N

CATCH DRAIN (USED TO DIRECT FLOWS TO SEDIMENTATION BASIN)

BASIN 2 (SEDIMENT BASIN)

TEMPORARY ACCESS

TRUCK WASH DOWN AREA

BASIN 1 (SEDIMENT BASIN)

PROPOSED CONSTRUCTION SITE COMPOUND

LEGEND

SEDIMENT FENCING

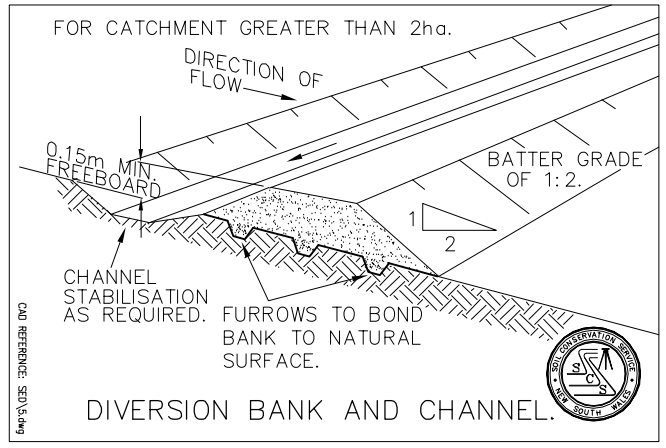
TRUCK WASH AREA

WorleyParsons
resources & energy

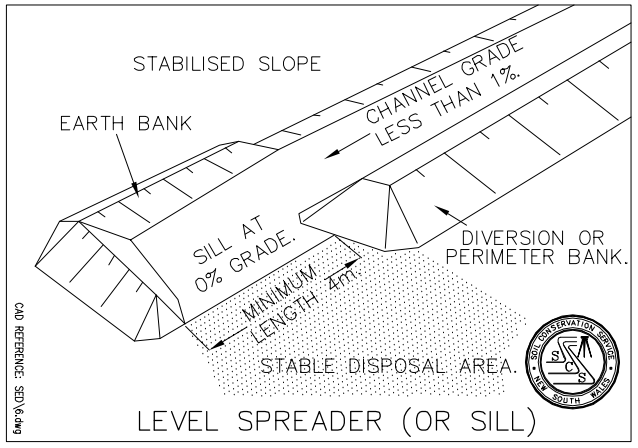
0 200 m

1: 5000

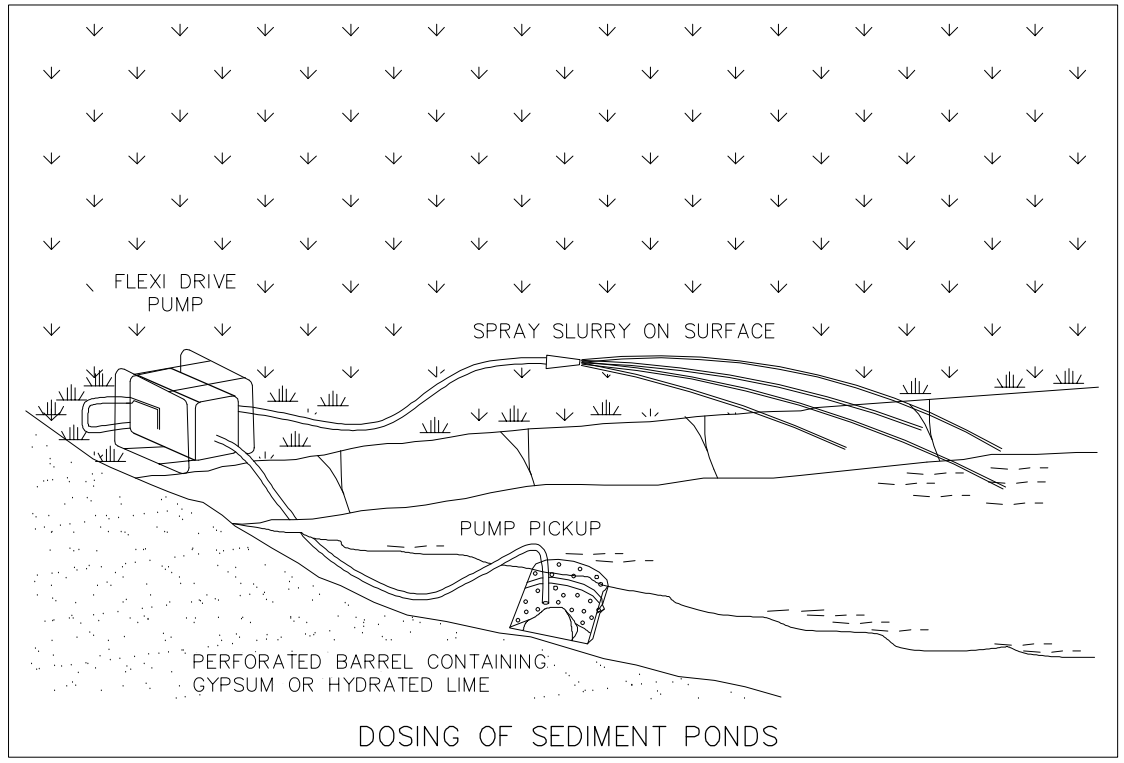
PRELIMINARY CONSTRUCTION STORMWATER MANAGEMENT PLAN TRAIN SUPPORT FACILITY SHEET 2 OF 2



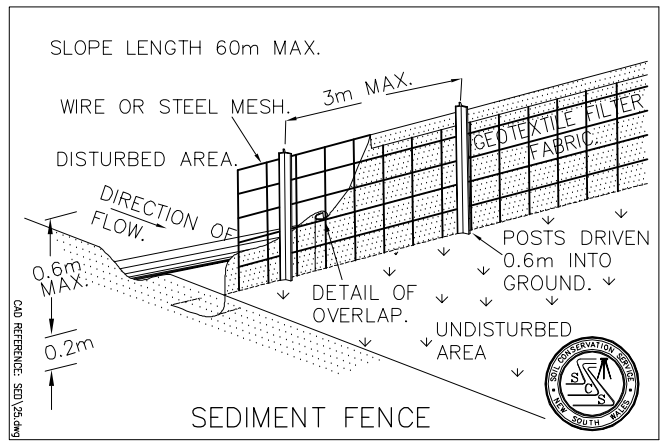
DIVERSION BANK AND CHANNEL.



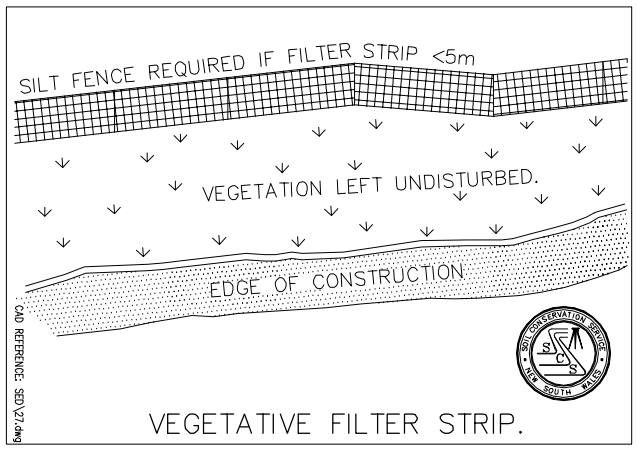
LEVEL SPREADER (OR SILL)



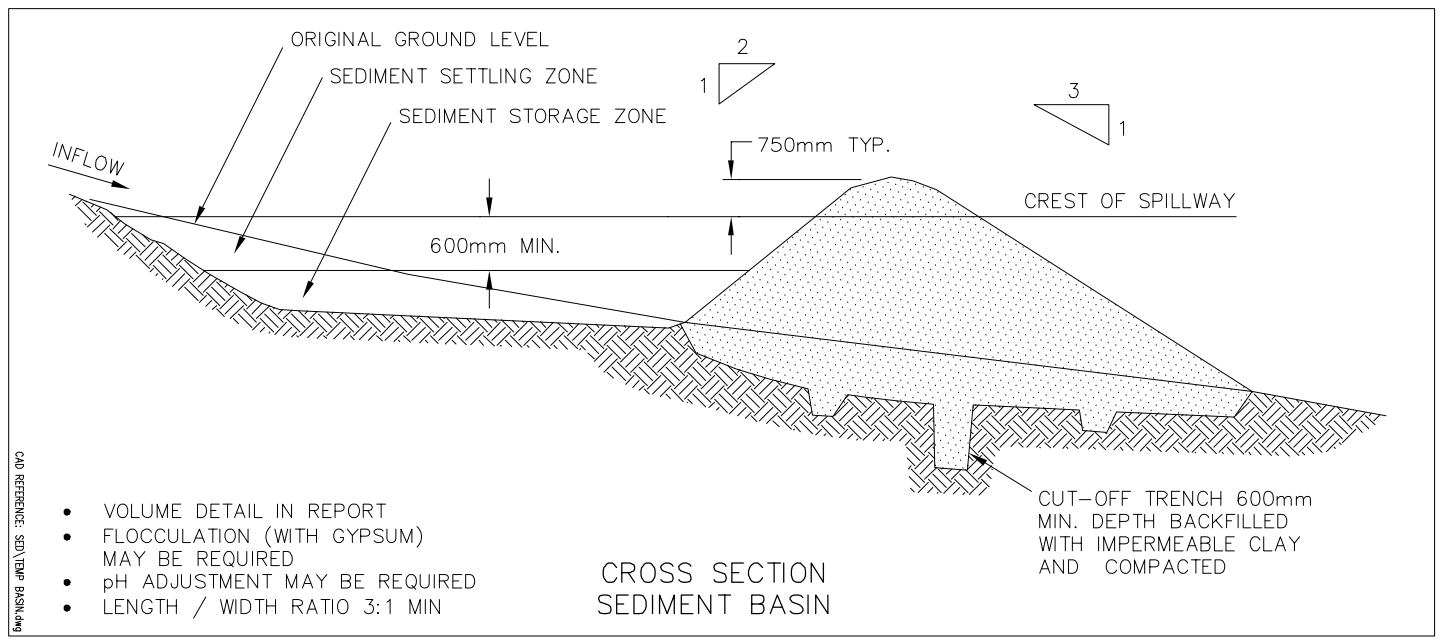
DOSING OF SEDIMENT PONDS



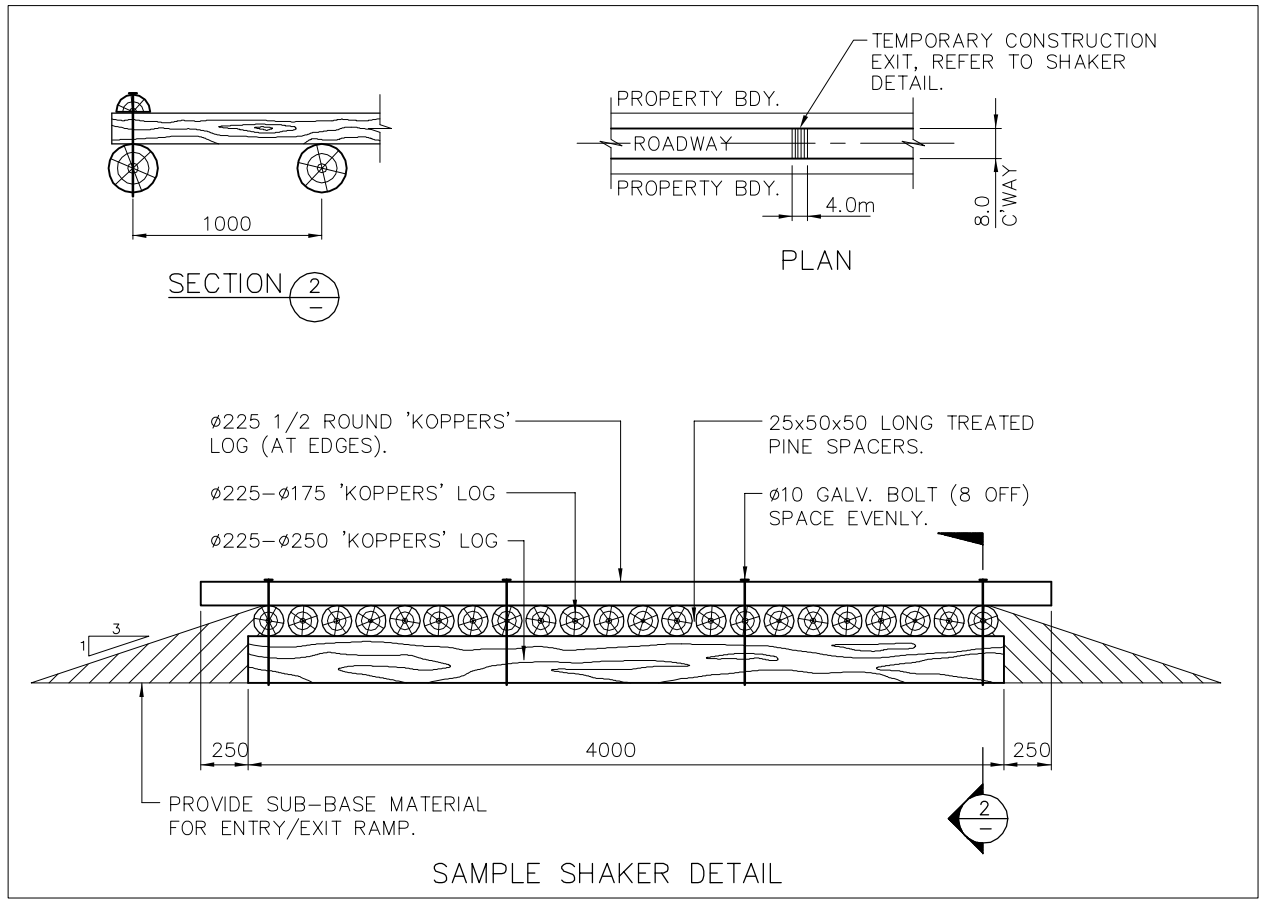
SEDIMENT FENCE



VEGETATIVE FILTER STRIP.

