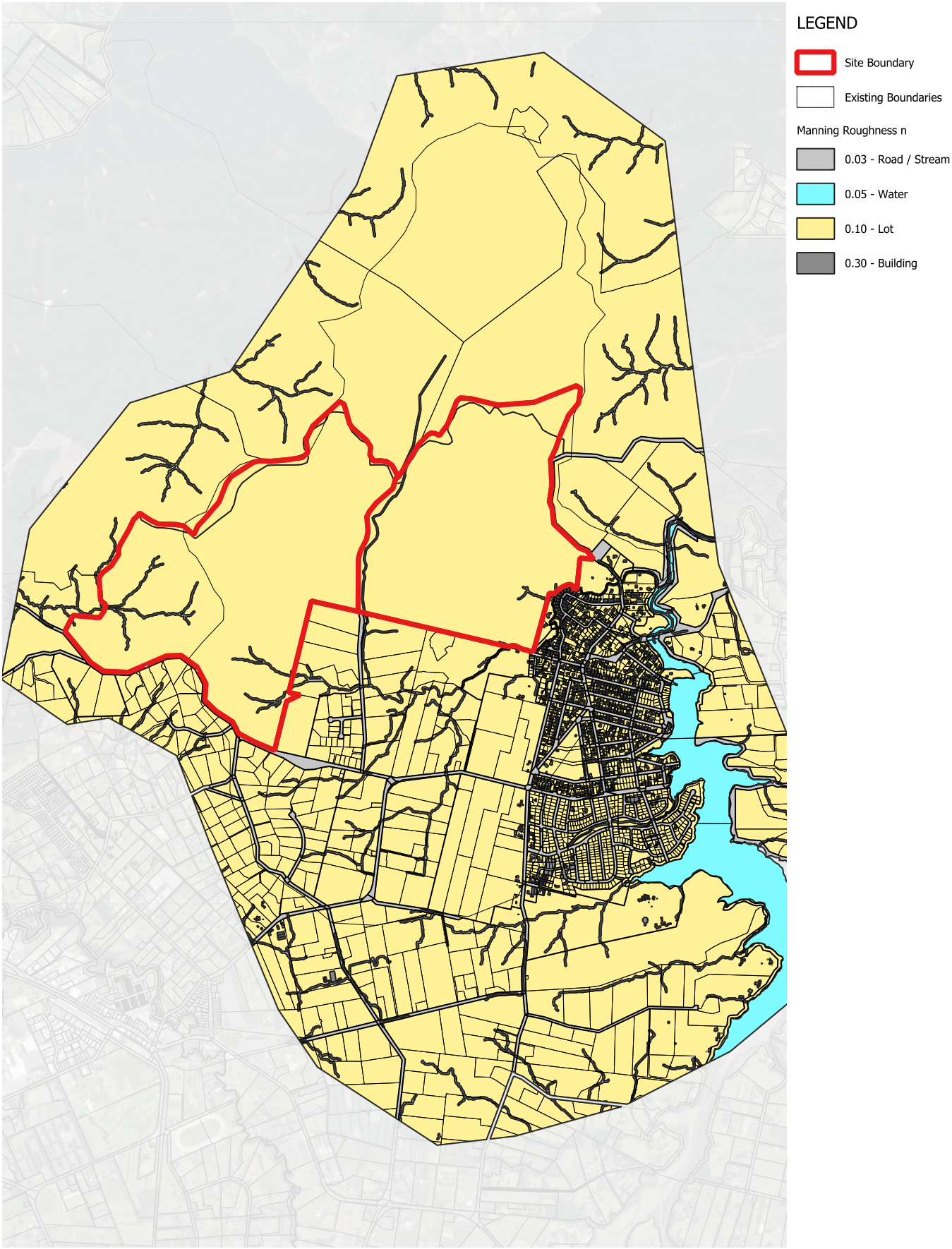
13. APPENDICES

APPENDIX A – HEC RAS MODEL PARAMETERS

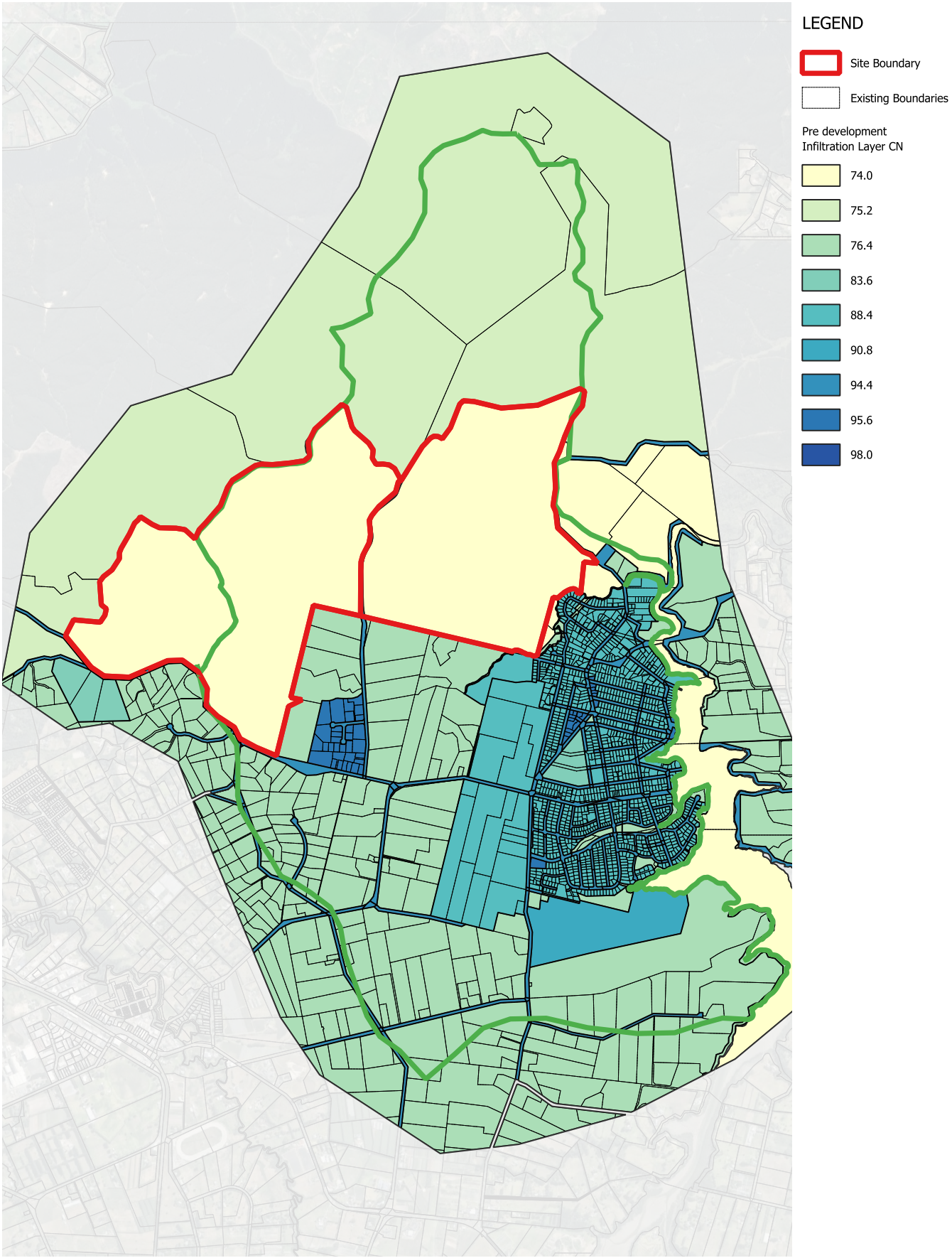
Manning Roughness n

Existing Buildings, Streams and Road delineated



