

IT IS HEREBY CERTIFIED THAT THE LINE SHOWN

1:100 YEAR FLOODLINE
1:50 YEAR FLOODLINE

REPESENT THE LEVELS LIKELY TO BE REACHED BY FLOODWATER ON AVERAGE ONCE IN 100 YEARS. DETERMINED IN ACCORDANCE WITH SECTION 144 OF THE NATIONAL WATER ACT (ACT 36 OF 1998)

2nd Sept 2024

R.D.HIRST Pr. Tech (Eng) 2018300110
FOR SiVEST (PTY) LTD

DATE

REFERENCE DRAWINGS

xxxx/xxxx	.....

Return Storm Period	Unit Hydrograph Method	SDF Method	SCS Method	Kovacs Regional Max.
	(m^3 / s)	(m^3 / s)	(m^3 / s)	(m^3 / s)
1 : 50 year	240.03	216.69	**239.24**	212.05
1 : 100 year	287.05	274.42	**284.92**	265.57

ISSUED FOR INFORMATION	RDH	02.09.24	A
Revision Details	By / Chk	Date	Rev

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Project Title

PTN 243
ROODEKRANS

Drawing Title

1:500 & 1:100 YEAR RETURN STORM FLOODLINES ALONG THE MULDERSDRIFT RIVER

Scale	ON ORIGINAL PLAN
1:400	0 10 20 30 40 50

Drawn	Designed	Checked
RDH	R D HIRST	R D HIRST
Date	Date	Date
02.09.2024	02.09.2024	02.09.2024

APPROVED ON BEHALF OF SiVEST

BY : R D HIRST | Pr No: 2018300114

SIGNATURE : | DATE :

SiVEST Project Number	SiVEST Drawing Number	Revision
9998	5301-01	A