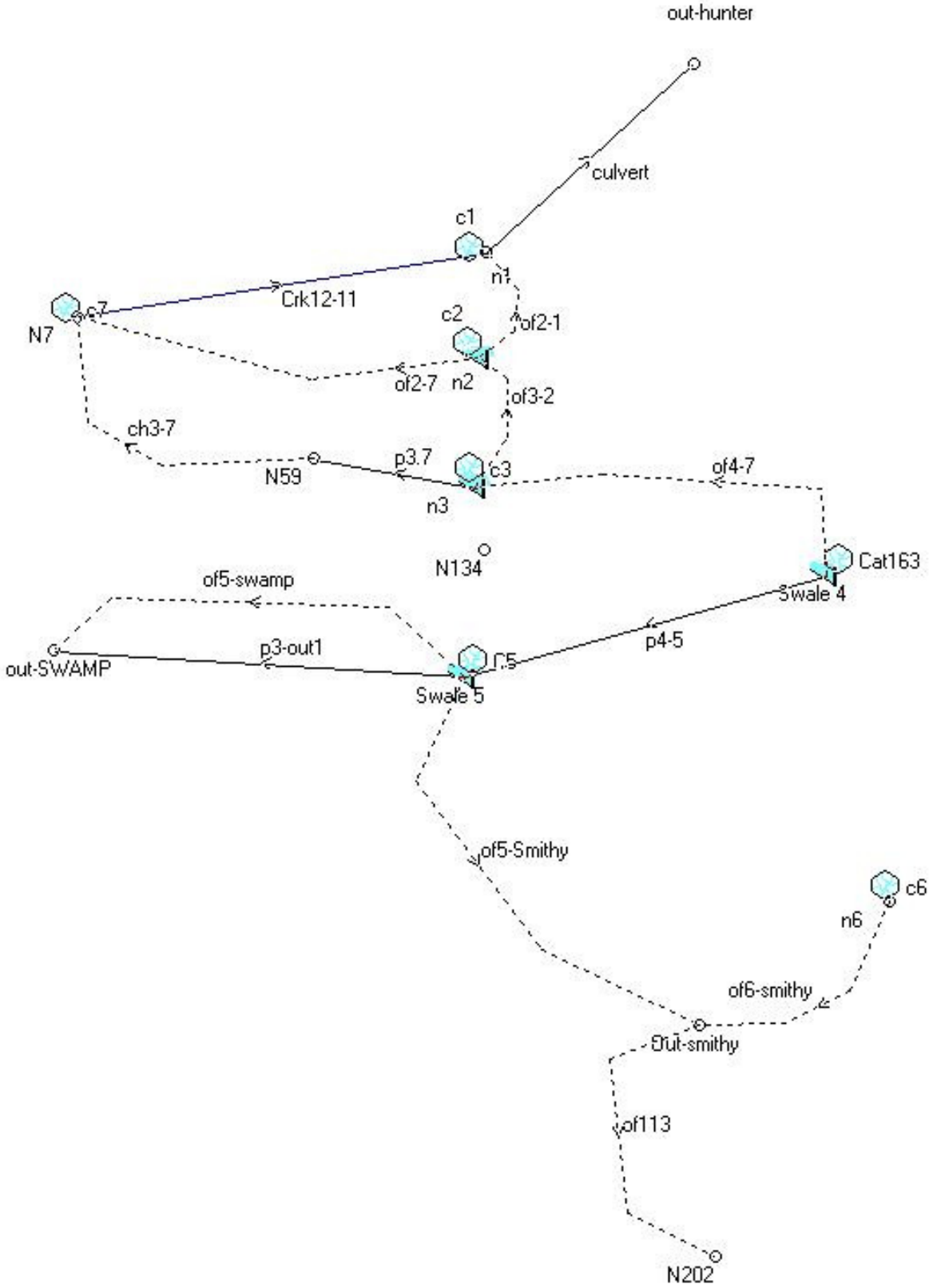


CROSS SECTION
SEDIMENT BASIN



SAMPLE SHAKER DETAIL

Appendix A DRAINS Model Results


out-hunter
culvert
c1
n1
Crk12-11
N7
c7
c2
of2-1
of2-7
n2
of3-2
ch3-7
N59
p3.7
c3
n3
of4-7
N134
Cat163
Swale 4
of5-swamp
p4-5
out-SWAMP
p3-out1
c5
Swale 5
of5-Smithy
c6
n6
of6-smithy
out-smithy
of113
N202

INPUT DATA - EXISTING

PIT / NODE DETAILS Version 10

Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	id	Part Full Shock Loss	Inflow Hydrograph
N59	Node					0.625		0		-18.896	-460.106		170		
N7	Node					0.2		0		-413.295	-221.642		196		
n1	Node					2		0		265.187	-115.888		182		
out-hunter	Node					1		0		611.893	198.884		193		
Out-smithy	Node					1.2		0		621.846	-1403.594		244		
N202	Node					0.6		0		649.218	-1786.795		247		
N134	Node					10		0		263.528	-609.82		485		
out-SWAM	Node					0.8		0		-453.108	-779.025		228		
n6	Node					2		0		936.868	-1195.072		575		

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Init Vol. (cu	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Leng	id
n3	0.6	1000	0	Culvert	0.5					248.598	-507.798	No			156
	1	15000													
n2	0	1000	0	None						253.575	-291.315	No			198
	0.2	16000													
	1	16500													
Swale 4	1.2	786	0	Culvert	0.5					832.955	-654.012	No			546
	1.6	5145													
	1.7	6000													
Swale 5	1	3010	0	Culvert	0.5					230.981	-822.422	No			553
	1.6	13903													

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)	Paved Slope(%) %	Grass Slope %	Supp Slope %	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length (m)
c3	n3	30.5	6	94	0	0	0	0	10	300	0	0.5	0.5	0	0.02	0.1	0	0	
c7	N7	280	0	100	0	0	0	0	0	1400	0	0	0.5	0	0.02	0.1	0	0	
c1	n1	30.3	0	100	0	0	0	0	0	250	0	0	0.5	0	0.02	0.1	0	0	
c2	n2	22.4	2	98	0	0	0	0	10	500	0	1	0.5	0	0.02	0.1	0	0	
Cat163	Swale 4	45.75	6	94	0	0	0	0	0	250	0	1	3	0	0.013	0.1	0	0	
C5	Swale 5	21.12	5	95	0	0	0	0	10	140	0	1	5	0	0.03	0.1	0	0	
c6	n6	32	9	91	0	0	0	0	10	500	0	1	0.5	0	0.03	0.1	0	0	

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg (m)	Rl (m)	Chg (m)	RL (m)	etc (m)
p3.7	n3	N59	10	0.6	0.59	0.1	Concrete, r	900	900	0.013	NewFixed	2	n3	0					
culvert	n1	out-hunter	40	0.4	0	1	Box culvert	2.7W x 1.5H		0.013	Existing	1	n1	0					
p4-5	Swale 4	Swale 5	5	1.2	1.15	1	Concrete, r	900	900	0.013	NewFixed	2	Swale 4	0					
p3-out1	Swale 5	out-SWAM	10	1	0.8	2	Concrete, r	600	600	0.013	NewFixed	4	Swale 5	0					

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg (m)	Bottom Elev (m)	Height of S (m)	Chg (m)	Bottom Elev (m)	Height of S (m)	Chg (m)	Bottom Elev (m)	Height of S (m)	etc etc

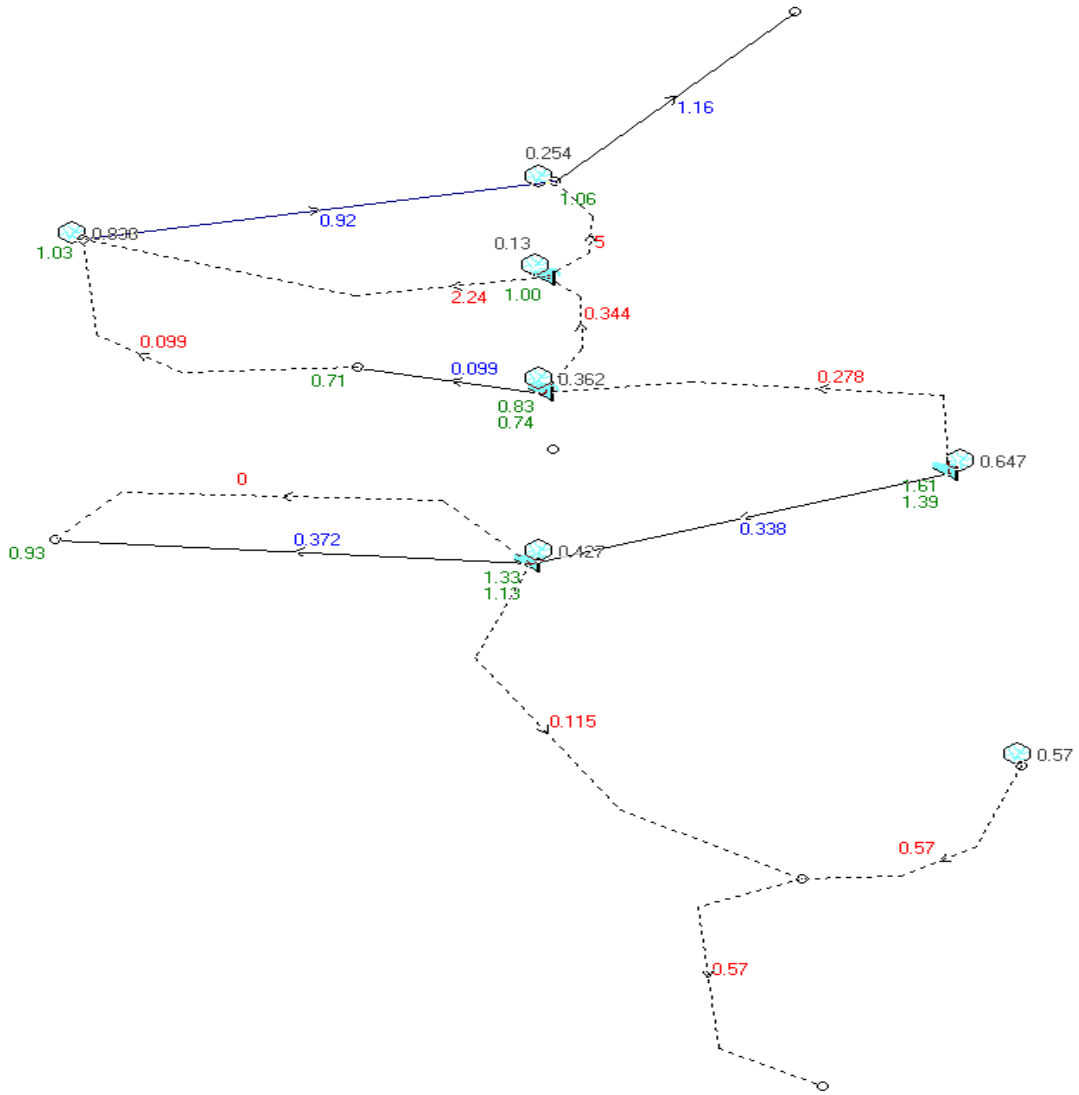
CHANNEL DETAILS

Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n	Depth (m)	Roofed
Crk12-11	N7	n1	Irregular	600	0.061	0.01							

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Depth Major Storr (m)	Safe Depth Minor Storr (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id
of3-2	n3	n2	5	0.75	10	2	10m path	0.3	0.3	0.6	0.1	0	202
ch3-7	N59	N7	20				10m path	0.3	0.3	0.6	1	0	210
of2-7	n2	N7	1	0.2	4	2	4m path	0.3	0.3	0.6	1	0	212
of2-1	n2	n1	5	0.6	10	2	10m path	0.3	0.3	0.6	0.1	0	205
of113	Out-smithy	N202	1				4m path	0.3	0.3	0.6	1	0	254
of4-7	Swale 4	n3	10	1.55	10	2	10m path	0.3	0.3	0.6	1	0	548
of5-swamp	Swale 5	out-SWAM	1	2	100	2	HWC track	0.3	0.3	0.6	1	0	231
of5-Smithy	Swale 5	Out-smithy	1	1.3	10	2	10m path	0.3	0.3	0.6	1	0	252
of6-smithy	n6	Out-smithy	1				10m path	0.3	0.3	0.6	1	0	577

Existing – 1 yr ARI



Existing 1yr ARI

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivir (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N59	0.71		0				
N7	1.02		5.706				
n1	1.02		5.034				
out-hunter	1		0				
out-SWAM	0.93		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
c3	0.362	0.362	0.006	4.22	85.3	0	AR&R 1 year, 2 hours storm, average 16.5 mm/h, Zone 1
c7	0.838	0	0.838	0	335.79	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c1	0.254	0	0.254	0	119.44	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c2	0.13	0.027	0.122	5.35	181.04	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Cat163	0.647	0.168	0.591	0	69.78	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
C5	0.427	0.065	0.404	6.83	42.27	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c6	0.57	0.57	0.004	4.37	115.89	0	AR&R 1 year, 2 hours storm, average 16.5 mm/h, Zone 1

Outflow Volumes for Total Catchment (8.96 impervious + 453 pervious = 462 total ha)

Storm	Total Rainf cu.m	Total Runo cu.m (Runc	Impervious cu.m (Runc	Pervious Runoff cu.m (Runoff %)
AR&R 1 ye	116441.6	1988.89 (1.	1988.89 (8!	0.00 (0.0%)
AR&R 1 ye	152483.1	2708.12 (1.	2687.69 (9!	20.42 (0.0%)
AR&R 1 ye	177434.9	3171.62 (1.	3171.62 (9!	0.00 (0.0%)
AR&R 1 ye	230665.3	5940.81 (2.	4203.50 (9-	1737.32 (0.8%)
AR&R 1 ye	268647.5	17188.16 ((	4939.63 (9-	12248.53 (4.6%)
AR&R 1 ye	299975.8	20791.27 (!	5549.29 (9!	15241.98 (5.2%)
AR&R 1 ye	355147	16649.31 (-	6616.06 (9!	10033.25 (2.9%)

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
p3.7	0.099	0.62	0.792	0.756	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
culvert	1.164	0.7	1.02	1	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
p4-5	0.338	1.79	1.386	1.336	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
p3-out1	0.372	2	1.133	0.933	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm
Crk12-11	0.92	-1.#J	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1

OVERFLOW ROUTE DETAILS

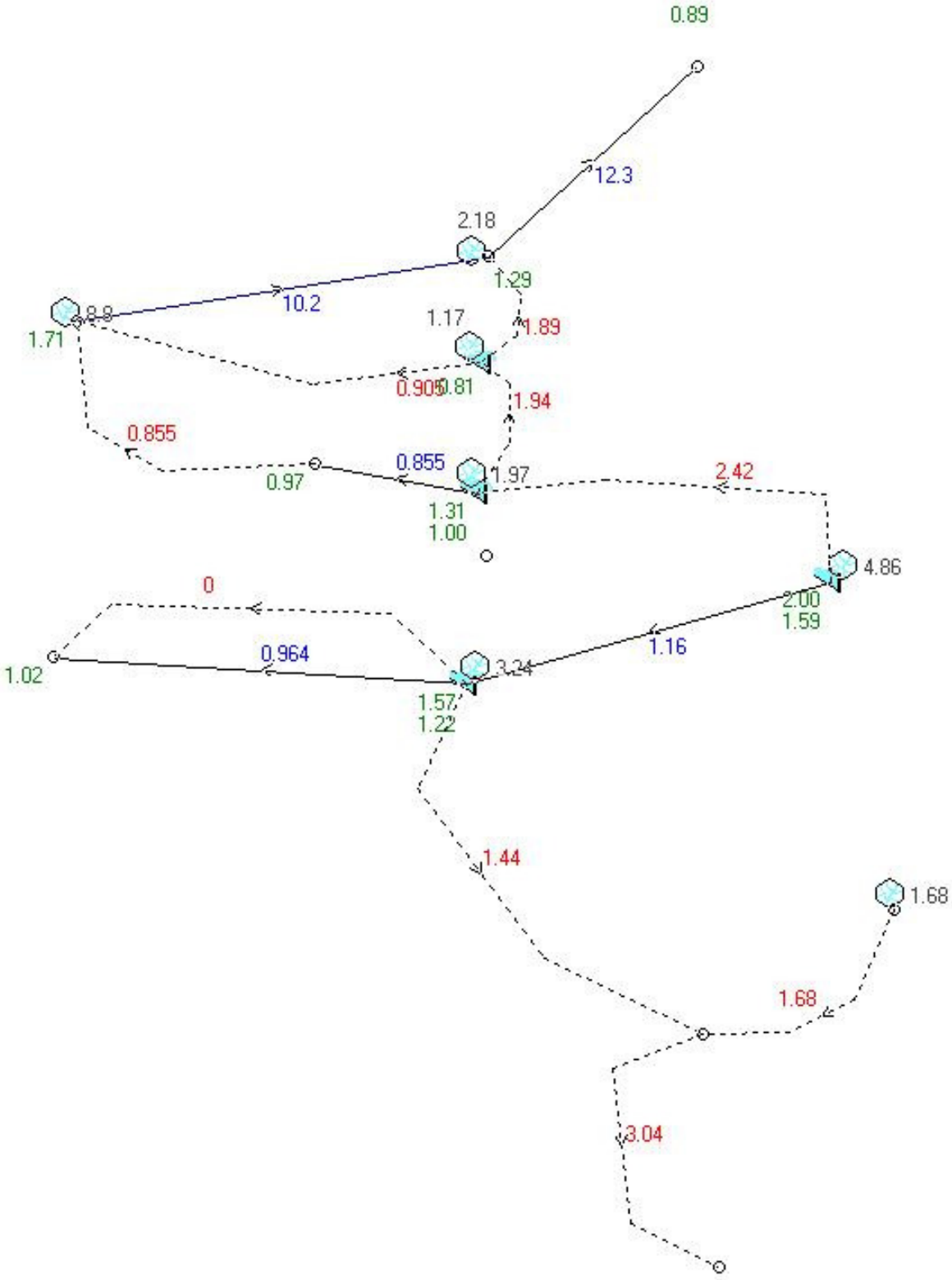
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
of3-2	0.343	0.343	0.136	0.532	0.03	10	0.06	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
ch3-7	0.099	0.099	0.431	0.123	0.01	10	0.08	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
of2-7	5.706	5.706	0.163	1	1.43	4	1.43	AR&R 1 year, 1 hour storm, average 25.2 mm/h, Zone 1
of2-1	5.034	5.034	0.136	1	0.5	10	0.5	AR&R 1 year, 1 hour storm, average 25.2 mm/h, Zone 1
of113	0.57	0.57	0.163	0.675	0.14	4	0.21	AR&R 1 year, 2 hours storm, average 16.5 mm/h, Zone 1
of4-7	0.278	0.278	0.431	0.229	0.03	10	0.12	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
of5-swamp	0	0	44.636	0	0	0	0	
of5-Smithy	0.115	0.115	0.431	0.134	0.01	10	0.09	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
of6-smithy	0.57	0.57	0.431	0.356	0.06	10	0.16	AR&R 1 year, 2 hours storm, average 16.5 mm/h, Zone 1