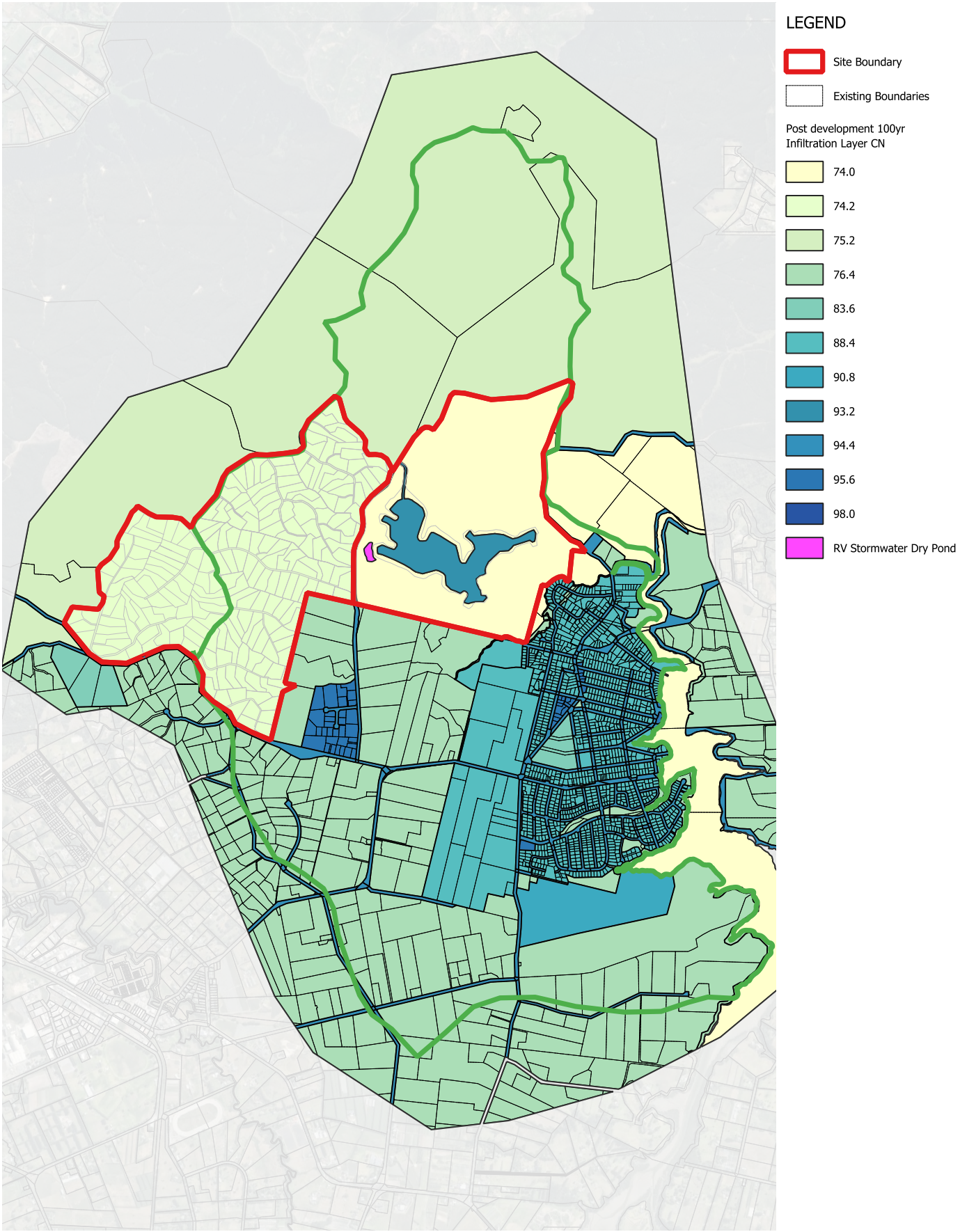
Pre development Infiltration Layer CN

Assuming TP108 Soil Group Type C



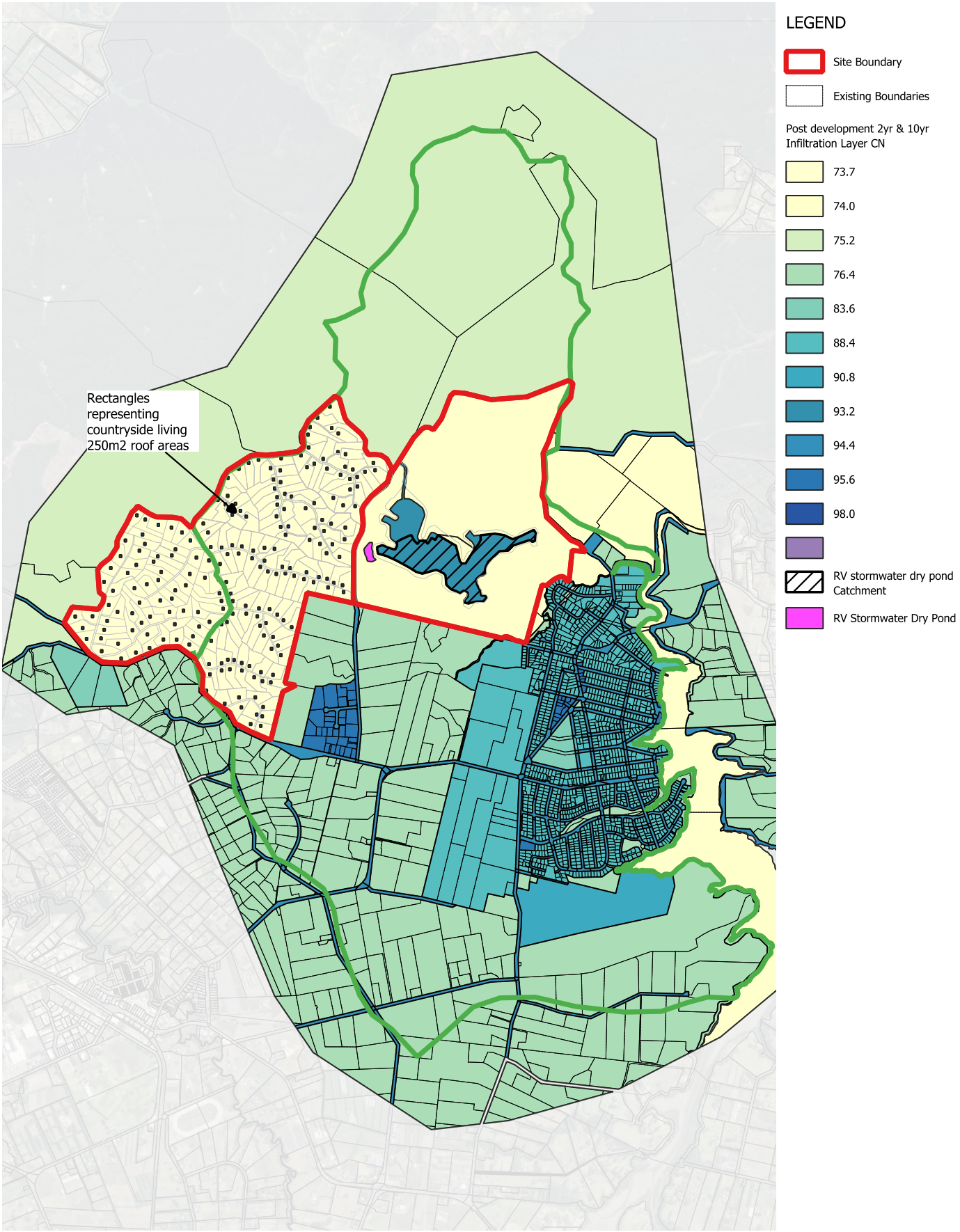
Post development Infiltration Layer CN for 100yr

