

RESULTS OF 50 YEAR RI RAINFALLS

River Sta	Q Total (m ³ /s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev* (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m ²)	Top Width (m)	Froude #
70	44	210.2	211.68		211.69	0.006513	0.56	98.23	104.8	0.15
60	44	209.73	211.27		211.28	0.010365	0.62	76.67	78.98	0.19
50	44	209.25	210.63		210.66	0.01553	0.79	59.71	57.92	0.23
40	44	208.52	209.82		209.84	0.017201	0.77	63.02	71.55	0.24
30	44	207.76	209.12		209.14	0.011677	0.72	75.43	85.89	0.21
20	44	207.2	208.6		208.62	0.009316	0.65	77.77	78.88	0.18
10	44	206.49	208.08	207.48	208.1	0.012012	0.74	74.38	86.7	0.21

* The Energy Grade (EG) elevation determines the floodline

RESULTS OF 100 YEAR RI RAINFALLS

River Sta	Q Total (m ³ /s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev* (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m ²)	Top Width (m)	Froude #
70	57	210.2	211.85		211.86	0.006368	0.6	116.54	106.57	0.16
60	57	209.73	211.45		211.47	0.010153	0.68	91.03	81.2	0.19
50	57	209.25	210.8		210.84	0.016039	0.88	69.99	59.72	0.24
40	57	208.52	209.98		210.01	0.017302	0.85	74.6	73.92	0.25
30	57	207.76	209.29		209.32	0.011257	0.77	90.4	87.99	0.21
20	57	207.2	208.78		208.8	0.009364	0.71	92.05	80.76	0.19
10	57	206.49	208.25	207.57	208.28	0.012009	0.81	91.31	106.48	0.21

* The Energy Grade (EG) elevation determines the floodline

Project AF1098 – Village Ridge Floodline Flood Study.

Notes for Floodline Drawing AF1098-01

1. TABLE OF RAINGAUGES IN AND CLOSE TO CATCHMENT AREA

Ref.	Name	Latitude (deg) (min)	Longitude (deg) (min)	MAP (mm)	Altitude (m amsl)	Years of Record	One Day Design Rainfalls (mm) for RI (years)					
							5y	10y	20y	50y	100y	200y
28775W	Witfontein	33 55	22 26	941	546	45	110	139	170	217	258	304
28338W	George	33 57	22 26	911	216	93	101	127	156	199	236	279
USE							104	135	163	208	247	290

Rainfall information sourced from SANRAL (2009)

2. TABLE OF FLOOD ANALYSIS INFORMATION

Catchment Area	6.8 km ²		
Land Usage	Brush/Scrub winter rainfall area, residential, commercial area and parks (eg. van Riebeeck Gardens)		
Soil Classifications	Hydrological Soil Classification: B/C (Moderate Stormwater Potential)		
Time of Concentration	186 minutes (3 hours)		
Flood Flow Estimates: (m ³ /s)	Method of Analyses	50 Year RI	100 Year RI
	SCS	44 m ³ /s	57 m ³ /s
	Rational	41 m ³ /s	48 m ³ /s
	USE	44 m ³ /s	57 m ³ /s

3. TABLE OF MANNING'S n VALUES FOR THE RIVER AND FLOODPLAIN.

Position in Floodplain:	Left hand bank	Watercourse	Right hand bank
	0.175	0.175	0.175

- Consideration from the City of Cape Town Floodplain and River Management Policy (2009):
 - It is far more cost effective in the long term to develop in areas where the threat of flooding is infrequent and the severity of flooding is minimal as opposed to the retrospective implementation of flood mitigation works which would generally be very costly and sometimes prone to catastrophic failure when flood flows exceed the design flow of infrastructure.
 - In determining catchment runoff the foreseeable ultimate development scenario for the catchment must be used.
 - The flood levels must be based upon theoretical energy levels as opposed to water surface levels.
 - Any structure built within the floodplain (ablutions and clubhouse) should be designed to withstand the forces and effects of flowing floodwaters, including scour of foundations, debris forces and buoyancy forces.
- Note that the 100 year flood line is likely to be exceeded during the infinite course of time. We recommend that infrastructure close to the floodlines have raised floor levels to assist with the possibilities of climate change.
- The position of the floodline on the ground should be based upon elevation data rather than the approximate position indicated on the drawing.