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
n3	0.83	801.2	0.443	0.099	0.343
n2	1	14383.5	10.74	0	10.74
Swale 4	1.61	1099.2	0.616	0.338	0.278
Swale 5	1.33	1769.7	0.486	0.372	0.115

CONTINUITY CHECK for AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Ch (cu.m)	Difference %
n3	3261.33	3190.73	70.47	0
N59	1489.76	1489.76	0	0
N7	8958.39	8963.5	0	-0.1
n1	10580.8	10587.97	0	-0.1
out-hunter	10587.97	10587.97	0	0
n2	2866.48	1365.59	-12868.21	501.3
Out-smithy	3249.62	3249.46	0	0
N202	3249.46	3249.46	0	0
N134	0	0	0	0
Swale 4	4354.3	4326.47	28.21	0
Swale 5	5649.57	5491.91	157.81	0
out-SWAM	5203.69	5203.69	0	0
n6	2961.41	2961.41	0	0


0.89
12.3
2.18
1.29
10.2
8.8
1.71
1.17
1.89
0.905
0.81
1.94
0.855
0.855
0.97
1.97
2.42
1.31
1.00
4.86
0
2.00
1.59
1.16
0.964
1.02
3.24
1.57
1.22
1.44
1.68
1.68
3.04

Existing 10yr

PIT / NODE DETAILS Version 8

Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivir (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N59	0.97		0				
N7	1.71		10.247				
n1	1.29		12.428				
out-hunter	0.89		0				
out-SWAM	1.02		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
c3	1.97	0.214	1.835	4.73	95.63	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
c7	8.804	0	8.804	0	258.54	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c1	2.18	0	2.18	0	59.26	0	AR&R 10 year, 2 hours storm, average 31.2 mm/h, Zone 1
c2	1.173	0.052	1.158	3.84	129.92	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Cat163	4.856	1.028	4.633	0	34.62	0	AR&R 10 year, 2 hours storm, average 31.2 mm/h, Zone 1
C5	3.241	0.386	3.132	2.87	17.76	0	AR&R 10 year, 1 hour storm, average 47.3 mm/h, Zone 1
c6	1.684	1.053	1.248	2.87	76.05	0	AR&R 10 year, 1 hour storm, average 47.3 mm/h, Zone 1

Outflow Volumes for Total Catchment (8.96 impervious + 453 pervious = 462 total ha)

Storm	Total Rainf cu.m	Total Runo cu.m (Runc	Impervious cu.m (Runc	Pervious cu.m (Runoff %)
AR&R 10 y	288331.7	114716.17	5321.62 (9	109394.55 (38.7%)
AR&R 10 y	338235.3	142037.43	6288.85 (9	135748.58 (40.9%)
AR&R 10 y	395069.8	164284.83	7390.52 (9	156894.31 (40.5%)
AR&R 10 y	515670.1	202807.98	9729.85 (9	193078.13 (38.2%)
AR&R 10 y	576663.4	219793.92	10914.00 (	208879.92 (36.9%)
AR&R 10 y	688669.2	244806.73	13086.87 (	231719.86 (34.3%)
AR&R 10 y	218559.1	73297.33 (	3968.83 (9	69328.50 (32.3%)
AR&R 10 y	778495.6	242097.34	14826.57 (	227270.77 (29.8%)

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
p3.7	0.855	1.07	1.219	1.132	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
culvert	12.252	5.08	1.293	0.893	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
p4-5	1.164	2.17	1.595	1.566	AR&R 10 year, 2 hours storm, average 31.2 mm/h, Zone 1
p3-out1	0.964	2.63	1.216	1.017	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm
Crk12-11	10.185	-1.#J	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
of3-2	1.94	1.94	0.136	1	0.19	10	0.19	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
ch3-7	0.855	0.855	0.431	0.457	0.09	10	0.19	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
of2-7	0.905	0.905	0.163	0.922	0.23	4	0.25	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
of2-1	1.891	1.891	0.136	1	0.19	10	0.19	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
of113	3.041	3.041	0.163	1	0.76	4	0.76	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
of4-7	2.422	2.422	0.431	0.881	0.24	10	0.27	AR&R 10 year, 2 hours storm, average 31.2 mm/h, Zone 1
of5-swamp	0	0	44.636	0	0	0	0	
of5-Smithy	1.436	1.436	0.431	0.632	0.14	10	0.23	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
of6-smithy	1.684	1.684	0.431	0.7	0.17	10	0.24	AR&R 10 year, 1 hour storm, average 47.3 mm/h, Zone 1

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
n3	1.31	0	2.796	0.855	1.94
n2	0.81	0	2.796	0	2.796
Swale 4	2	0	3.586	1.164	2.422
Swale 5	1.57	0	2.399	0.964	1.436

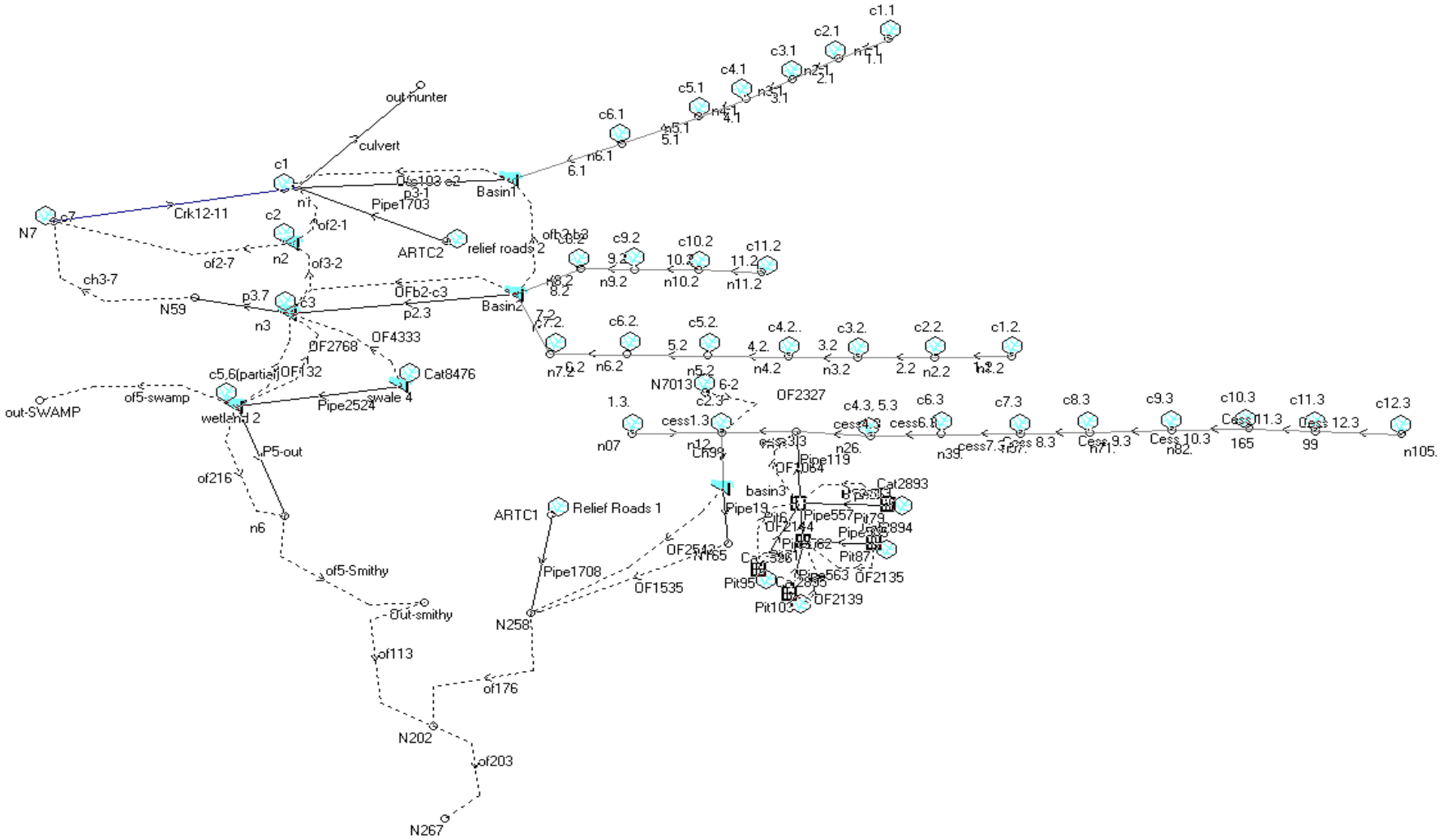
CONTINUITY CHECK for AR&R 10 year, 1 hour storm, average 47.3 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Ch (cu.m)	Difference %
n3	11522.33	10332.71	1190.01	0
N59	2858.23	2858.01	0	0
N7	43647.85	34781.63	0	20.3
n1	40362.72	32368.92	0	19.8
out-hunter	32368.92	32368.92	0	0
n2	11245.08	3118.01	8127.16	0
Out-smithy	9341.71	9341.7	0	0
N202	9341.7	9341.7	0	0
N134	0	0	0	0
Swale 4	9369.62	9101.85	267.76	0
Swale 5	7854.07	6673.92	1180.17	0
out-SWAM	3538.5	3538.5	0	0
n6	6206.3	6206.3	0	0

Run Log for QR Hexham A run at 12:09:02 on 30/5/2012

The maximum flow exceeded the safe value in the following overflow routes: of6-smithy, of4-7, of113, of5-Smithy, of2-7, ch3-7, of2-1, of3-2

DEVELOPED MODEL



DEVELOPED INPUT DATA

PIT / NODE DETAILS Version 11

Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	id	Part Full Shock Loss	Inflow Hydrograph
n1.2	Node					1.96		0		2263.792	-641.2		9		
n2.2	Node					1.86		0		2049.52	-644.656		8		
n3.2	Node					1.69		0		1835.248	-644.656		7		
n4.2	Node					1.52		0		1642.058	-642.582		3		
n5.2	Node					1.35		0		1415.344	-639.472		2		
n6.2	Node					1.18		0		1190.704	-636.016		1		
n7.2	Node					1.01		0		972.976	-632.56		2530		
N59	Node					0.625		0		-18.896	-460.106		170		
n07	Node					0.92		0		1202.454	-881.046		52		
n12.	Node					0.879		0		1453.36	-876.899		51		
N165	Node					1.3		0		1470.832	-1222.05		617		
N7	Node					0.2		0		-413.295	-221.642		196		
n1	Node					2		0		265.187	-115.888		182		
out-hunter	Node					1		0		611.893	198.884		193		
out-SWAM	Node					0.8		0		-453.108	-779.025		228		
Out-smithy	Node					1.2		0		621.846	-1403.59		244		
N202	Node					0.6		0		649.218	-1786.8		247		
N267	Node					0.6		0		679.078	-2075.44		250		
n105.	Node					1.683		0		3352.778	-883.12		552		
99	Node					1.628		0		3114.832	-872.848		2460		
165	Node					1.549		0		2926.432	-864.448		2464		
n82.	Node					1.458		0		2712.036	-870.678		557		
n71.	Node					1.336		0		2483.94	-876.899		548		
n57.	Node					1.281		0		2289.021	-881.046		554		
n39.	Node					1.173		0		2067.146	-883.12		41		
n26.	Node					1.073		0		1870.154	-887.267		49		
n17.	Node					0.968		0		1662.794	-872.752		50		
n11.2	Node					1.442		0		1566.91	-379.899		2647		
n10.2	Node					1.338		0		1390.737	-370.941		2631		
n9.2	Node					1.236		0		1211.578	-370.941		2630		
n8.2	Node					1.136		0		1062.279	-367.955		2629		
n1.1	Node					0.596		0		1921.856	343.616		2747		
n2.1	Node					0.52		0		1781.888	283.136		2746		
n3.1	Node					0.436		0		1652.288	219.2		2745		
n4.1	Node					0.376		0		1520.96	156.992		2744		
n5.1	Node					0.32		0		1391.36	103.424		2743		
n6.1	Node					0.31		0		1173.632	18.752		2741		
Pit79	OnGrade	Port Steph	Interallotment Pit 900		1.5	1.8333		0	0.2	1921.192	-1101.43	No	60686	1 x Ku	No
Pit6	OnGrade	Port Steph	Interallotment Pit 900		1.5	1.8333		0	0.2	1670.632	-1096.25	No	2909	1 x Ku	No
Pit87	OnGrade	Port Steph	Interallotment Pit 900		1.5	1.8333		0	0.2	1881.448	-1218.94	No	60694	1 x Ku	No

Pit71	OnGrade	Port Steph	Interallotment Pit 900		1.5	1.8333		0	0.2	1682.728	-1215.48	No		60678	1 x Ku	No			
Pit95	OnGrade	Port Steph	Interallotment Pit 900		1.5	1.8333		0	0.2	1558.312	-1300.15	No		60702	1 x Ku	No			
Pit103	OnGrade	Port Steph	Interallotment Pit 900		1.5	1.8333		0	0.2	1642.984	-1376.18	No		60710	1 x Ku	No			
N7013	Node					2		0		1409.814	-752.483			464884					
ARTC1	Node					2		0		978.671	-1132.37			753064					
N258	Node					1.8		0		920.445	-1438.43			258					
ARTC2	Node					1.3		0		683.059	-284.347			753081					
n6	Node					2		0		233.668	-1134.86			241					

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Init Vol. (cu	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Length	id	
Basin2	1	2	0	Culvert	0.5					881.046	-447.664	No			150	
	1.1	2														
	1.2	7583														
	1.3	7678														
	1.33	7680														
n3	0.6	1000	0	Culvert	0.5					248.598	-507.798	No			156	
	1	15000														
basin3	0.7	4469	0	Culvert	0.5					1457.922	-1050.25	No			264	
	0.9	6872														
	1.1	7094														
	1.3	7317														
	1.5	7540														
	1.7	7764														
	1.9	7989														
	2	8101														
n2	0	1000	0	None						253.575	-291.315	No			198	
	0.2	16000														
	1	16500														
Basin1	0.3	2	0	Culvert	0.5					866.531	-93.078	No			174	
	0.5	2														
	0.7	2														
	0.9	2585														
	1	2655														
	1.1	2724														
	1.23	2785														
swale 4	1.1	0	0	Culvert	0.5					557.565	-731.747	No			1156345	
	1.2	786														
	1.6	5145														
	1.7	6000														
wetland 2	1	3010	0	Culvert	0.5					96.811	-793.955	No			216	
	1.6	13903														