Assuming TP108 Soil Group Type C



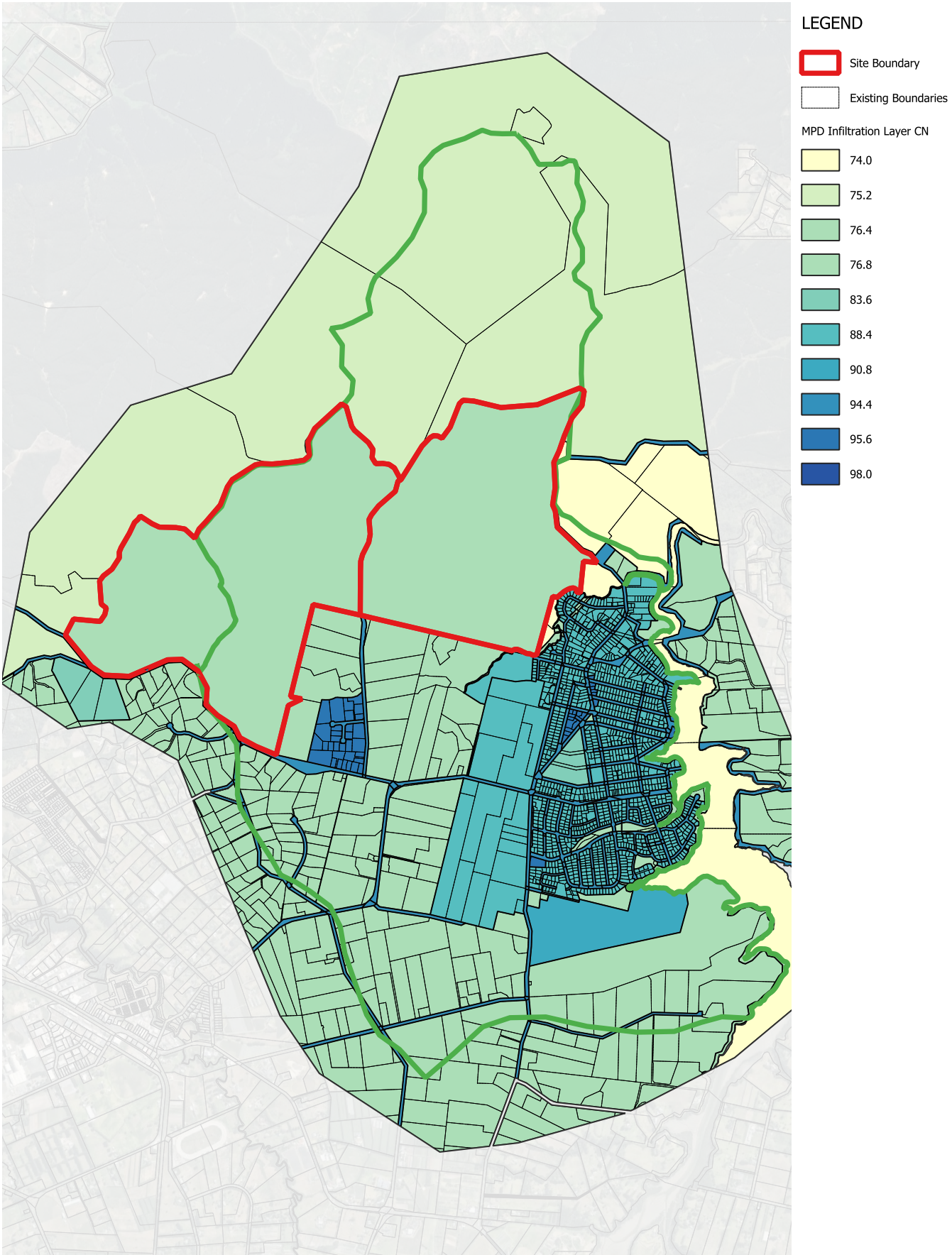
Post development Infiltration Layer CN for 2yr and 10yr