References

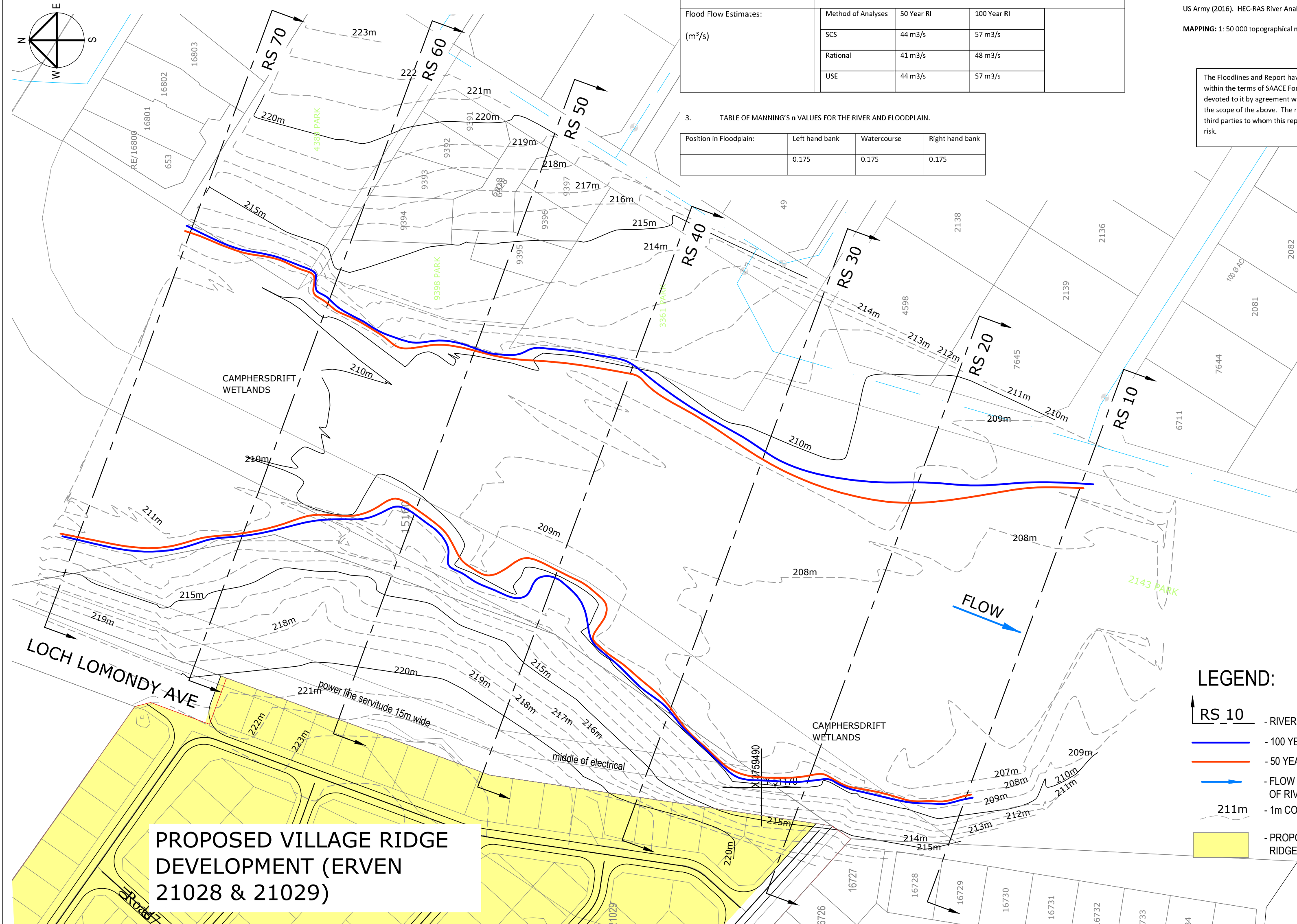
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MAPPING: 1: 50 000 topographical maps 3322 CD and 3422 AB; 1: 10 000 orthomaps 3322CD 19, 20, 24 and 25

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PROJECT:
PROPOSED VILLAGE RIDGE DEVELOPMENT ON ERVEN 21028 & 21029 GEORGE

CLIENT:
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DRAWING TITLE:
FLOODLINE DETERMINATION

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AF1098-01	1:1000	A2	0

PROPOSED VILLAGE RIDGE DEVELOPMENT (ERVEN 21028 & 21029)