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area	Paved Area	Grass Area	Supp Area	Paved Time	Grass Time	Supp Time	Paved Length	Grass Length	Supp Length	Paved Slope(%)	Grass Slope	Supp Slope	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length

		(ha)	%	%	%	(min)	(min)	(min)	(m)	(m)	(m)	%	%	%						(m)
c1.2.	n1.2	1.1071	50	50	0	0	0	0	30	30	0	0.5	0.5	0	0.05	0.05	0	0		
c2.2.	n2.2	1.1099	50	50	0	0	0	0	30	30	0	0.5	0.5	0	0.05	0.05	0	0		
c3.2.	n3.2	1.1205	50	50	0	0	0	0	34	34	0	0.5	0.5	0	0.05	0.05	0	0		
c4.2..	n4.2	0.9848	50	50	0	0	0	0	30	30	0	0.5	0.5	0	0.05	0.05	0	0		
c5.2.	n5.2	0.7993	50	50	0	0	0	0	38	38	0	0.5	0.5	0	0.05	0.05	0	0		
c6.2.	n6.2	0.6399	50	50	0	0	0	0	32	32	0	0.5	0.5	0	0.05	0.05	0	0		
c7.2.	n7.2	0.6065	50	50	0	0	0	0	32	32	0	0.5	0.5	0	0.05	0.05	0	0		
c3	n3	32.09	6	94	0	0	0	0	10	300	0	0.5	0.5	0	0.02	0.1	0	0		
1.3.	n07	0.1599	0	100	0	0	0	0	0	22	0	0	0.1	0	0	0.025	0	0		
c2.3	n12.	0.3969	0	100	0	0	0	0	0	30	0	0	0.1	0	0	0.025	0	0		
c7	N7	280	0	100	0	0	0	0	0	1400	0	0	0.5	0	0.02	0.1	0	0		
c1	n1	31.1	0	100	0	0	0	0	0	250	0	0	0.5	0	0.02	0.1	0	0		
c2	n2	25.79	2	98	0	0	0	0	10	500	0	1	0.5	0	0.02	0.1	0	0		
c12.3	n105.	0.9316	0	100	0	0	0	0	0	70	0	0	0.1	0	0	0.025	0	0		
c11.3	99	1.149	0	100	0	0	0	0	0	130	0	0	0.1	0	0	0.025	0	0		
c10.3	165	0.91	0	100	0	0	0	0	0	100	0	0	0.1	0	0	0.025	0	0		
c9.3	n82.	1.0526	0	100	0	0	0	0	0	83.4	0	0	0.1	0	0	0.025	0	0		
c8.3	n71.	0.7242	0	100	0	0	0	0	0	80.79	0	0	0.1	0	0	0.025	0	0		
c7.3	n57.	0.956	0	100	0	0	0	0	0	81	0	0	0.1	0	0	0.025	0	0		
c6.3	n39.	0.767	0	100	0	0	0	0	0	73	0	0	0.1	0	0	0.025	0	0		
c4.3, 5.3	n26.	0.5864	0	100	0	0	0	0	0	50	0	0	0.1	0	0	0.025	0	0		
c11.2	n11.2	0.6703	50	50	0	0	0	0	34	34	0	0.5	0.5	0	0.05	0.05	0	0		
c10.2	n10.2	0.9546	50	50	0	0	0	0	45	45	0	0.5	0.5	0	0.05	0.05	0	0		
c9.2	n9.2	0.9338	50	50	0	0	0	0	44	44	0	0.5	0.5	0	0.05	0.05	0	0		
c8.2	n8.2	0.6272	50	50	0	0	0	0	44	44	0	0.5	0.5	0	0.05	0.05	0	0		
c1.1	n1.1	0.4055	50	50	0	0	0	0	20	20	0	0.5	0.5	0	0.05	0.05	0	0		
c2.1	n2.1	0.4909	50	50	0	0	0	0	17	17	0	0.5	0.5	0	0.05	0.05	0	0		
c3.1	n3.1	0.3807	50	50	0	0	0	0	19	19	0	0.5	0.5	0	0.05	0.05	0	0		
c4.1	n4.1	0.1834	50	50	0	0	0	0	12	12	0	0.5	0.5	0	0.05	0.05	0	0		
c5.1	n5.1	0.0101	50	50	0	0	0	0	11	11	0	0.5	0.5	0	0.05	0.05	0	0		
c6.1	n6.1	0.0731	50	50	0	0	0	0	12	12	0	0.5	0.5	0	0.05	0.05	0	0		
Cat2893	Pit79	0.1	0	100	0	0	0	0	0	30	0	0	0.1	0	0	0.025	0	0		
Cat2894	Pit87	0.1	0	100	0	0	0	0	0	30	0	0	0.1	0	0	0.025	0	0		
Cat2896	Pit95	0.1	0	100	0	0	0	0	0	30	0	0	0.1	0	0	0.025	0	0		
Cat2895	Pit103	0.1	0	100	0	0	0	0	0	30	0	0	0.1	0	0	0.025	0	0		
6-Feb	N7013	8.8	0	100	0	0	15	0												0
Relief Roac	ARTC1	7.4	30	70	0	0	0	0	600	50	0	0.1	0.5	0	0.015	0.03	0	0		
relief road:	ARTC2	6.11	30	70	0	0	0	0	770	770	0	0.1	0.5	0	0.015	0.03	0	0		
Cat8476	swale 4	28.2	4	96	0	0	0	0	10	250	0	1	3	0	0.03	0.03	0	0		
c5,6(partia	wetland 2	39	4	96	0	0	0	0	0	250	0	1	1	0	0.02	0.1	0	0		

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg (m)
p2.3	Basin2	n3	5	1.01	0.6	8.2	Box culver	1.8W x 0.3H		0.013	Existing	1	Basin2		0

p3.7	n3	N59	10	0.6	0.59	0.1	Concrete, r	900	900	0.013	NewFixed	2	n3	0
Pipe19	basin3	N165	10	0.7	0.69	0.1	Concrete, r	450	450	0.015	NewFixed	2	basin3	0
culvert	n1	out-hunter	40	0.4	0	1	Box culvert	2.7W x 1.5H		0.013	Existing	1	n1	0
p3-1	Basin1	n1	5	0.3	0.05	5	Concrete, r	225	225	0.013	NewFixed	1	Basin1	0
Pipe564	Pit79	Pit6	50	1.031	0.981	0.1	Concrete, r	225	225	0.015	New	1	Pit79	0
Pipe119	Pit6	n17.	12.94	0.981	0.968	0.1	Concrete, r	450	450	0.015	New	1	Pit6	0
Pipe565	Pit87	Pit71	50	1.039	0.989	0.1	Concrete, r	225	225	0.015	New	1	Pit87	0
Pipe557	Pit71	Pit6	8.35	0.989	0.981	0.1	Concrete, r	450	450	0.015	New	1	Pit71	0
Pipe562	Pit95	Pit6	50	1.031	0.981	0.1	Concrete, r	225	225	0.015	New	1	Pit95	0
Pipe563	Pit103	Pit71	50	1.039	0.989	0.1	Concrete, r	225	225	0.015	New	1	Pit103	0
Pipe1708	ARTC1	N258	10	1.35	1.3	0.5	Concrete, r	375	375	0.015	New	1	ARTC1	0
Pipe1703	ARTC2	n1	10	0.5	0.4	1	Concrete, r	375	375	0.015	New	1	ARTC2	0
Pipe2524	swale 4	wetland 2	5	1.2	1.15	1	Concrete, r	900	900	0.015	NewFixed	2	swale 4	0
P5-out	wetland 2	n6	10	1	0.9	1	Concrete, r	600	600	0.013	NewFixed	4	wetland 2	0

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg (m)	Bottom Elev (m)	Height of S (m)	Chg (m)	Bottom Elev (m)	Height of S (m)	Chg (m)	Bottom Elev (m)	Height of S (m)	etc etc

CHANNEL DETAILS

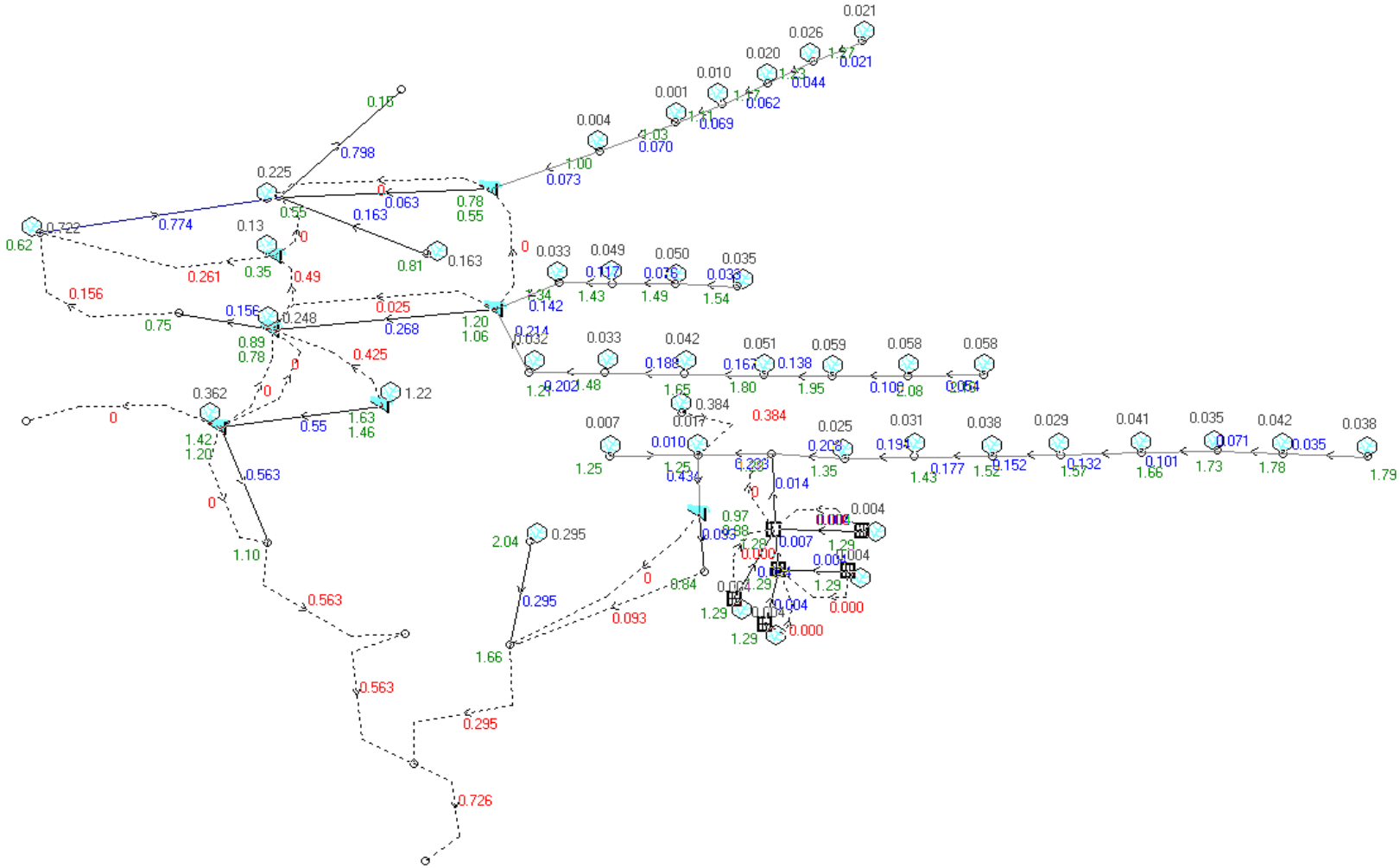
Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n	Depth (m)		Roofed
1.2	n1.2	n2.2	Prismatic	100	1.96	1.86	0.1	2	2	2	0.035		1	No
2.2	n2.2	n3.2	Prismatic	170	1.86	1.69	0.1	2	2	2	0.05		1	No
3.2	n3.2	n4.2	Prismatic	170	1.69	1.52	0.1	2	2	2	0.05		1	No
4.2.	n4.2	n5.2	Prismatic	170	1.52	1.35	0.1	2	2	2	0.05		1	No
5.2	n5.2	n6.2	Prismatic	170	1.35	1.18	0.1	2	2	2	0.05		1	No
6.2	n6.2	n7.2	Prismatic	170	1.18	1.01	0.1	2	2	2	0.05		1	No
7.2	n7.2	Basin2	Prismatic	10	1.01	1	0.1	2.5	2	2	0.035		1	No
cess1.3	n07	n12.	Prismatic	41.42	0.92	0.879	0.1	2	2	2	0.035		1	No
Ch98	n12.	basin3	Prismatic	178.96	0.879	0.7	0.1	2	2	2	0.035		1	No
Crk12-11	N7	n1	Irregular	600	0.061	0.01								
Cess 12.3	n105.	99	Prismatic	55	1.683	1.628	0.1	2	2	2	0.035		1	No
Cess 11.3	99	165	Prismatic	79.3	1.628	1.549	0.1	2	2	2	0.035		1	No
Cess 10.3	165	n82.	Prismatic	91.06	1.549	1.458	0.1	2	2	2	0.035		1	No
Cess 9.3	n82.	n71.	Prismatic	122	1.458	1.336	0.1	2	2	2	0.035		1	No
Cess 8.3	n71.	n57.	Prismatic	55	1.336	1.281	0.1	2	2	2	0.035		1	No
cess7.3	n57.	n39.	Prismatic	108	1.281	1.173	0.1	2	2	2	0.035		1	No
cess6.3	n39.	n26.	Prismatic	100	1.173	1.073	0.1	2	2	2	0.035		1	No
cess4.3	n26.	n17.	Prismatic	105.39	1.073	0.968	0.1	2	2	2	0.035		1	No
cess3.3	n17.	n12.	Prismatic	89.39	0.968	0.879	0.1	2	2	2	0.035		1	No
11.2	n11.2	n10.2	Prismatic	104	1.442	1.338	0.1	2	2	2	0.035		1	No
10.2	n10.2	n9.2	Prismatic	101.89	1.338	1.236	0.1	2	2	2	0.035		1	No
9.2	n9.2	n8.2	Prismatic	100	1.236	1.136	0.1	2	2	2	0.035		1	No
8.2	n8.2	Basin2	Prismatic	136	1.136	1	0.1	2	2	2	0.035		1	No
1.1	n1.1	n2.1	Prismatic	76	1.196	1.12	0.1	2	2	2	0.035		1	No

2.1	n2.1	n3.1	Prismatic	83.82	1.12	1.036	0.1	2	2	2	0.035	1	No
3.1	n3.1	n4.1	Prismatic	59.57	1.036	0.976	0.1	2	2	2	0.035	1	No
4.1	n4.1	n5.1	Prismatic	55.57	0.976	0.92	0.1	2	2	2	0.035	1	No
5.1	n5.1	n6.1	Prismatic	10	0.92	0.91	0.1	2	2	2	0.035	1	No
6.1	n6.1	Basin1	Prismatic	10	0.91	0.9	0.1	2	2	2	0.035	1	No