Assuming TP108 Soil Group Type C



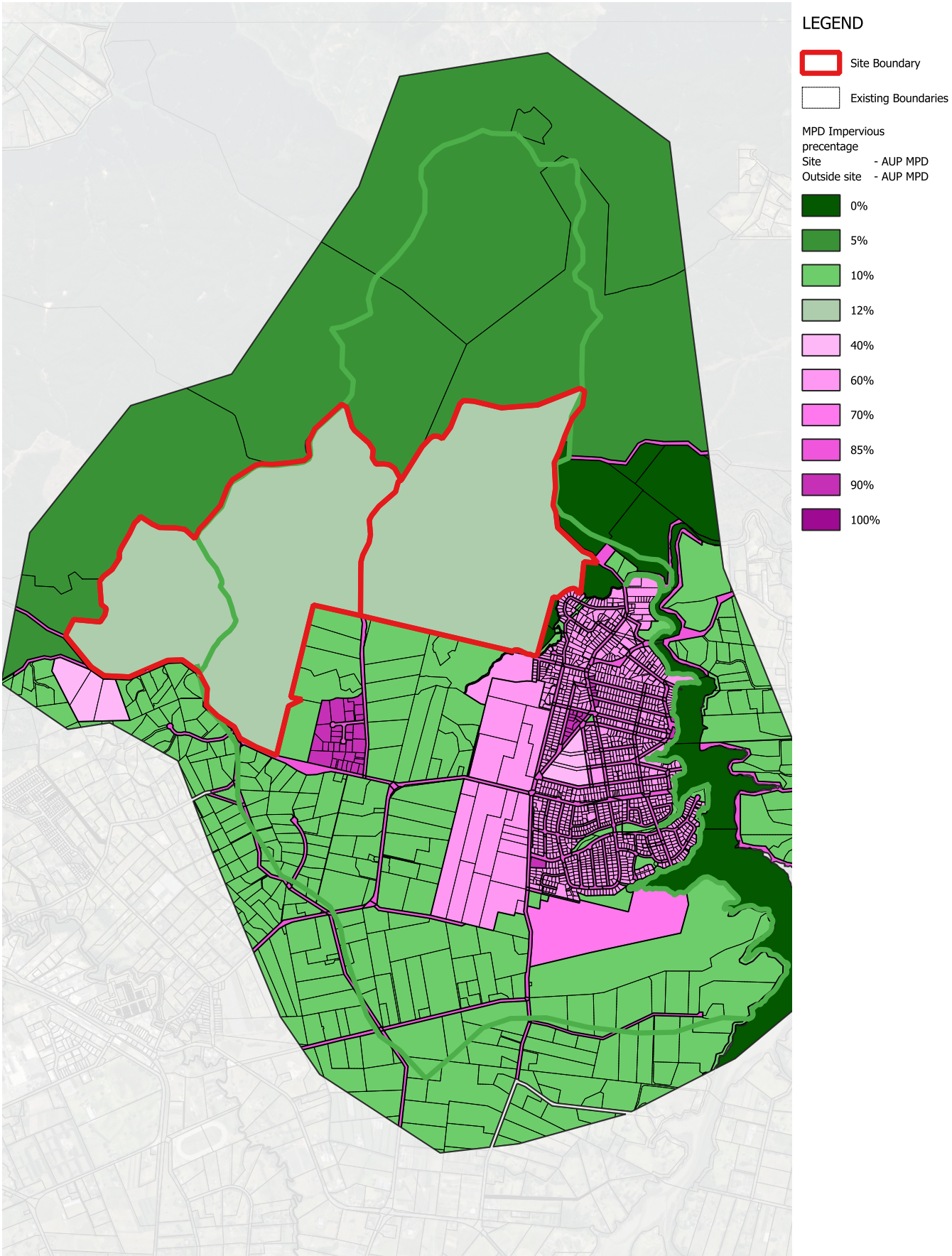
MPD Infiltration Layer CN

Assuming TP108 Soil Group Type C



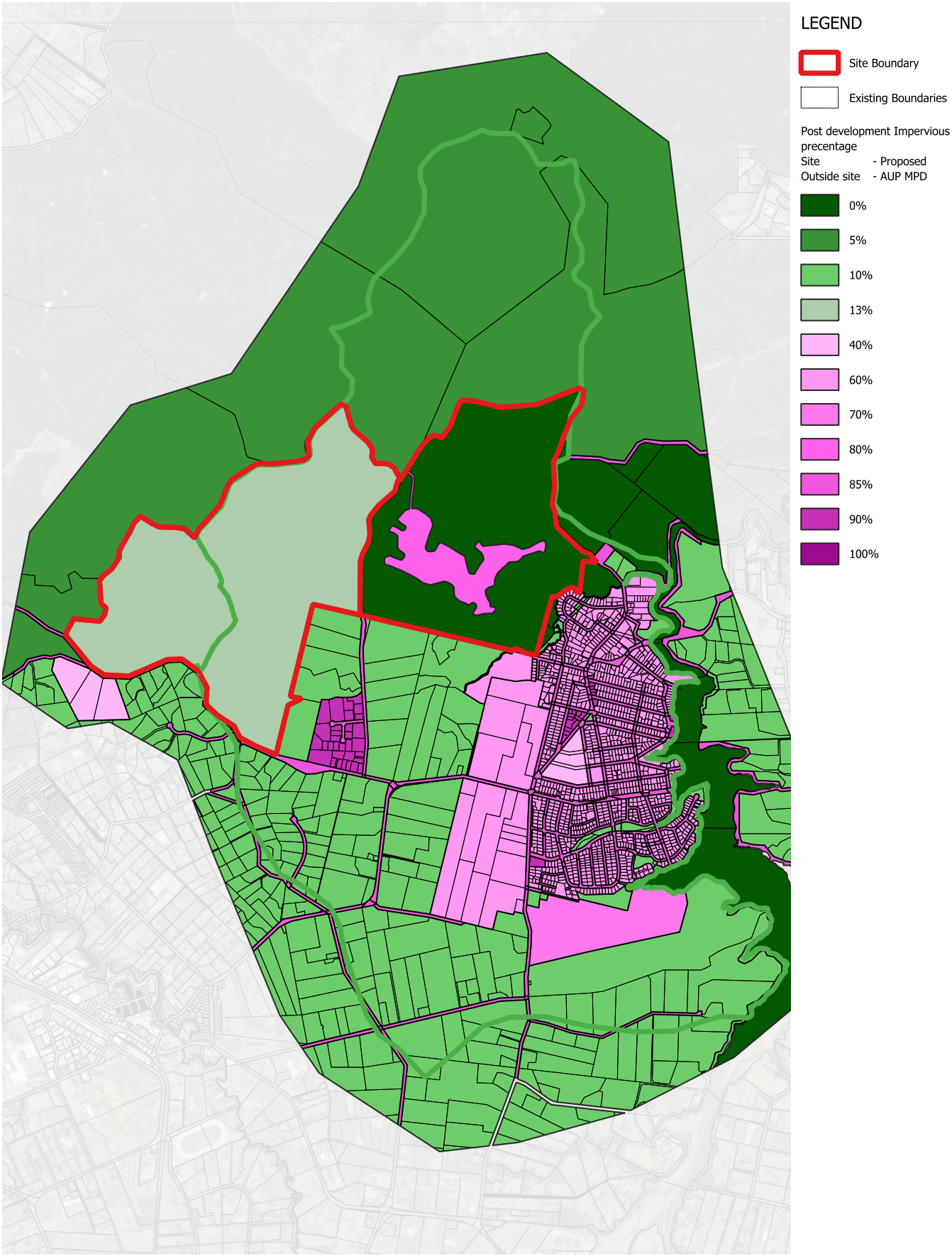
Impervious Percentage Maximum Probable Development