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Depth Major Stor (m)	SafeDepth Minor Stor (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id
ofb2-b3	Basin2	Basin1	1	1.33	25	2	cess drain	0.3	0.3	0.6	0.5	0	177
OFb2-c3	Basin2	n3	10	1.19	20	2	20m spillw	0.2	0.05	0.6	5	0	155
of3-2	n3	n2	5	0.75	10	2	10m path	0.3	0.3	0.6	0.1	0	202
ch3-7	N59	N7	20				10m path	0.3	0.3	0.6	1	0	210
OF2542	basin3	N258	1	2	25	2	Dummy us	0.3	0.3	0.6	1	0	566447
OF1535	N165	N258	5				Grassed Sv	0.5	0.4	1	0.1	0	138763
of2-7	n2	N7	1	0.2	4	2	4m path	0.3	0.3	0.6	1	0	212
of2-1	n2	n1	5	0.6	10	2	10m path	0.3	0.3	0.6	0.1	0	205
of113	Out-smithy	N202	5				10m path	0.3	0.3	0.6	0.1	0	254
of203	N202	N267	1				HWC track	0.3	0.3	0.6	0.1	0	256
Ofc103-c2	Basin1	n1	10	1.23	25	2	20m spillw	0.3	0.3	0.6	1	0	184
OF2132	Pit79	Pit6	10				20m spillw	0.3	0.3	0.6	1	0	355347
OF1064	Pit6	n17.	10				Dummy us	0.2	0.05	0.6	1	0	34884
OF2135	Pit87	Pit71	10				20m spillw	0.3	0.3	0.6	1	0	355349
OF2144	Pit95	Pit6	10				20m spillw	0.3	0.3	0.6	1	0	355358
OF2139	Pit103	Pit71	10				20m spillw	0.3	0.3	0.6	1	0	355353
OF2327	N7013	n12.	2				Dummy us	0.3	0.3	0.6	1	0	464883
of176	N258	N202	5				Dummy us	0.3	0.3	0.6	0.1	0	261
OF4333	swale 4	n3	10	1.55	10	2	Dummy us	0.3	0.3	0.6	1	0	1156354
OF2768	wetland 2	n3	2	1.935	20	2.2	Dummy us	0.3	0.3	0.6	1	0	668049
OF132	wetland 2	n3	10	2	80	2	HWC track	0.3	0.3	0.6	1	0	545
of216	wetland 2	n6	1	2.1	40	2.2	20m spillw	0.3	0.3	0.6	1	0	240
of5-swamp	wetland 2	out-SWAM	1	1.8	100	2.2	HWC track	0.3	0.3	0.6	1	0	231
of5-Smithy	n6	Out-smithy	1				10m path	0.3	0.3	0.6	1	0	252

DEVELOPED 1YR ARI



DEVELOPED DATA 1YR ARI

PIT / NODE DETAILS Version 8

Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
n1.2	2.11		0.058				
n2.2	2.08		0.113				
n3.2	1.95		0.156				
n4.2	1.8		0.177				
n5.2	1.65		0.196				
n6.2	1.48		0.208				
n7.2	1.21		0.217				
N59	0.75		0				
n07	1.25		0.007				
n12.	1.25		0.46				
N165	0.84		0				
N7	0.66		1.158				
n1	0.58		1.13				
out-hunter	0.18		0				
n105.	1.79		0.038				
99	1.78		0.073				
165	1.73		0.103				
n82.	1.66		0.136				
n71.	1.57		0.155				
n57.	1.52		0.181				
n39.	1.43		0.199				
n26.	1.35		0.207				
n17.	1.28		0.208				
n11.2	1.54		0.035				
n10.2	1.49		0.083				
n9.2	1.43		0.123				
n8.2	1.34		0.145				
n1.1	1.27		0.021				
n2.1	1.23		0.047				
n3.1	1.17		0.065				
n4.1	1.11		0.071				
n5.1	1.03		0.07				
n6.1	1		0.073				
Pit79	1.29		0.004		0.55	0	None
Pit6	1.28		0		0.55	0	None
Pit87	1.29		0.004		0.55	0	None
Pit71	1.29		0		0.55		None
Pit95	1.29		0.004		0.55	0	None
Pit103	1.29		0.004		0.55	0	None
ARTC1	2.08		0.309				
N258	1.66		0.094				
ARTC2	0.81		0.163				
n6	1.1		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
c1.2.	0.058	0.034	0.024	22.08	22.08	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c2.2.	0.058	0.034	0.024	22.08	22.08	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c3.2.	0.059	0.034	0.025	23.8	23.8	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c4.2..	0.052	0.03	0.022	22.08	22.08	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c5.2.	0.042	0.025	0.018	25.45	25.45	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c6.2.	0.034	0.02	0.014	22.95	22.95	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c7.2.	0.032	0.019	0.013	22.95	22.95	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c3	0.265	0.118	0.227	6.59	133.25	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
1.3.	0.007	0	0.007	0	19.6	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c2.3	0.017	0	0.017	0	23.61	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c7	0.838	0	0.838	0	335.79	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c1	0.261	0	0.261	0	119.44	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c2	0.15	0.032	0.14	5.35	181.04	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c12.3	0.038	0	0.038	0	36.57	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
c11.3	0.042	0	0.042	0	53.01	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
c10.3	0.035	0	0.035	0	45.29	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
c9.3	0.041	0	0.041	0	40.62	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
c8.3	0.029	0	0.029	0	39.85	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
c7.3	0.038	0	0.038	0	39.91	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
c6.3	0.031	0	0.031	0	37.5	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
c4.3, 5.3	0.025	0	0.025	0	29.88	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1

c11.2	0.035	0.021	0.015	23.8	23.8	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c10.2	0.05	0.029	0.021	28.16	28.16	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c9.2	0.049	0.029	0.021	27.79	27.79	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c8.2	0.033	0.019	0.014	27.79	27.79	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c1.1	0.021	0.012	0.009	17.31	17.31	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c2.1	0.026	0.015	0.011	15.71	15.71	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c3.1	0.02	0.012	0.008	16.79	16.79	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c4.1	0.01	0.006	0.004	12.74	12.74	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c5.1	0.001	0	0	12.1	12.1	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
c6.1	0.004	0.002	0.002	12.74	12.74	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Cat2893	0.004	0	0.004	0	23.61	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Cat2894	0.004	0	0.004	0	23.61	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Cat2896	0.004	0	0.004	0	23.61	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Cat2895	0.004	0	0.004	0	23.61	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
6-Feb	0.388	0	0.388	0	15	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Relief Roac	0.309	0.081	0.228	104.86	22.08	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
relief roads	0.163	0.071	0.093	113.45	106.11	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
Cat8476	1.216	0.069	1.152	6.36	31.56	0	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
c5,6(partia	0.41	0.096	0.382	0	97.02	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1

Outflow Volumes for Total Catchment (14.7 impervious + 463 pervious = 478 total ha)

Storm	Total Rainf	Total Runo	Impervious	Pervious Runoff
	cu.m	cu.m (Runc	cu.m (Runc	cu.m (Runoff %)
AR&R 1 ye	277689	26640.73 (	8337.18 (9	18303.55 (6.8%)
AR&R 1 ye	310071.7	31090.64 (	9335.54 (9	21755.09 (7.2%)

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
p2.3	0.268	2.92	1.061	0.888	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
p3.7	0.156	0.68	0.845	0.803	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
Pipe19	0.094	0.64	0.939	0.903	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
culvert	1.133	2.28	0.584	0.184	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
p3-1	0.063	1.58	0.587	0.584	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
Pipe564	0.004	0.1	1.286	1.285	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Pipe119	0.014	0.13	1.284	1.284	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Pipe565	0.004	0.1	1.286	1.285	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Pipe557	0.007	0.07	1.285	1.285	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Pipe562	0.004	0.1	1.286	1.285	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Pipe563	0.004	0.1	1.286	1.285	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Pipe1708	0.309	2.82	2.078	1.664	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Pipe1703	0.163	1.74	0.812	0.697	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
Pipe2524	0.55	1.85	1.455	1.421	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
P5-out	0.563	1.76	1.195	1.095	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm
1.2	0.055	0.16	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
2.2	0.101	0.19	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
3.2	0.138	0.21	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
4.2.	0.167	0.23	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
5.2	0.188	0.24	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
6.2	0.202	0.41	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
7.2	0.214	0.37	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
cess1.3	0.016	0.02	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Ch98	0.446	0.64	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Crk12-11	0.916	-1.#J	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
Cess 12.3	0.035	0.14	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
Cess 11.3	0.071	0.2	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
Cess 10.3	0.101	0.24	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
Cess 9.3	0.132	0.26	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
Cess 8.3	0.152	0.27	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
cess7.3	0.177	0.29	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
cess6.3	0.194	0.3	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
cess4.3	0.208	0.29	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
cess3.3	0.233	0.28	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
11.2	0.033	0.15	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
10.2	0.076	0.21	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
9.2	0.117	0.26	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
8.2	0.142	0.3	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
1.1	0.021	0.13	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
2.1	0.045	0.18	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
3.1	0.062	0.21	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
4.1	0.07	0.29	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
5.1	0.07	0.34	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
6.1	0.073	0	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
ofb2-b3	0	0	0	0	0	0	0	
OFb2-c3	0.025	0.025	0	0.021	0	20	0.06	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
of3-2	0.49	0.49	0	0.664	0.05	10	0.07	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
ch3-7	0.156	0.156	0	0.162	0.02	10	0.1	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
OF2542	0	0	0	0	0	0	0	
OF1535	0.094	0.094	0	0.248	0.1	1.98	0.38	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
of2-7	0.261	0.261	0.085	0.405	0.07	4	0.16	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
of2-1	0	0	0	0	0	0	0	
of113	0.563	0.563	0	0.724	0.06	10	0.08	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
of203	0.726	0.726	-72.012	0.05	0.01	100	0.14	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
Ofc103-c2	0	0	0	0	0	0	0	
OF2132	0	0	4.66E+35	0	0	0	0	
OF1064	0	0	0	0	0	0	0	
OF2135	0	0	0	0	0	0	0	
OF2144	0	0	0	0	0	0	0	
OF2139	0	0	-4.6E+21	0	0	0	0	
OF2327	0.388	0.388	1.3E+38	0.051	0.03	21.41	0.66	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
of176	0.313	0.313	0.2	0.074	0.02	29.34	0.26	AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1
OF4333	0.425	0.425	0	0.054	0.04	22.35	0.66	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1
OF2768	0	0	0	0	0	0	0	
OF132	0	0	0	0	0	0	0	
of216	0	0	1.99E+12	0	0	0	0	
of5-swamp	0	0	4.35E+16	0	0	0	0	
of5-Smithy	0.563	0.563	-0.24	0.354	0.06	10	0.16	AR&R 1 year, 9 hours storm, average 6.46 mm/h, Zone 1

DETENTION BASIN DETAILS

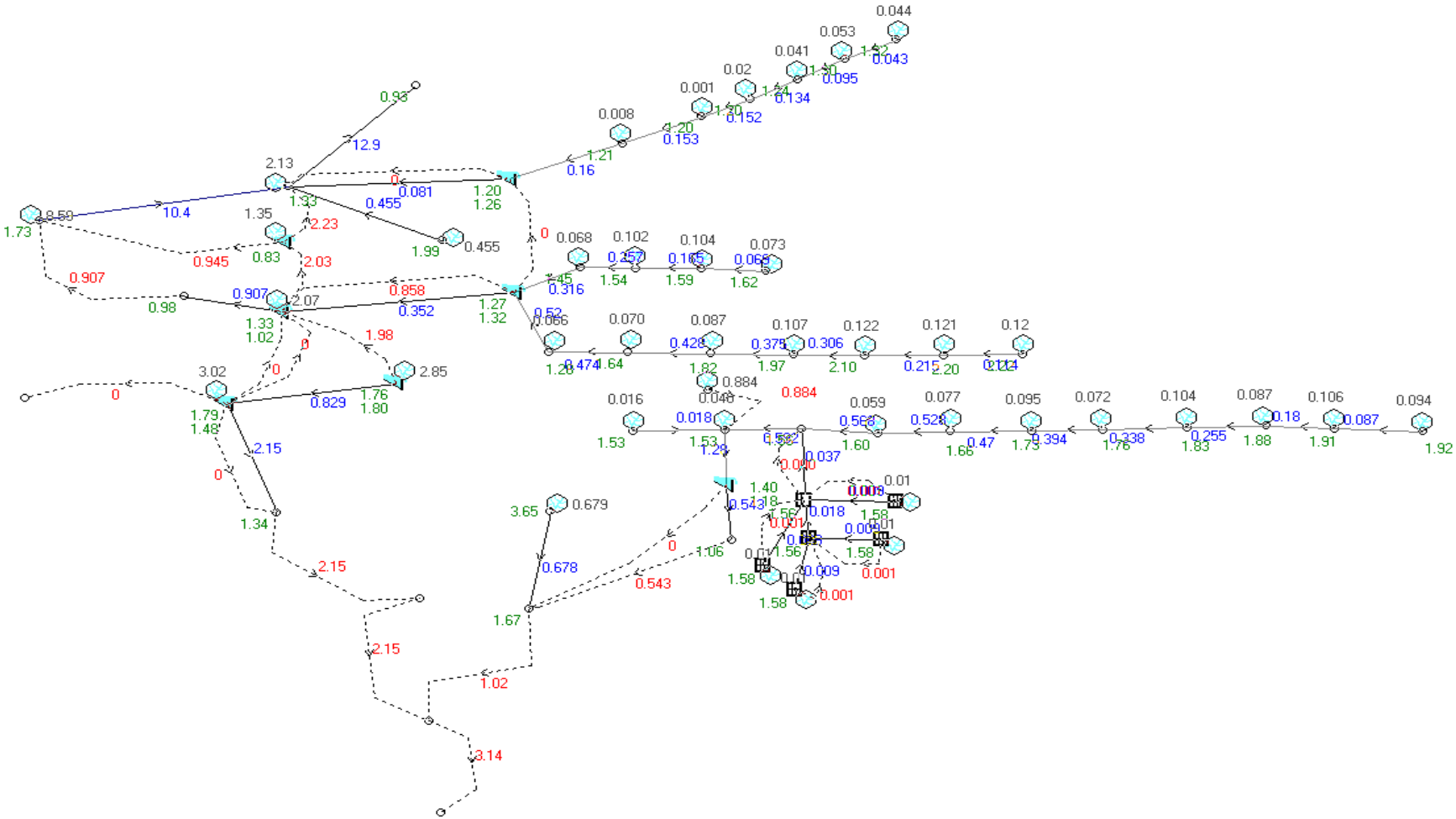
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Basin2	1.2	236.9	0.293	0.268	0.025
n3	0.89	1295.3	0.645	0.156	0.49
basin3	0.98	1647.3	0.094	0.094	0
n2	0.35	3800.9	0.261	0	0.261
Basin1	0.78	13.9	0.063	0.063	0
swale 4	1.63	1225.5	0.975	0.55	0.425
wetland 2	1.42	2560.5	0.563	0.563	0

CONTINUITY CHECK for AR&R 1 year, 12 hours storm, average 5.41 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Ch (cu.m)	Difference %
n1.2	443.18	442.88	0	0.1
n2.2	887.19	886.11	0	0.1
n3.2	1334.47	1334.81	0	0
n4.2	1729	1731.18	0	-0.1
n5.2	2050.92	2052.4	0	-0.1
n6.2	2308.52	2308.18	0	0
n7.2	2550.92	2529.47	0	0.8
Basin2	3801.85	4221.17	0.03	-11
n3	7460.12	7355.69	104.55	0
N59	2738.36	2738.33	0	0
n07	25.88	25.76	0	0.4
n12.	2708.27	2704.81	0	0.1
basin3	2704.81	2145.86	545.25	0.5
N165	2145.86	2145.77	0	0
N7	13228.5	10308.84	0	22.1
n1	14314.45	11242.74	0	21.5
out-hunter	11242.74	11242.74	0	0
n2	5959.16	4375.59	1583.59	0
out-SWAM	0	0	0	0
Out-smithy	7426.03	7426	0	0
N202	11815.8	11815.68	0	0
N267	11814.42	11814.42	0	0
n105.	147.43	147.76	0	-0.2
99	323.42	324.7	0	-0.4
165	466.31	468.64	0	-0.5
n82.	634	637.26	0	-0.5
n71.	751.21	753.45	0	-0.3
n57.	903.84	905.76	0	-0.2
n39.	1026.95	1029.11	0	-0.2
n26.	1122.76	1123.85	0	-0.1
n17.	1188.58	1187.46	0	0.1
n11.2	268.22	267.91	0	0.1
n10.2	649.54	648.83	0	0.1
n9.2	1022.18	1021.65	0	0.1
n8.2	1272.41	1272.35	0	0

n1.1	162.49	162.42	0	0
n2.1	359.19	358.76	0	0.1
n3.1	511.34	510.78	0	0.1
n4.1	584.35	583.92	0	0.1
n5.1	587.96	587.73	0	0
n6.1	617.04	616.93	0	0
Basin1	616.93	616.69	0.24	0
Pit79	16.11	16.17	0	-0.3
Pit6	64.69	64.73	0	-0.1
Pit87	16.11	16.16	0	-0.3
Pit71	32.33	32.36	0	-0.1
Pit95	16.11	16.17	0	-0.3
Pit103	16.11	16.16	0	-0.3
N7013	1431.12	1431.12	0	0
ARTC1	2255.13	2255.1	0	0
N258	4396.12	4396.03	0	0
ARTC2	1744.65	1744.34	0	0
swale 4	5036.34	5005.79	30.56	0
wetland 2	7578.68	7426.32	152.52	0
n6	7426.32	7426.3	0	0