Within site - AUP MPD
Outside site - AUP MPD



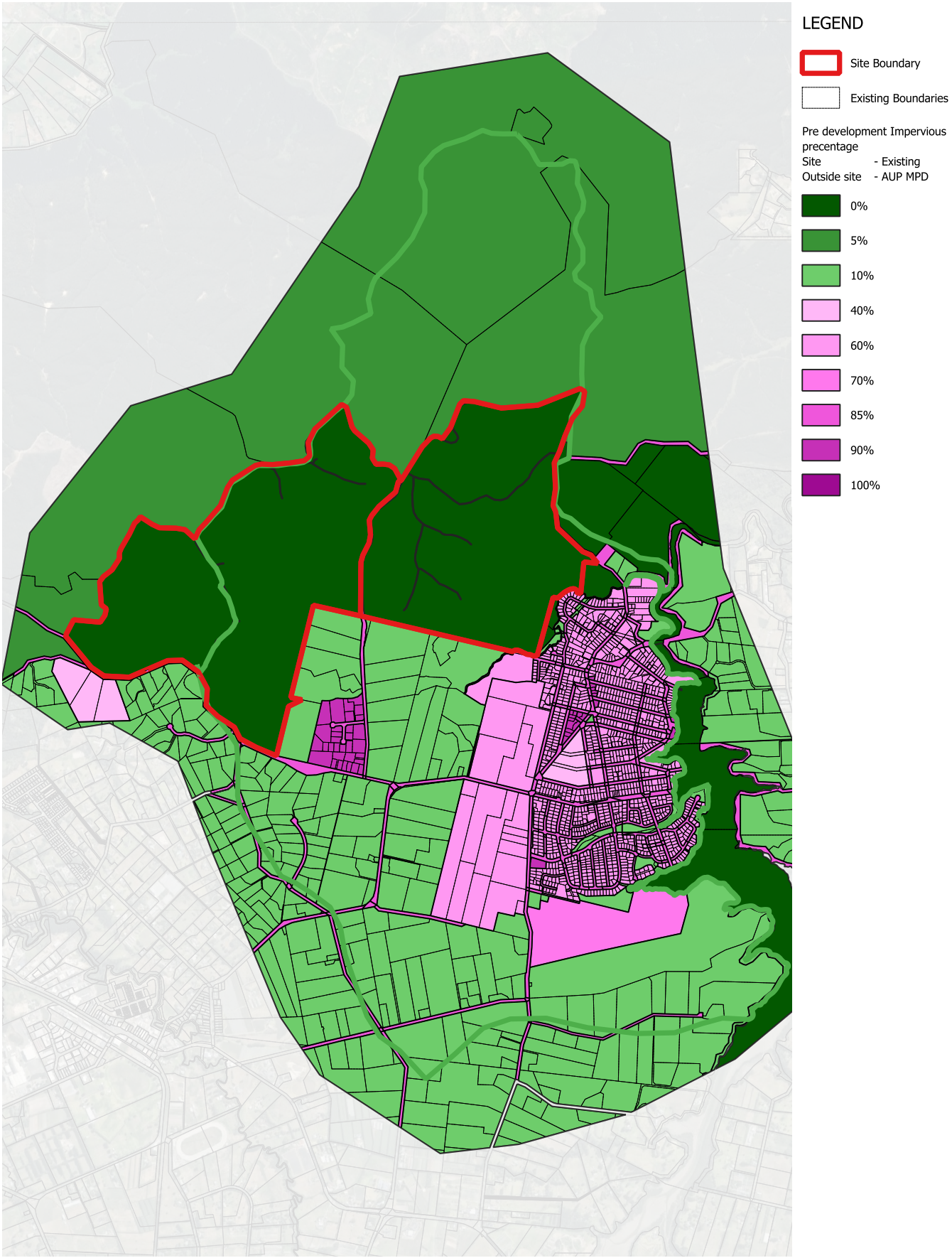
Impervious Percentage Postdevelopment

Within site - Proposed
Outside site - AUP MPD



Impervious Percentage Predevelopment

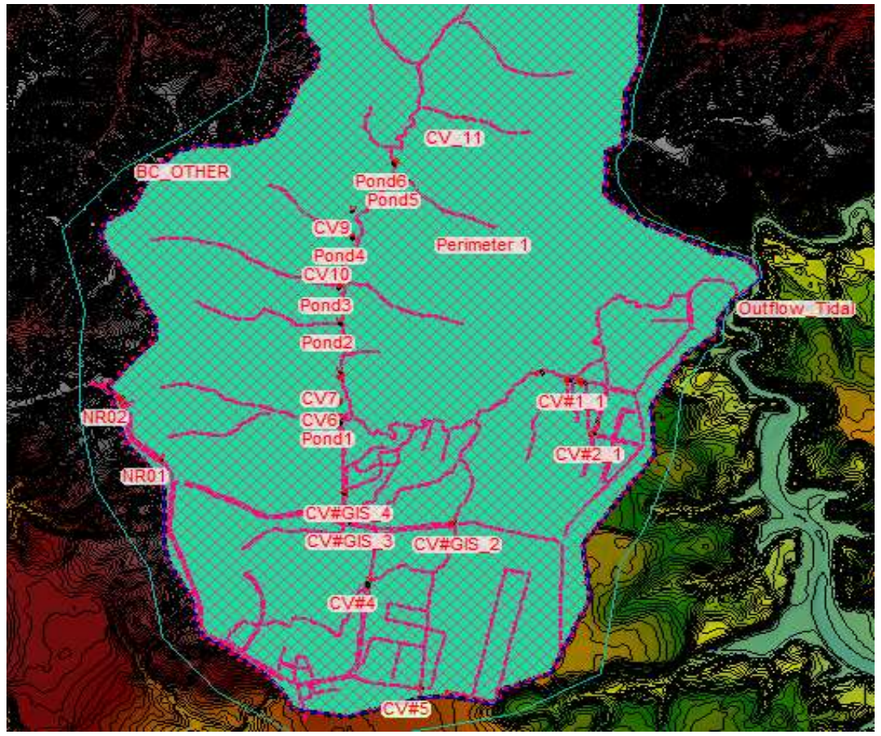
Within site - Existing Impervious
Outside site - AUP MPD



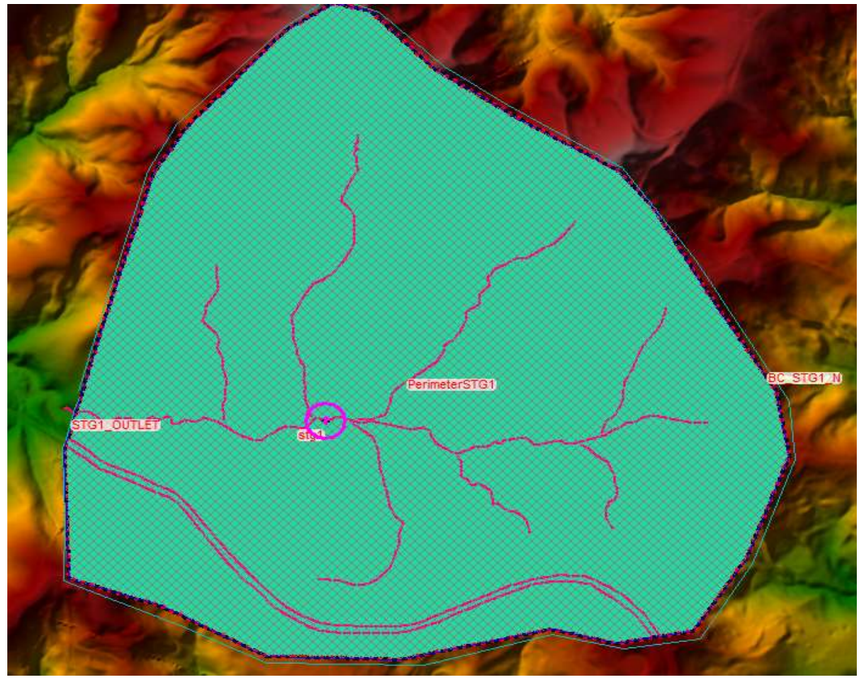
Existing Culverts

Culverts	Size(mm)	Sources
CV#1_1	875, 525, 975 & 900x2	GLS
CV#2_1	600 & 750x2	Aerial photo
CV#4	600	Aerial photo
CV#5	600	Aerial photo
CV#6_1	600	Aerial photo
CV#9_6	600	Aerial photo
CV#_1	2500	Aerial photo
CV#GIS_2	900	Aerial photo
CV#GIS_3	900	Aerial photo
CV#GIS_4	600	Aerial photo
Pond1	300	Survey
Pond2	300	Survey
Pond3	300	Survey
Pond4	300	Survey
Pond5	975	Survey
Pond6	2600	Survey
CV6	300	Survey
CV7	300	Survey
CV8	550	Survey
CV9	250	Survey
CV10	450	Survey
CV_11	450	Survey
NR01	350	Survey
NR02	150	Survey
NR03	300	Survey
NR04	300	Survey
Stg1	900 & 525	Survey

Existing Eastern Catchment



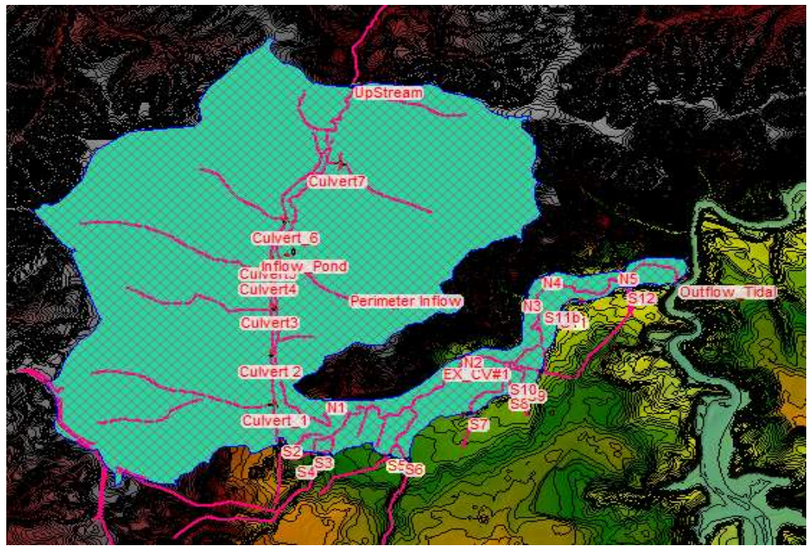
Existing Western Catchment



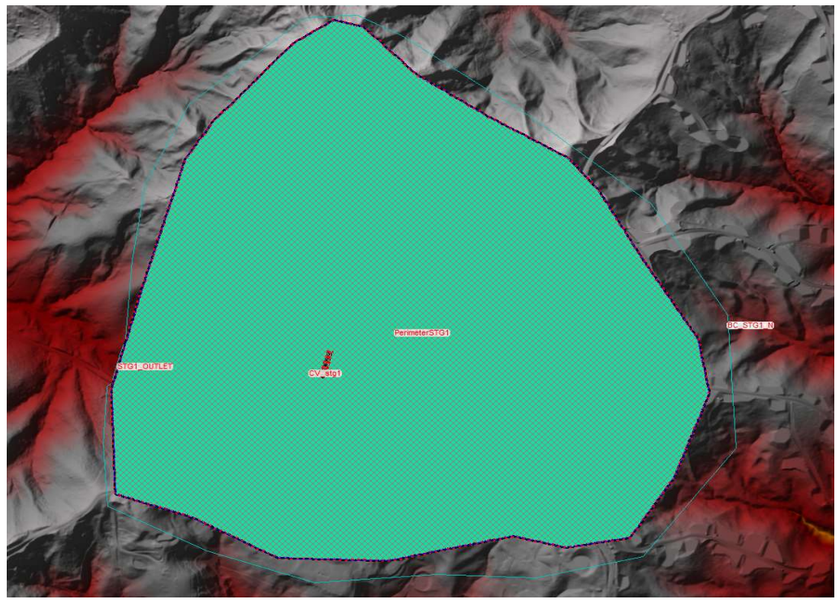
Propsoed Major Culverts

Culverts	Size(mm)	Sources
1	2000 x 5000	Proposed
2	1500 x 1500	Proposed
3	2000 x 4000	Proposed
4	2000 x 6000	Proposed
5	1000 x 2000	Proposed
6	1500 x 2000	Proposed
7	600	Proposed
Stg 1 Prima	1200	Proposed
Stg 1 Seco	1500 x 4500 Box culvert	Proposed

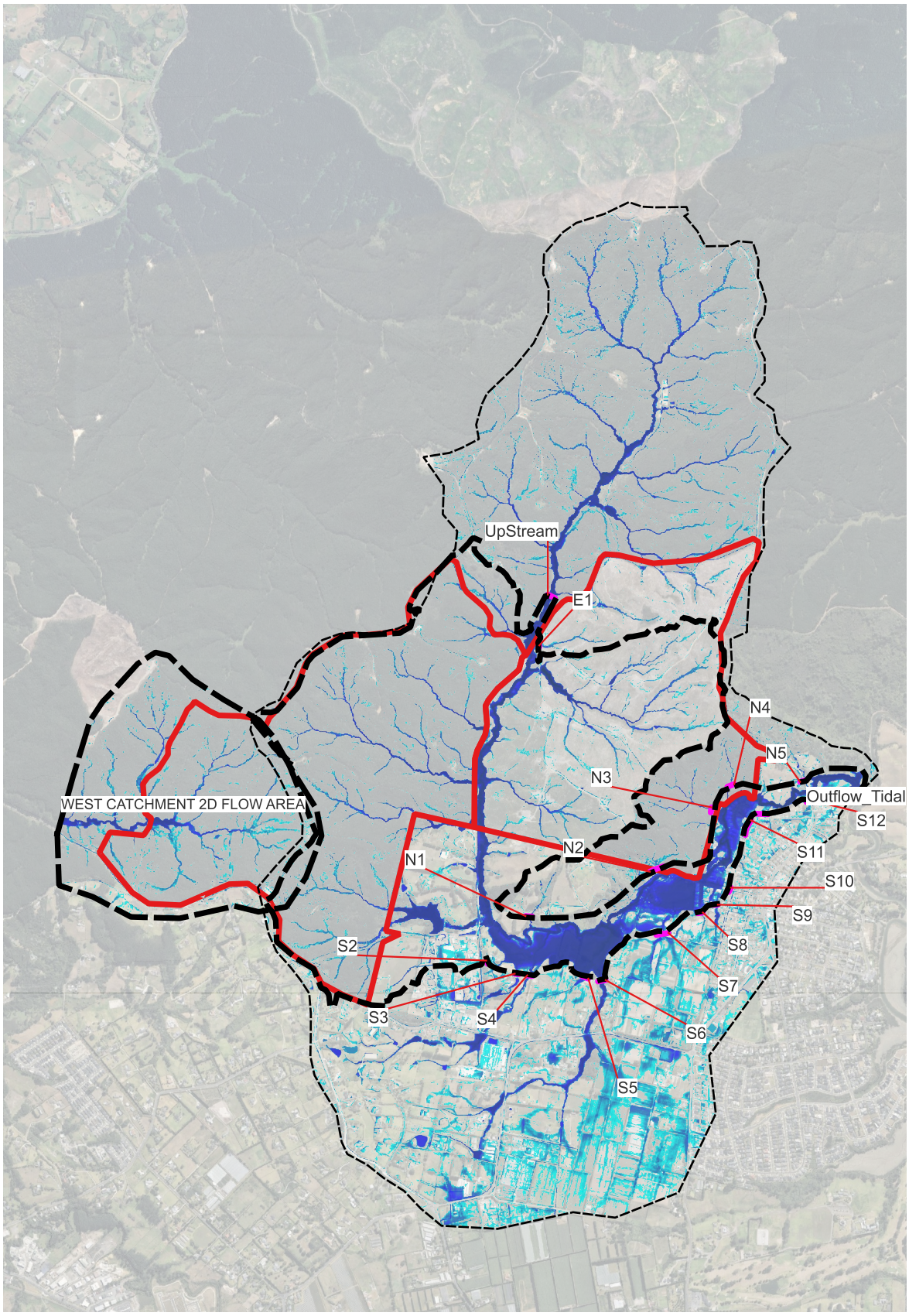
Proposed Eastern Catchment



Proposed Western Catchment



HEC RAS Catchment wide model extents
and location of Inflow Boundary Condition extraction for the reduced model