10yr DEVELOPED MODEL



DEVELOPED 10YR ARI

PIT / NODE DETAILS Version 8

Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
n1.2	2.23		0.121				
n2.2	2.21		0.238				
n3.2	2.1		0.341				
n4.2	1.97		0.409				
n5.2	1.82		0.449				
n6.2	1.64		0.477				
n7.2	1.28		0.521				
N59	0.98		0				
n07	1.54		0.016				
n12.	1.53		1.376				
N165	1.06		0				
N7	1.73		10.357				
n1	1.33		13.008				
out-hunter	0.93		0				
n105.	1.92		0.094				
99	1.91		0.186				
165	1.88		0.262				
n82.	1.83		0.346				
n71.	1.76		0.398				
n57.	1.73		0.471				
n39.	1.66		0.529				
n26.	1.6		0.57				
n17.	1.56		0.585				
n11.2	1.62		0.073				
n10.2	1.59		0.175				
n9.2	1.54		0.268				
n8.2	1.45		0.325				
n1.1	1.32		0.044				
n2.1	1.3		0.098				
n3.1	1.24		0.138				
n4.1	1.22		0.156				
n5.1	1.22		0.155				
n6.1	1.22		0.162				
Pit79	1.59		0.01		0.24	0.001	Inlet Capacity
Pit6	1.57		0.001		0.27	0	None
Pit87	1.59		0.01		0.24	0.001	Inlet Capacity
Pit71	1.57		0.001		0.27		None
Pit95	1.59		0.01		0.24	0.001	Inlet Capacity
Pit103	1.59		0.01		0.24	0.001	Inlet Capacity
ARTC1	3.8		0.704				
N258	1.67		0.543				
ARTC2	1.99		0.455				
n6	1.34		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
c1.2.	0.121	0.065	0.056	17	17	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c2.2.	0.122	0.065	0.056	17	17	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c3.2.	0.123	0.066	0.057	18.33	18.33	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c4.2..	0.108	0.058	0.05	17	17	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c5.2.	0.088	0.047	0.04	19.59	19.59	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c6.2.	0.07	0.038	0.032	17.67	17.67	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c7.2.	0.066	0.036	0.031	17.67	17.67	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c3	2.072	0.226	1.93	4.73	95.63	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
1.3.	0.016	0	0.016	0	15.09	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c2.3	0.04	0	0.04	0	18.18	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c7	8.804	0	8.804	0	258.54	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c1	2.125	0	2.125	0	85.72	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
c2	1.351	0.06	1.334	3.84	129.92	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
c12.3	0.094	0	0.094	0	30.23	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c11.3	0.106	0	0.106	0	40.84	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
c10.3	0.087	0	0.087	0	34.89	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
c9.3	0.104	0	0.104	0	31.29	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
c8.3	0.072	0	0.072	0	30.7	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
c7.3	0.095	0	0.095	0	30.75	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
c6.3	0.077	0	0.077	0	28.89	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
c4.3, 5.3	0.059	0	0.059	0	24.7	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c11.2	0.073	0.04	0.034	18.33	18.33	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c10.2	0.105	0.056	0.048	21.69	21.69	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c9.2	0.102	0.055	0.047	21.39	21.39	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1

c8.2	0.069	0.037	0.032	21.39	21.39	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c1.1	0.044	0.024	0.021	13.33	13.33	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c2.1	0.054	0.029	0.025	12.09	12.09	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c3.1	0.042	0.022	0.019	12.93	12.93	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c4.1	0.02	0.011	0.009	9.81	9.81	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c5.1	0.001	0.001	0.001	9.31	9.31	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c6.1	0.008	0.004	0.004	9.81	9.81	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Cat2893	0.01	0	0.01	0	18.18	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Cat2894	0.01	0	0.01	0	18.18	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Cat2896	0.01	0	0.01	0	18.18	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Cat2895	0.01	0	0.01	0	18.18	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
6-Feb	0.89	0	0.89	0	15	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Relief Roac	0.704	0.18	0.524	80.74	17	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
relief roads	0.455	0.155	0.3	87.41	81.75	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Cat8476	2.872	0.133	2.739	5.26	26.09	0	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
c5,6(partia	3.018	0.183	2.887	0	69.62	0	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1

Outflow Volumes for Total Catchment (14.7 impervious + 463 pervious = 478 total ha)

Storm	Total Rainf	Total Runo	Impervious	Pervious Runoff
	cu.m	cu.m (Runc	cu.m (Runc	cu.m (Runoff %)
AR&R 10 y	533025.3	218958.62	16214.17 (	202744.45 (39.2%)
AR&R 10 y	596071.3	237720.51	18157.51 (	219563.00 (38.0%)

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
p2.3	0.352	0.65	1.319	1.327	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
p3.7	0.907	1.09	1.238	1.149	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Pipe19	0.543	1.71	1.211	1.139	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
culvert	12.895	5.16	1.326	0.926	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
p3-1	0.081	2.05	1.264	1.326	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Pipe564	0.009	0.23	1.586	1.566	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Pipe119	0.038	0.24	1.562	1.56	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Pipe565	0.009	0.23	1.587	1.567	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Pipe557	0.019	0.12	1.566	1.566	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Pipe562	0.009	0.23	1.586	1.566	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Pipe563	0.009	0.23	1.587	1.567	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Pipe1708	0.704	6.38	3.801	1.675	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Pipe1703	0.455	4.12	1.987	1.326	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Pipe2524	0.832	0.94	1.789	1.791	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
P5-out	2.172	2.42	1.476	1.344	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm
1.2	0.116	0.17	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
2.2	0.221	0.23	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
3.2	0.312	0.27	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
4.2.	0.379	0.29	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
5.2	0.428	0.32	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
6.2	0.474	0.68	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
7.2	0.52	0.64	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
cess1.3	0.025	0.01	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Ch98	1.358	0.69	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Crk12-11	10.355	-1.#J	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Cess 12.3	0.089	0.16	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
Cess 11.3	0.18	0.24	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Cess 10.3	0.255	0.29	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Cess 9.3	0.338	0.33	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Cess 8.3	0.394	0.33	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
cess7.3	0.47	0.36	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
cess6.3	0.528	0.36	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
cess4.3	0.585	0.36	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
cess3.3	0.659	0.35	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
11.2	0.07	0.17	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
10.2	0.167	0.26	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
9.2	0.26	0.33	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
8.2	0.319	0.55	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
1.1	0.044	0.15	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
2.1	0.096	0.23	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
3.1	0.136	0.28	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
4.1	0.154	0.26	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
5.1	0.155	0.2	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
6.1	0.162	0.2	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
ofb2-b3	0	0	0	0	0	0	0	
OFb2-c3	0.858	0.858	0	0.181	0.04	20	0.24	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
of3-2	2.033	2.033	0	1	0.2	10	0.2	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
ch3-7	0.907	0.907	0	0.475	0.09	10	0.19	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
OF2542	0	0	0	0	0	0	0	
OF1535	0.543	0.543	0	0.477	0.28	3.82	0.6	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
of2-7	0.945	0.945	0.053	0.951	0.24	4	0.25	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
of2-1	2.226	2.226	0	1	0.22	10	0.22	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
of113	2.172	2.172	0	1	0.22	10	0.22	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
of203	3.137	3.137	6.205	0.122	0.03	100	0.26	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
Ofc103-c2	0	0	0	0	0	0	0	
OF2132	0.001	0.001	5.91	0.004	0	20	0.01	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
OF1064	0	0	5.58	0	0	0	0	
OF2135	0.001	0.001	0	0.004	0	20	0.01	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
OF2144	0.001	0.001	5.871	0.004	0	20	0.01	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
OF2139	0.001	0.001	5.887	0.004	0	20	0.01	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
OF2327	0.89	0.89	0	0.072	0.06	28.74	0.8	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1
of176	1.024	1.024	0.175	0.117	0.05	35.81	0.4	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
OF4333	1.984	1.984	0	0.097	0.1	32.96	1.05	AR&R 10 year, 9 hours storm, average 12.4 mm/h, Zone 1
OF2768	0	0	5.896	0	0	0	0	
OF132	0	0	5.835	0	0	0	0	
of216	0	0	5.952	0	0	0	0	
of5-swamp	0	0	5.989	0	0	0	0	
of5-Smithy	2.172	2.172	5.293	0.822	0.22	10	0.26	AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Basin2	1.27	768.9	1.21	0.352	0.858
n3	1.33	11148	2.94	0.907	2.033
basin3	1.4	4728.4	0.543	0.543	0
n2	0.83	11626.2	3.171	0	3.171
Basin1	1.22	1028.4	0.081	0.081	0
swale 4	1.76	2046.4	2.816	0.832	1.984
wetland 2	1.79	7813.6	2.172	2.172	0

CONTINUITY CHECK for AR&R 10 year, 12 hours storm, average 10.4 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Ch (cu.m)	Difference %
n1.2	1015.17	1012.68	0	0.2
n2.2	2030.44	2022.62	0	0.4
n3.2	3049.82	3041.13	0	0.3
n4.2	3944.19	3936.99	0	0.2
n5.2	4669.56	4663.66	0	0.1
n6.2	5250.38	5244.65	0	0.1
n7.2	5800.72	5781.66	0	0.3
Basin2	8683.94	8880.53	0.03	-2.3
n3	38767.84	38656.38	111.56	0
N59	11692.53	11692.49	0	0
n07	95.39	93.28	0	2.2
n12.	9955.72	9934.77	0	0.2
basin3	9934.77	9100.96	809.03	0.2
N165	9100.96	9100.77	0	0
N7	157334.3	153908.4	0	2.2
n1	191723.1	188270.7	0	1.8
out-hunter	188270.7	188270.7	0	0
n2	39633.84	37695.26	1937.46	0
out-SWAM	0	0	0	0
Out-smithy	24578.16	24578.12	0	0
N202	39493.23	39493	0	0
N267	39490.68	39490.68	0	0
n105.	551.13	550.35	0	0.1
99	1225.17	1222.89	0	0.2
165	1759.14	1756.21	0	0.2
n82.	2377.79	2374.18	0	0.2
n71.	2801.98	2798.32	0	0.1
n57.	3363.05	3359.38	0	0.1
n39.	3812.97	3807.68	0	0.1
n26.	4155.68	4148.61	0	0.2
n17.	4385.5	4375.93	0	0.2
n11.2	614.5	612.7	0	0.3
n10.2	1487.31	1482.67	0	0.3
n9.2	2338.27	2332.91	0	0.2
n8.2	2907.61	2902.26	0	0.2
n1.1	372.07	370.85	0	0.3

n2.1	821.37	816.74	0	0.6
n3.1	1166.09	1160	0	0.5
n4.1	1328.39	1323.52	0	0.4
n5.1	1332.76	1330.37	0	0.2
n6.1	1397.49	1395.54	0	0.1
Basin1	1395.54	1395.25	0.29	0
Pit79	59.56	59.41	0	0.2
Pit6	236.96	236.89	0	0
Pit87	59.56	59.41	0	0.2
Pit71	118.82	118.15	0	0.6
Pit95	59.56	59.41	0	0.2
Pit103	59.56	59.41	0	0.2
N7013	5250.1	5250.1	0	0
ARTC1	5835.19	5835.07	0	0
N258	14926.62	14926.47	0	0
ARTC2	4732.1	4730.85	0	0
swale 4	17449.15	17417.63	31.61	0
wetland 2	24756.18	24578.61	177.74	0
n6	24578.61	24578.57	0	0

Appendix C MUSIC Modelling Result Files

MUSIC MODEL - EXISTING

DESCRIPTION

This section allows you to specify any information or notes for your project

VersionNumber	202			{MUSIC Setup File version number}				
MeteorologicalTemplate	C:\Program			{MLB Filename}				
Node Type	Agricultura	Agricultura	Agricultura	{Node Type}				
Node Name	C101	102	103+ ARTC	Surroundin	C2	C3	C4	C6(partial) {Node Name}
Node ID	5	8	9	{Node ID}				
Coordinates	152.49893(	17.441562	269.40986	{Coordinates}{[X:Y]}				
General - Location	C101	102	103+ ARTC	Surroundin	C2	C3	C4	C6(partial)
General - Notes								
General - Fluxes - Daily								
General - Fluxes - Sub-Daily								
Areas - Total Area (ha)	32.61	88.24	25.4	{ha}				
Areas - Impervious (%)	4	4	4	{%}				
Areas - Pervious (%)	96	96	96	{%}				
Rainfall-Runoff - Impervious Area - Rainfall Threshold (mm/day)	1	1	1	{mm/day}				
Rainfall-Runoff - Pervious Area - Soil Storage Capacity (mm)	120	120	120	{mm}				
Rainfall-Runoff - Pervious Area - Initial Storage (% of Capacity)	30	30	30	{% of Capacity}				
Rainfall-Runoff - Pervious Area - Field Capacity (mm)	80	80	80	{mm}				
Rainfall-Runoff - Pervious Area - Infiltration Capacity Coefficient - a	200	200	200					
Rainfall-Runoff - Pervious Area - Infiltration Capacity Exponent - b	1	1	1					
Rainfall-Runoff - Groundwater Properties - Initial Depth (mm)	10	10	10	{mm}				
Rainfall-Runoff - Groundwater Properties - Daily Recharge Rate (%	25	25	25	{%}				
Rainfall-Runoff - Groundwater Properties - Daily Baseflow Rate (%	5	5	5	{%}				
Rainfall-Runoff - Groundwater Properties - Daily Deep Seepage Rate (%	0	0	0	{%}				
Total Suspended Solids - Base Flow Concentration - Mean (log mg/L)	1.74	1.74	1.74	{log mg/L}				
Total Suspended Solids - Base Flow Concentration - Std Dev (log mg/L)	0.13	0.32	0.13	{log mg/L}				
Total Suspended Solids - Base Flow Concentration - Estimation Methoc	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}				
Total Suspended Solids - Base Flow Concentration - Serial Correlation (R squared	0	0	0	{R squared}				
Total Suspended Solids - Storm Flow Concentration - Mean (log mg/L)	2.279	2.279	2.279	{log mg/L}				
Total Suspended Solids - Storm Flow Concentration - Std Dev (log mg/L)	0.46	0.46	0.46	{log mg/L}				
Total Suspended Solids - Storm Flow Concentration - Estimation Methoc	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}				
Total Suspended Solids - Storm Flow Concentration - Serial Correlation (R squared	0	0	0	{R squared}				
Total Phosphorus - Base Flow Concentration - Mean (log mg/L)	-0.14	-0.14	-0.14	{log mg/L}				
Total Phosphorus - Base Flow Concentration - Std Dev (log mg/L)	1.368	1.368	1.368	{log mg/L}				
Total Phosphorus - Base Flow Concentration - Estimation Methoc	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}				
Total Phosphorus - Base Flow Concentration - Serial Correlation (R squared	0	0	0	{R squared}				
Total Phosphorus - Storm Flow Concentration - Mean (log mg/L)	-0.14	-0.267	-0.14	{log mg/L}				
Total Phosphorus - Storm Flow Concentration - Std Dev (log mg/L)	0.47	0.47	0.47	{log mg/L}				
Total Phosphorus - Storm Flow Concentration - Estimation Methoc	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}				
Total Phosphorus - Storm Flow Concentration - Serial Correlation (R squared	0	0	0	{R squared}				