HEC RAS - Inflow Hydrograph Summary

Flow hydrographs extracted from catchment wide model and input in to reduced model

BOUNDARY INFLOW	Peak flow (m3/s)			
	1%AEP	1%AEPCC	10%AEPCC	50%AEPCC
N1	2.81	5.14	2.04	0.77
N2	3.70	6.65	2.61	0.94
N3	3.95	6.92	2.92	1.19
N4	2.34	4.11	1.71	0.61
N5	2.86	5.16	2.13	0.94
S10	1.31	2.25	0.99	0.45
S11	1.39	2.36	1.12	0.51
S11b	0.64	1.12	0.48	0.03
S12	1.10	2.02	0.89	0.39
S2	2.13	0.88	1.34	0.48
S3	2.69	4.36	2.29	1.13
S4	7.40	12.85	2.89	1.02
S5	1.69	3.21	1.28	0.56
S6	17.22	31.90	12.35	2.81
S7	4.45	7.45	3.43	1.53
S8	0.74	1.18	0.58	0.28
S9	2.30	4.17	1.65	0.70
UPSTREAM	43.99	86.15	34.33	11.15

Appendix B – HEC HMS Model Parameters For RV Dry Pond

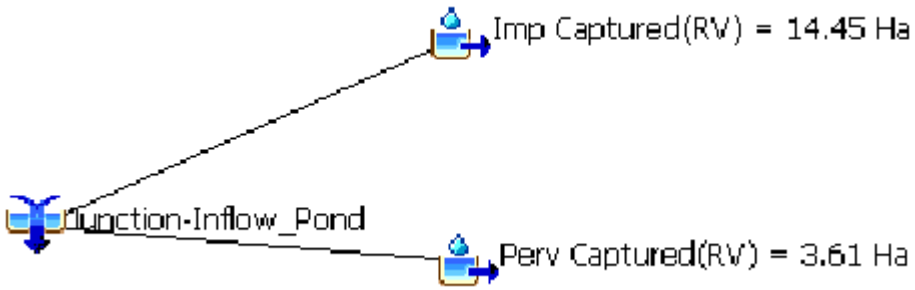
Retirement Village Stormwater Dry Pond

Catchment pipe network routing for 50%, 20%, 10%, 5% and 2%AEP storms

HMS Basin model

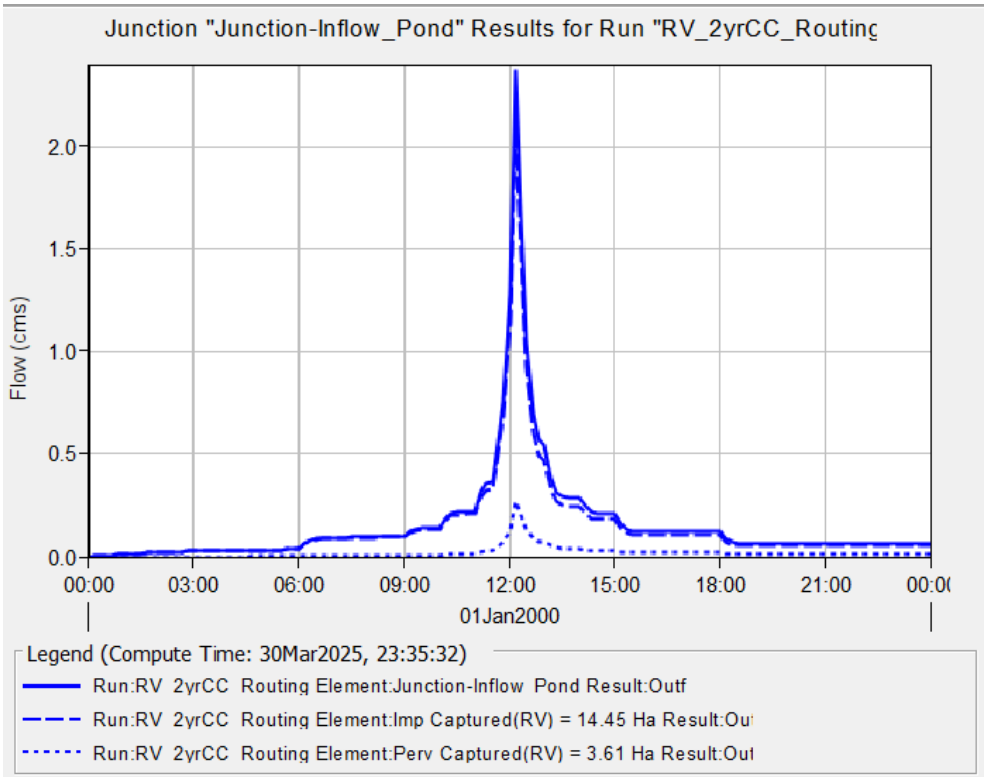
Impervious Area = 14.45 Ha (CN = 98, Ia = 0, Lag = 6.7min)

Pervious Area = 3.61 Ha (CN = 74, Ia = 5, Lag = 6.7min)

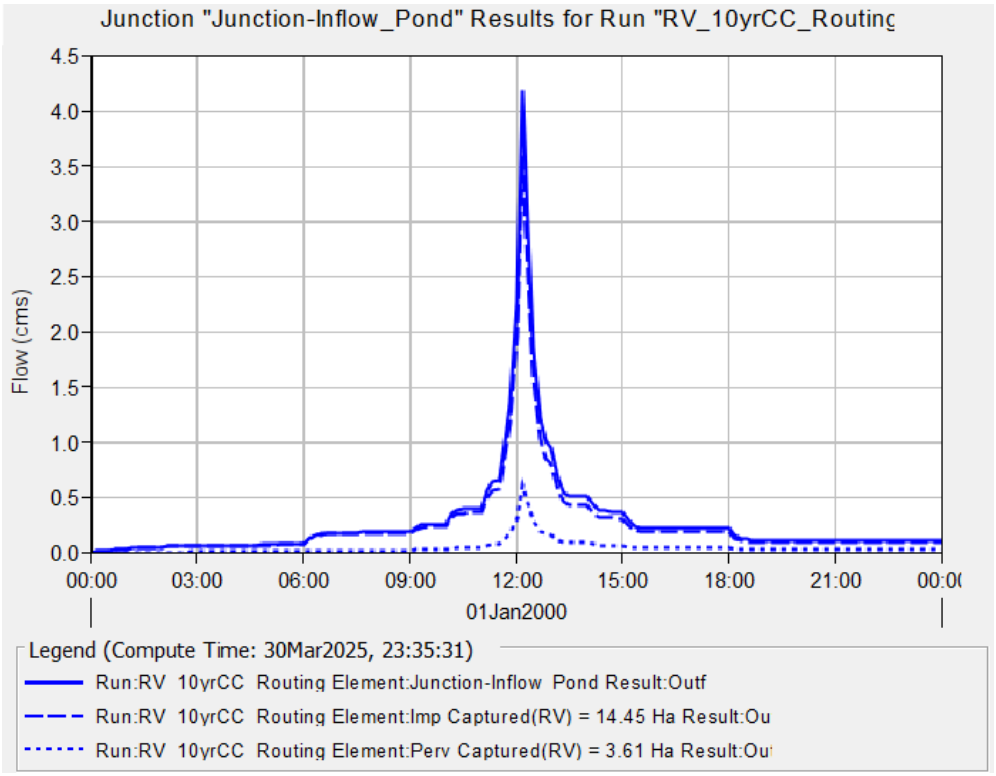


Note: It is noted that Primary Pipe network is sized for a 10%AEP storm. Routed flows for the 5% and 2% AEP storms exceed the pipe capacity for a 10min duration during the storm. However for the purposes of the catchment wide modelling this shall have negligible impact.