Total Nitrogen - Base Flow Concentration - Mean (log mg/L)	0.24	0.24	0.24	{log mg/L}
Total Nitrogen - Base Flow Concentration - Std Dev (log mg/L)	0.339	0.339	0.339	{log mg/L}
Total Nitrogen - Base Flow Concentration - Estimation Method	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Nitrogen - Base Flow Concentration - Serial Correlation (R squared)	0	0	0	{R squared}
Total Nitrogen - Storm Flow Concentration - Mean (log mg/L)	0.6	0.602	0.6	{log mg/L}
Total Nitrogen - Storm Flow Concentration - Std Dev (log mg/L)	0.376	0.376	0.376	{log mg/L}
Total Nitrogen - Storm Flow Concentration - Estimation Method	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Nitrogen - Storm Flow Concentration - Serial Correlation (R squared)	0	0	0	{R squared}
Node Type	ForestSour	{Node Type}		
Node Name	surroundin	{Node Name}		
Node ID	7	{Node ID}		
Coordinates	-153.01151	{Coordinates}{[X:Y]}		
General - Location	surrounding catchments:C6(parital)			
General - Notes				
General - Fluxes - Daily				
General - Fluxes - Sub-Daily				
Areas - Total Area (ha)	8.8	{ha}		
Areas - Impervious (%)	4	{%}		
Areas - Pervious (%)	96	{%}		
Rainfall-Runoff - Impervious Area - Rainfall Threshold (mm/day)	1.5	{mm/day}		
Rainfall-Runoff - Pervious Area - Soil Storage Capacity (mm)	100	{mm}		
Rainfall-Runoff - Pervious Area - Initial Storage (% of Capacity)	30	{% of Capacity}		
Rainfall-Runoff - Pervious Area - Field Capacity (mm)	30	{mm}		
Rainfall-Runoff - Pervious Area - Infiltration Capacity Coefficient - a	400			
Rainfall-Runoff - Pervious Area - Infiltration Capacity Exponent - b	1			
Rainfall-Runoff - Groundwater Properties - Initial Depth (mm)	0	{mm}		
Rainfall-Runoff - Groundwater Properties - Daily Recharge Rate (%)	25	{%}		
Rainfall-Runoff - Groundwater Properties - Daily Baseflow Rate (%)	50	{%}		
Rainfall-Runoff - Groundwater Properties - Daily Deep Seepage Rate (%)	0	{%}		
Total Suspended Solids - Base Flow Concentration - Mean (log mg/L)	1.74	{log mg/L}		
Total Suspended Solids - Base Flow Concentration - Std Dev (log mg/L)	0.32	{log mg/L}		
Total Suspended Solids - Base Flow Concentration - Estimation Method	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}		
Total Suspended Solids - Base Flow Concentration - Serial Correlation (R squared)	0	{R squared}		
Total Suspended Solids - Storm Flow Concentration - Mean (log mg/L)	2.004	{log mg/L}		
Total Suspended Solids - Storm Flow Concentration - Std Dev (log mg/L)	0.598	{log mg/L}		
Total Suspended Solids - Storm Flow Concentration - Estimation Method	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}		
Total Suspended Solids - Storm Flow Concentration - Serial Correlation (R squared)	0	{R squared}		
Total Phosphorus - Base Flow Concentration - Mean (log mg/L)	-0.14	{log mg/L}		
Total Phosphorus - Base Flow Concentration - Std Dev (log mg/L)	1.368	{log mg/L}		
Total Phosphorus - Base Flow Concentration - Estimation Method	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}		
Total Phosphorus - Base Flow Concentration - Serial Correlation (R squared)	0	{R squared}		
Total Phosphorus - Storm Flow Concentration - Mean (log mg/L)	-0.658	{log mg/L}		
Total Phosphorus - Storm Flow Concentration - Std Dev (log mg/L)	0.503	{log mg/L}		
Total Phosphorus - Storm Flow Concentration - Estimation Method	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}		
Total Phosphorus - Storm Flow Concentration - Serial Correlation (R squared)	0	{R squared}		
Total Nitrogen - Base Flow Concentration - Mean (log mg/L)	0.24	{log mg/L}		
Total Nitrogen - Base Flow Concentration - Std Dev (log mg/L)	0.339	{log mg/L}		

Total Nitrogen - Base Flow Concentration - Estimation Method					0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Nitrogen - Base Flow Concentration - Serial Correlation (R squared)					0	{R squared}
Total Nitrogen - Storm Flow Concentration - Mean (log mg/L)					0.322	{log mg/L}
Total Nitrogen - Storm Flow Concentration - Std Dev (log mg/L)					0.418	{log mg/L}
Total Nitrogen - Storm Flow Concentration - Estimation Method					0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Nitrogen - Storm Flow Concentration - Serial Correlation (R squared)					0	{R squared}
Node Type	JunctionNc	JunctionNc	JunctionNc	JunctionNc		{Node Type}
Node Name	Location 5	Location 4	Junction	Junction		{Node Name}
Node ID	2	3	4	6		{Node ID}
Coordinates	-65.539722	135.40549	58.485041	163.55336		{Coordinates}{[X:Y]}
General - Location	Location 5	Location 4	Junction	Junction		
General - Notes						
Node Type	ReceivingN					{Node Type}
Node Name	Hunter Riv					{Node Name}
Node ID	1					{Node ID}
Coordinates	62.169664					{Coordinates}{[X:Y]}
General - Location	Hunter River					
General - Notes						

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MUSIC MODEL - DEVELOPED WITH CONTROLS

DESCRIPTION

This section allows you to specify any information or notes for your project.

VersionNumber	202		{MUSIC Setup File version number}
MeteorologicalTemplate	C:\Program		{MLB Filename}
Node Type	ForestSour	ForestSour	{Node Type}
Node Name	C6-1	ARTC	{Node Name}
Node ID	22	23	{Node ID}
Coordinates	-7.606453	187.36996	{Coordinates}{[X:Y]}
General - Location	C6-1	ARTC	
General - Notes			
General - Fluxes - Daily			
General - Fluxes - Sub-Daily			
Areas - Total Area (ha)	8.8	13.5	{ha}
Areas - Impervious (%)	4	4	{%}
Areas - Pervious (%)	96	96	{%}
Rainfall-Runoff - Impervious Area - Rainfall Threshold (mm/day)	1.5	1.5	{mm/day}
Rainfall-Runoff - Pervious Area - Soil Storage Capacity (mm)	100	100	{mm}
Rainfall-Runoff - Pervious Area - Initial Storage (% of Capacity)	30	30	{% of Capacity}
Rainfall-Runoff - Pervious Area - Field Capacity (mm)	30	30	{mm}
Rainfall-Runoff - Pervious Area - Infiltration Capacity Coefficient - a	400	400	
Rainfall-Runoff - Pervious Area - Infiltration Capacity Exponent - b	1	1	
Rainfall-Runoff - Groundwater Properties - Initial Depth (mm)	0	0	{mm}
Rainfall-Runoff - Groundwater Properties - Daily Recharge Rate (%)	25	25	{%}
Rainfall-Runoff - Groundwater Properties - Daily Baseflow Rate (%)	50	50	{%}
Rainfall-Runoff - Groundwater Properties - Daily Deep Seepage Rate (%)	0	0	{%}
Total Suspended Solids - Base Flow Concentration - Mean (log mg/L)	1.255	1.255	{log mg/L}
Total Suspended Solids - Base Flow Concentration - Std Dev (log mg/L)	0.32	0.32	{log mg/L}
Total Suspended Solids - Base Flow Concentration - Estimation Method	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Suspended Solids - Base Flow Concentration - Serial Correlation (R squared)	0	0	{R squared}
Total Suspended Solids - Storm Flow Concentration - Mean (log mg/L)	2.004	2.004	{log mg/L}
Total Suspended Solids - Storm Flow Concentration - Std Dev (log mg/L)	0.598	0.598	{log mg/L}
Total Suspended Solids - Storm Flow Concentration - Estimation Method	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Suspended Solids - Storm Flow Concentration - Serial Correlation (R squared)	0	0	{R squared}
Total Phosphorus - Base Flow Concentration - Mean (log mg/L)	-1.222	-1.222	{log mg/L}
Total Phosphorus - Base Flow Concentration - Std Dev (log mg/L)	1.368	1.368	{log mg/L}
Total Phosphorus - Base Flow Concentration - Estimation Method	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Phosphorus - Base Flow Concentration - Serial Correlation (R squared)	0	0	{R squared}
Total Phosphorus - Storm Flow Concentration - Mean (log mg/L)	-0.658	-0.658	{log mg/L}
Total Phosphorus - Storm Flow Concentration - Std Dev (log mg/L)	0.503	0.503	{log mg/L}
Total Phosphorus - Storm Flow Concentration - Estimation Method	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Phosphorus - Storm Flow Concentration - Serial Correlation (R squared)	0	0	{R squared}
Total Nitrogen - Base Flow Concentration - Mean (log mg/L)	-0.027	-0.027	{log mg/L}
Total Nitrogen - Base Flow Concentration - Std Dev (log mg/L)	0.339	0.339	{log mg/L}

Total Nitrogen - Base Flow Concentration - Estimation Method	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}		
Total Nitrogen - Base Flow Concentration - Serial Correlation (R squared)	0	0	{R squared}		
Total Nitrogen - Storm Flow Concentration - Mean (log mg/L)	0.322	0.322	{log mg/L}		
Total Nitrogen - Storm Flow Concentration - Std Dev (log mg/L)	0.418	0.418	{log mg/L}		
Total Nitrogen - Storm Flow Concentration - Estimation Method	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}		
Total Nitrogen - Storm Flow Concentration - Serial Correlation (R squared)	0	0	{R squared}		
Node Type	UserDefine	UserDefine	UserDefine	UserDefine	{Node Type}
Node Name	Basin 3 De	Basin 2 (1-	Basin 1 De	Basin 2 (4-	{Node Name}
Node ID	4	8	9	14	{Node ID}
Coordinates	4.0255974	30.223942	52.738145	10.165834	{Coordinates}{[X:Y]}
General - Location	Basin 3 De	Basin 2 (1-	Basin 1 De	Basin 2 (4-11) Developed catchment	
General - Notes					
General - Fluxes - Daily					
General - Fluxes - Sub-Daily					
Areas - Total Area (ha)	8.019	3.338	1.544	6.216	{ha}
Areas - Impervious (%)	90	90	10	90	{%}
Areas - Pervious (%)	10	10	90	10	{%}
Rainfall-Runoff - Impervious Area - Rainfall Threshold (mm/day)	1	1	1	1	{mm/day}
Rainfall-Runoff - Pervious Area - Soil Storage Capacity (mm)	30	30	30	30	{mm}
Rainfall-Runoff - Pervious Area - Initial Storage (% of Capacity)	30	30	30	30	{% of Capacity}
Rainfall-Runoff - Pervious Area - Field Capacity (mm)	80	80	80	80	{mm}
Rainfall-Runoff - Pervious Area - Infiltration Capacity Coefficient - a	400	400	400	400	
Rainfall-Runoff - Pervious Area - Infiltration Capacity Exponent - b	1	1	1	1	
Rainfall-Runoff - Groundwater Properties - Initial Depth (mm)	10	10	10	10	{mm}
Rainfall-Runoff - Groundwater Properties - Daily Recharge Rate (%)	25	25	25	25	{%}
Rainfall-Runoff - Groundwater Properties - Daily Baseflow Rate (%)	5	5	5	5	{%}
Rainfall-Runoff - Groundwater Properties - Daily Deep Seepage Rate (%)	0	0	0	0	{%}
Total Suspended Solids - Base Flow Concentration - Mean (log mg/L)	1.74	1.74	1.74	1.74	{log mg/L}
Total Suspended Solids - Base Flow Concentration - Std Dev (log mg/L)	0.5	0.5	0.5	0.5	{log mg/L}
Total Suspended Solids - Base Flow Concentration - Estimation Method	0	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Suspended Solids - Base Flow Concentration - Serial Correlation (R squared)	0	0	0	0	{R squared}
Total Suspended Solids - Storm Flow Concentration - Mean (log mg/L)	2.6	2.6	2.6	2.6	{log mg/L}
Total Suspended Solids - Storm Flow Concentration - Std Dev (log mg/L)	0.495	0.495	0.495	0.495	{log mg/L}
Total Suspended Solids - Storm Flow Concentration - Estimation Method	0	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Suspended Solids - Storm Flow Concentration - Serial Correlation (R squared)	0	0	0	0	{R squared}
Total Phosphorus - Base Flow Concentration - Mean (log mg/L)	-0.52	-0.52	-0.52	-0.52	{log mg/L}
Total Phosphorus - Base Flow Concentration - Std Dev (log mg/L)	0.27	0.27	0.27	0.27	{log mg/L}
Total Phosphorus - Base Flow Concentration - Estimation Method	0	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Phosphorus - Base Flow Concentration - Serial Correlation (R squared)	0	0	0	0	{R squared}
Total Phosphorus - Storm Flow Concentration - Mean (log mg/L)	-0.14	-0.14	-0.14	-0.14	{log mg/L}
Total Phosphorus - Storm Flow Concentration - Std Dev (log mg/L)	0.53	0.53	0.53	0.53	{log mg/L}
Total Phosphorus - Storm Flow Concentration - Estimation Method	0	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Phosphorus - Storm Flow Concentration - Serial Correlation (R squared)	0	0	0	0	{R squared}
Total Nitrogen - Base Flow Concentration - Mean (log mg/L)	0.24	0.24	0.24	0.24	{log mg/L}
Total Nitrogen - Base Flow Concentration - Std Dev (log mg/L)	0.258	0.258	0.258	0.258	{log mg/L}
Total Nitrogen - Base Flow Concentration - Estimation Method	0	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}
Total Nitrogen - Base Flow Concentration - Serial Correlation (R squared)	0	0	0	0	{R squared}
Total Nitrogen - Storm Flow Concentration - Mean (log mg/L)	0.398	0.398	0.398	0.398	{log mg/L}
Total Nitrogen - Storm Flow Concentration - Std Dev (log mg/L)	0.3	0.3	0.3	0.3	{log mg/L}
Total Nitrogen - Storm Flow Concentration - Estimation Method	0	0	0	0	{Index from 0 to 1 for "Mean" | "Stochastically generated"}