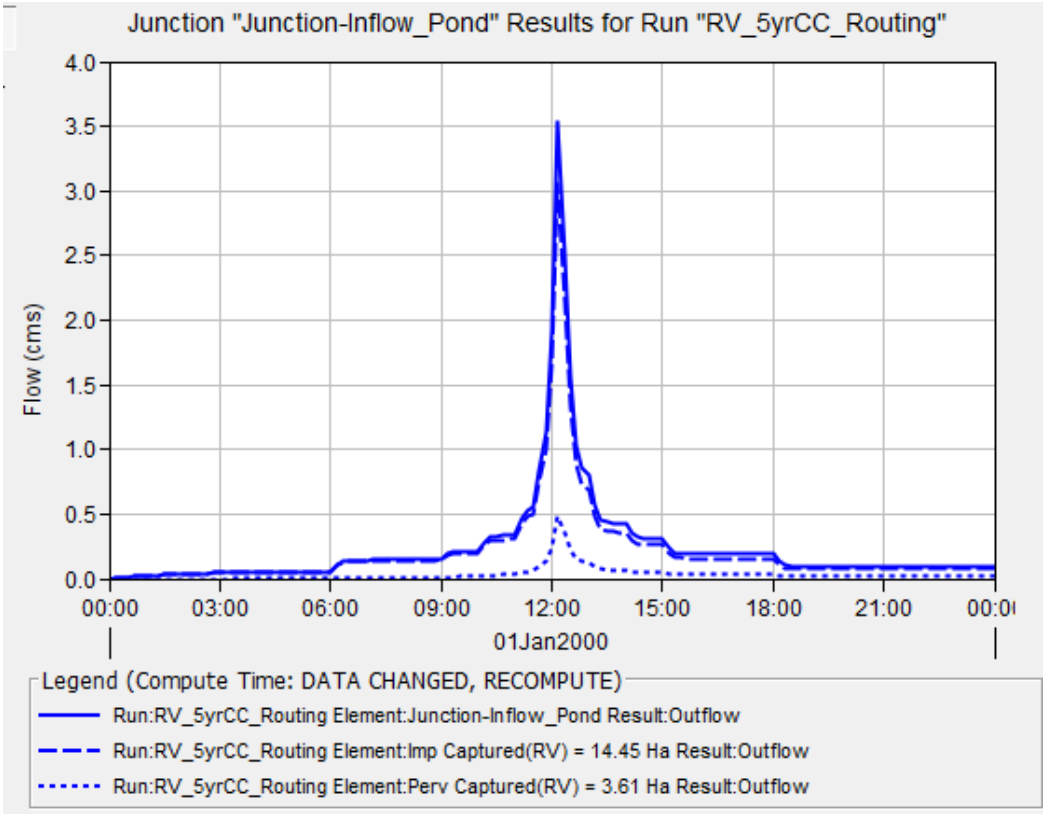
50% AEP Hydrograph – Input to HEC RAS as inflow boundary condition



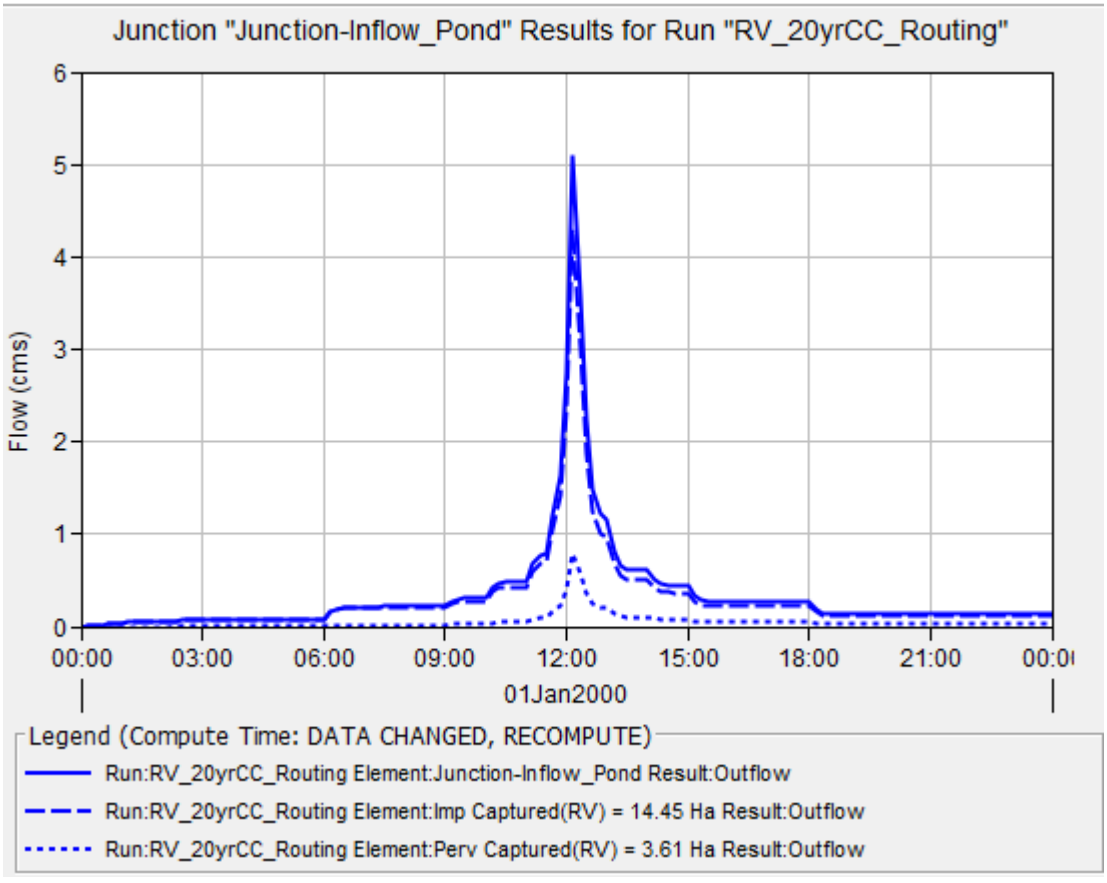
10% AEP Hydrograph – Input to HEC RAS as inflow boundary condition



20% AEP Hydrograph – Input to HEC RAS as inflow boundary condition



5% AEP Hydrograph – Input to HEC RAS as inflow boundary condition



2% AEP Hydrograph – Input to HEC RAS as inflow boundary condition