Total Nitrogen - Storm Flow Concentration - Serial Correlation (R squared)	0	0	0	0	{R squared}
Node Type	PondNode	PondNode	PondNode		{Node Type}
Node Name	Pond Inlet	Pond Inlet	Pond Inlet		{Node Name}
Node ID	3	7	10		{Node ID}
Coordinates	21.462038	43.129257	83.553919		{Coordinates}{[X:Y]}
General - Location	Pond Inlet	Pond Inlet	Pond Inlet	Forebay	
General - Notes					
General - Fluxes					
Stormwater Re-use - Use stored water for irrigation or other purpose	1	1	1		
Stormwater Re-use - Annual Demand Type	0	0	0		{Index from 0 to 1 for "PET" | "PET - Rain"}
Stormwater Re-use - Annual Demand (kL/yr) Scaled by Daily: PET	-9999	-9999	-9999		{kL/yr}
Stormwater Re-use - Annual Demand (kk/yr) Scaled by Daily: PET - Rain	-9999	-9999	-9999		{kk/yr}
Stormwater Re-use - Daily Demand (kL/day)	-9999000	-9999000	-9999000		{kL/day}
Stormwater Re-use - User-defined distribution of Annual Demand (ML/yr)	-9999	-9999	-9999		{ML/yr}
Stormwater Re-use - User-defined time series					
Inlet Properties - Low Flow By-pass (cubic metres per sec)	0.1	0.1	0.1		{cubic metres per sec}
Inlet Properties - High Flow By-pass (cubic metres per sec)	3.5	3.5	0.58		{cubic metres per sec}
Storage and Infiltration Properties - Surface Area (square metres)	6400	8500	2780		{square metres}
Storage and Infiltration Properties - Extended Detention Depth (metres)	0.3	0.2	0.3		{metres}
Storage and Infiltration Properties - Permanent Pool Volume (cubic metres)	240	390	520		{cubic metres}
Storage and Infiltration Properties - Exfiltration Rate (mm/hr)	0	0	0		{mm/hr}
Storage and Infiltration Properties - Evaporative Loss as % of PET	100	100	100		
Outlet Properties - Equivalent Pipe Diameter (mm)	300	300	300		{mm}
Outlet Properties - Overflow Weir Width (metres)	2	2	2		{metres}
Outlet Properties - Notional Detention Time (hrs)	4.643438	5.035389	2.016993		{hrs}
Advanced Properties - Orifice Discharge Coefficient	0.6	0.6	0.6		
Advanced Properties - Weir Coefficient	1.7	1.7	1.7		
Advanced Properties - Number of CSTR Cells	2	2	2		
Advanced Properties - Total Suspended Solids - k (m/yr)	400	400	400		{m/yr}
Advanced Properties - Total Suspended Solids - C* (mg/L)	12	12	12		{mg/L}
Advanced Properties - Total Suspended Solids - C** (mg/L)	12	12	12		{mg/L}
Advanced Properties - Total Phosphorus - k (m/yr)	300	300	300		{m/yr}
Advanced Properties - Total Phosphorus - C* (mg/L)	0.09	0.09	0.09		{mg/L}
Advanced Properties - Total Phosphorus - C** (mg/L)	0.09	0.09	0.09		{mg/L}
Advanced Properties - Total Nitrogen - k (m/yr)	40	40	40		{m/yr}
Advanced Properties - Total Nitrogen - C* (mg/L)	1	1	1		{mg/L}
Advanced Properties - Total Nitrogen - C** (mg/L)	1	1	1		{mg/L}
Advanced Properties - Threshold Hydraulic Loading for C** (m/yr)	3500	3500	3500		{m/yr}
Advanced Properties - User Defined Storage-Discharge-Height					
Node Type	JunctionNc				{Node Type}
Node Name	Junction				{Node Name}
Node ID	17				{Node ID}
Coordinates	166.21126				{Coordinates}{[X:Y]}
General - Location	Junction				
General - Notes					
Node Type	ReceivingN				{Node Type}
Node Name	Receiving I				{Node Name}
Node ID	18				{Node ID}
Coordinates	186.38124				{Coordinates}{[X:Y]}
General - Location	Receiving Node				

General - Notes

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Node Type	GenericNo	GenericNo	GenericNo	GenericNo	GenericNo	GenericNo	GPTNode	GPTNode	GPTNode	{Node Type}
Node Name	SPEL Wate	SPEL Wate	Copy of SP	Copy of SP	Copy of Co	Copy of Co	Copy of Co	Copy of	Copy of Co	{Node Name}
Node ID	1	2	5	6	11	12	13	19	20	{Node ID}
Coordinates	82.757636	49.541807	79.997450	62.253400	99.768996	122.31190	136.97556	117.36828	114.54986	{Coordinates}{X:Y}
Lo-flow bypass rate (cum/sec)	0.075	0	0.075	0	0	0.009	0	0	0	{Lo-flow bypass rate (cum/sec)}
High Flow By-pass (cubic metres per sec)	3.5	0.075	3.5	0.075	0.009	0.58	100	100	100	{High-flow bypass rate (cum/sec)}
Flow Transfer Function - Input #1	0	0	0	0	0	0	0	0	0	{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #1	0	0	0	0	0	0	0	0	0	{Flow Transfer Output (cum/sec)}
Flow Transfer Function - Input #2	10	10	10	10	10	10	10	10	10	{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #2	10	10	10	10	10	10	10	10	10	{Flow Transfer Output (cum/sec)}
Flow Transfer Function - Input #3										{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #3										{Flow Transfer Output (cum/sec)}
Flow Transfer Function - Input #4										{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #4										{Flow Transfer Output (cum/sec)}
Flow Transfer Function - Input #5										{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #5										{Flow Transfer Output (cum/sec)}
Flow Transfer Function - Input #6										{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #6										{Flow Transfer Output (cum/sec)}
Flow Transfer Function - Input #7										{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #7										{Flow Transfer Output (cum/sec)}
Flow Transfer Function - Input #8										{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #8										{Flow Transfer Output (cum/sec)}
Flow Transfer Function - Input #9										{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #9										{Flow Transfer Output (cum/sec)}
Flow Transfer Function - Input #10										{Flow Transfer Input (cum/sec)}
Flow Transfer Function - Output #10										{Flow Transfer Output (cum/sec)}
GP Transfer Function - Input #1	0	0	0	0	0	0	0	0	0	{GP Transfer Input (kg/year)}
GP Transfer Function - Output #1	0	0	0	0	0	0	0	0	0	{GP Transfer Output (kg/year)}
GP Transfer Function - Input #2	15	15	15	15	15	15	15	15	15	{GP Transfer Input (kg/year)}
GP Transfer Function - Output #2	0	0	0	0	0	0	15	15	15	{GP Transfer Output (kg/year)}
GP Transfer Function - Input #3										{GP Transfer Input (kg/year)}
GP Transfer Function - Output #3										{GP Transfer Output (kg/year)}
GP Transfer Function - Input #4										{GP Transfer Input (kg/year)}
GP Transfer Function - Output #4										{GP Transfer Output (kg/year)}
GP Transfer Function - Input #5										{GP Transfer Input (kg/year)}
GP Transfer Function - Output #5										{GP Transfer Output (kg/year)}
GP Transfer Function - Input #6										{GP Transfer Input (kg/year)}
GP Transfer Function - Output #6										{GP Transfer Output (kg/year)}
GP Transfer Function - Input #7										{GP Transfer Input (kg/year)}
GP Transfer Function - Output #7										{GP Transfer Output (kg/year)}
GP Transfer Function - Input #8										{GP Transfer Input (kg/year)}
GP Transfer Function - Output #8										{GP Transfer Output (kg/year)}
GP Transfer Function - Input #9										{GP Transfer Input (kg/year)}
GP Transfer Function - Output #9										{GP Transfer Output (kg/year)}
GP Transfer Function - Input #10										{GP Transfer Input (kg/year)}
GP Transfer Function - Output #10										{GP Transfer Output (kg/year)}
TN Transfer Function - Input #1	0	0	0	0	0	0	0	0	0	{TN Transfer Input (mg/L)}
TN Transfer Function - Output #1	0	0	0	0	0	0	0	0	0	{TN Transfer Output (mg/L)}

TN Transfer Function - Input #2	50	50	50	50	50	50	50	50	50	{TN Transfer Input (mg/L)}
TN Transfer Function - Output #2	22.5	5	22.5	5	5	22.5	50	50	50	{TN Transfer Output (mg/L)}
TN Transfer Function - Input #3										{TN Transfer Input (mg/L)}
TN Transfer Function - Output #3										{TN Transfer Output (mg/L)}
TN Transfer Function - Input #4										{TN Transfer Input (mg/L)}
TN Transfer Function - Output #4										{TN Transfer Output (mg/L)}
TN Transfer Function - Input #5										{TN Transfer Input (mg/L)}
TN Transfer Function - Output #5										{TN Transfer Output (mg/L)}
TN Transfer Function - Input #6										{TN Transfer Input (mg/L)}
TN Transfer Function - Output #6										{TN Transfer Output (mg/L)}
TN Transfer Function - Input #7										{TN Transfer Input (mg/L)}
TN Transfer Function - Output #7										{TN Transfer Output (mg/L)}
TN Transfer Function - Input #8										{TN Transfer Input (mg/L)}
TN Transfer Function - Output #8										{TN Transfer Output (mg/L)}
TN Transfer Function - Input #9										{TN Transfer Input (mg/L)}
TN Transfer Function - Output #9										{TN Transfer Output (mg/L)}
TN Transfer Function - Input #10										{TN Transfer Input (mg/L)}
TN Transfer Function - Output #10										{TN Transfer Output (mg/L)}
TP Transfer Function - Input #1	0	0	0	0	0	0	0	0	0	{TP Transfer Input (mg/L)}
TP Transfer Function - Output #1	0	0	0	0	0	0	0	0	0	{TP Transfer Output (mg/L)}
TP Transfer Function - Input #2	5	5	5	5	5	5	5	5	5	{TP Transfer Input (mg/L)}
TP Transfer Function - Output #2	2.25	1.55	2.25	1.55	1.55	2.25	5	5	5	{TP Transfer Output (mg/L)}
TP Transfer Function - Input #3										{TP Transfer Input (mg/L)}
TP Transfer Function - Output #3										{TP Transfer Output (mg/L)}
TP Transfer Function - Input #4										{TP Transfer Input (mg/L)}
TP Transfer Function - Output #4										{TP Transfer Output (mg/L)}
TP Transfer Function - Input #5										{TP Transfer Input (mg/L)}
TP Transfer Function - Output #5										{TP Transfer Output (mg/L)}
TP Transfer Function - Input #6										{TP Transfer Input (mg/L)}
TP Transfer Function - Output #6										{TP Transfer Output (mg/L)}
TP Transfer Function - Input #7										{TP Transfer Input (mg/L)}
TP Transfer Function - Output #7										{TP Transfer Output (mg/L)}
TP Transfer Function - Input #8										{TP Transfer Input (mg/L)}
TP Transfer Function - Output #8										{TP Transfer Output (mg/L)}
TP Transfer Function - Input #9										{TP Transfer Input (mg/L)}
TP Transfer Function - Output #9										{TP Transfer Output (mg/L)}
TP Transfer Function - Input #10										{TP Transfer Input (mg/L)}
TP Transfer Function - Output #10										{TP Transfer Output (mg/L)}
TSS Transfer Function - Input #1	0	0	0	0	0	0	0	0	0	{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #1	0	0	0	0	0	0	0	0	0	{TSS Transfer Output (mg/L)}
TSS Transfer Function - Input #2	1000	1000	1000	1000	1000	1000	1000	1000	1000	{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #2	400	100	400	100	100	400	700	700	700	{TSS Transfer Output (mg/L)}
TSS Transfer Function - Input #3										{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #3										{TSS Transfer Output (mg/L)}
TSS Transfer Function - Input #4										{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #4										{TSS Transfer Output (mg/L)}
TSS Transfer Function - Input #5										{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #5										{TSS Transfer Output (mg/L)}
TSS Transfer Function - Input #6										{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #6										{TSS Transfer Output (mg/L)}

TSS Transfer Function - Input #7	{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #7	{TSS Transfer Output (mg/L)}
TSS Transfer Function - Input #8	{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #8	{TSS Transfer Output (mg/L)}
TSS Transfer Function - Input #9	{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #9	{TSS Transfer Output (mg/L)}
TSS Transfer Function - Input #10	{TSS Transfer Input (mg/L)}
TSS Transfer Function - Output #10	{TSS Transfer Output (mg/L)}

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Appendix D Inspection and Test Plans

Issue	**SEDIMENT AND EROSION CONTROLS – ESTABLISHMENT AND MAINTENANCE**
Purpose	Monitor and maintain Sediment and Erosion controls to minimise pollutant export from the site.
Responsibility	Site Foreman
Criteria	• Sediment traps, check dams – clean out when 30% of design capacity • Basins – remove sediment within 1 week of reaching 100% of design capacity • Truck shakedown – clean out when 90% of design capacity • All controls to be cleaned when construction stops for periods >2 weeks.
Monitoring	Inspect controls: • Daily for first week; • Fortnightly thereafter; • after rainfall events >25mm/day • Prior to shut downs >2 weeks.
Corrective Actions	• Increase frequency of maintenance; • Improve sediment and erosion controls • Modify site practices
Reporting	• Record inspect results; • Store 1 copy on site for inspection by authorities; • Provide monthly copies to Superintendent
Notification	For Breach of Criteria; • Notify Superintendent by phone and Fax on same day, or within 12 hours. Detail rectification measures undertaken/proposed.

Issue	**BASIN WATER QUALITY AND LEVELS**
Purpose	Monitor water quality in basins to maintain within an accep**table** range in case of overflow. Maintain adequate buffer in the basin in the event of wet weather.
Responsibility	Site Foreman
Criteria	• pH – 6 to 8.5 (or ±0.5 of receiving waters) • Suspended Solids - <50mg/L[3] • Water level <90%
Monitoring	Inspect: • Daily for first week; • Weekly thereafter; • Prior to rainfall, if possible • After rainfall events >25mm/day • Prior to shut downs >2 weeks.
Corrective Actions	• pH – add Hydrated Lime or Acid to modify pH accordingly; • Suspended Solids – add Gypsum. Other flocculants require approval due to possibly impacts on aquatic species. • Modify site practices; • Pump water from pond, clear out discharge pipes.
Reporting	• Record inspect results; • Store 1 copy on site for inspection by authorities; • Provide monthly copies to Superintendent
Notification	For Breach of Criteria and discharge from site; • Notify Superintendent by phone and Fax on same day, or within 12 hours. Detail rectification measures undertaken/proposed. When water quality is unsatisfactory for > 2weeks; • Notify Superintendent to determine rectification measures.

Issue	**DUST CONTROL**
Purpose	Control dust on the site to prevent adverse impacts on adjacent properties.
Responsibility	Site Foreman

[3] If a relationship can be established between Turbidity and TSS then turbidity readings may be adopted for the monitoring criteria.

Criteria	• Less than 1 complaint per week, and less than 3 in total
Monitoring	Inspect: • Continuously monitor site conditions and weather; • If >3 complaints are received set up dust monitoring stations with data loggers.
Corrective Actions	• Water cart; • Install wind breaks in accordance with Blue Book. • Stop work on windy days. • Revegetate exposed areas (e.g. hydro-mulch); • Install dust monitoring;
Reporting	• Record wind speed and direction, water truck usage (number, times) and wind breaks (install date, details); • Review dust monitoring results and collate weekly, or upon receipt of complaints. • Store 1 copy on site for inspection by authorities; • Provide monthly summaries to Superintendent.
Notification	For Breach of Criteria; • Notify Superintendent by phone and Fax on same day, or within 12 hours. Detail rectification measures undertaken/proposed.

Issue	**WATER RELEASES**
Purpose	Protect receiving waters during planned discharges.
Responsibility	Site Foreman
Criteria	• pH – 6 to 8.5 (or ±0.5 of receiving waters) • Suspended Solids - <50mg/L
Monitoring	• Record pH and TSS in receiving waters daily and following rainfall events >25mm/day • Record pH and TSS in receiving waters prior to release; • Record ph and TSS in pond water.
Corrective Actions	• pH – add Hydrated Lime or Acid to modify pH accordingly; • Suspended Solids – add Gypsum. Other flocculants require approval due to possibly impacts on aquatic species. • Modify site practices;
Reporting	• Report all monitoring results. • Store 1 copy on site for inspection by authorities; • Provide monthly summaries to Superintendent.
Notification	For Breach of Criteria; • Notify Superintendent by phone and Fax on same day, or within 12 hours. Detail rectification measures undertaken/proposed.