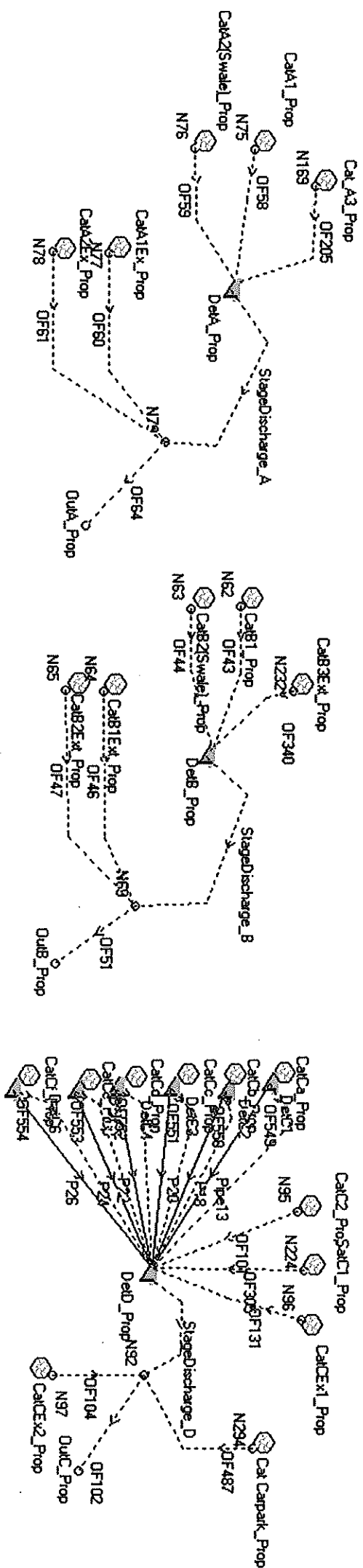


APPENDIX A

INITIAL DRAINS MODEL INPUT AND OUTPUT - EXISTING AND PROPOSED CONDITIONS



DATA

PRISM Model Name and File Path: F:\A003210\Calculations\CoultStormwater\DRAINS\Moorebank.drn
PRISM Version: 2010.06 - 1 August 2010
Modeler's Name: Chris McClelland
Description: Moorebank OSD

PIT / NODE DETAILS										Version 9										Base Inflow (cu.m/a)										Blocking Factor										X										Y										Bolt-down Id										Crest RL										Crest Length(m)										Part Full Shock Loss																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. N	Surface Elev (m)	Max Pond Depth (m)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

DRAINS Input Data

[illegible]

2 Year ARI Results

DRAINS Model Name and File Path: F:\AA003210\D-Calculations\C-Civil\Stormwater\DRAINS\Moorebank.drn									
DRAINS Version:		2010.09 - 5 August 2010							
Modeller's Name:		Chris McClelland							
Description:		Moorebank OSD							
DRAINS results prepared 02 September, 2010 from Version 2010.09									
PIT / NODE DETAILS							RESULTS 2 YEAR ARI		
Version 8									
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)			
HW2	12.34	5.744			1.86		0	None	
N50	11.97		0						
SUB-CATCHMENT DETAILS									
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved To (min)	Grassed To (min)	Supp. To (min)	Due to Storm		
CatchB1Ex	0.185	0	0.185	3	8		0 AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1		
CatchC1Ex	0.617	0.542	0.076	7	7		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
CatchBEx	2.78	1.58	1.313	14.5	24		0 AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1		
CatchAEx	4.115	3.019	1.136	13.75	15		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
CatB1_Prop	3.805	3.805	0	6	3		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
CatB2(Swale)_Prop	0.785	0.785	0	9.5	8.5		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
CatB1Ext_Prop	0.185	0	0.185	5	8		0 AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1		
CatB2Ext_Prop	0.06	0	0.06	8.5	15.5		0 AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1		
CatA1_Prop	7.002	7.002	0	6	3		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
CatA2(Swale)_Prop	0.819	0.819	0	12	11		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
CatA1Ex_Prop	1.185	0.682	0.512	13.2	8.3		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
CatA2Ex_Prop	0.076	0	0.076	0	18		0 AR&R 2 year, 1 hour storm, average 33.7 mm/h, Zone 1		
CatCa_Prop	1.078	1.078	0	3	0		0 AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1		
CatCb_Prop	1.022	1.022	0	3	0		0 AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1		
CatCc_Prop	1.021	1.021	0	3	0		0 AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1		
CatCd_Prop	1.064	1.064	0	3	0		0 AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1		
CatCe_Prop	0.979	0.979	0	3	0		0 AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1		
CatCf_Prop	1.095	1.095	0	3	0		0 AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1		
CatC2_Prop	3.907	3.907	0	3	0		0 AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1		
CatCEX1_Prop	0.617	0.542	0.076	7	7		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
CatCEX2_Prop	0.268	0.197	0.087	21.7	25		0 AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1		
Cat_A3_Prop	0.721	0.721	0	3	0		0 AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1		
Cat Carpark_Ext	0.618	0.618	0	5	0		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
CatC1_Prop	0.648	0.648	0	3	0		0 AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1		
CatB3Ext_Prop	0.083	0	0.083	0	8		0 AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1		
CatchCEX	4.757	3.863	0.998	25	30		0 AR&R 2 year, 1 hour storm, average 33.7 mm/h, Zone 1		
Cat Carpark_Prop	0.618	0.618	0	5	0		0 AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1		
Outflow Volumes for Total Catchment (142 impervious + 56.3 pervious = 198 total ha)									
Storm	Total Rainfall cu.m	Total Runoff cu.m (Runoff %)	Impervious Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)					
AR&R 2 year, 5 min	18008.62	11568.18 (64)	11472.57 (89)	95.59 (1.9%)					
AR&R 2 year, 10 min	27591.18	19238.41 (69)	18332.42 (92)	906.00 (11.6%)					
AR&R 2 year, 15 min	34695.6	25419.27 (73)	23418.14 (64)	2001.13 (20.3%)					
AR&R 2 year, 20 min	40445.04	30511.70 (75)	27534.07 (95)	2977.62 (25.9%)					
AR&R 2 year, 25 min	45188.78	34650.07 (76)	30928.55 (95)	3721.52 (29.0%)					
AR&R 2 year, 30 min	49368.74	38067.76 (77)	33920.91 (96)	4146.84 (29.6%)					
AR&R 2 year, 45 min	59180.61	46349.80 (78)	40948.35 (96)	5403.45 (32.1%)					
AR&R 2 year, 1 hour	66813.62	52769.25 (79)	46410.55 (97)	6358.70 (33.5%)					
AR&R 2 year, 1.5 hours	78213.57	61817.24 (79)	54571.59 (97)	7245.65 (32.6%)					
AR&R 2 year, 2 hours	87234.42	69022.24 (79)	61029.34 (97)	7992.91 (32.2%)					
AR&R 2 year, 3 hours	100517.83	79483.61 (79)	70537.84 (98)	8945.77 (31.3%)					
AR&R 2 year, 4.5 hours	115982.09	90767.91 (78)	81608.90 (98)	9159.01 (27.8%)					
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				
Pipe13	1.018	1.5	15.29	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
P18	0.964	1.4	15.284	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
P20	0.962	1.4	15.284	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
P22	1.004	1.5	15.288	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
P24	0.921	1.4	15.283	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
P28	1.034	1.5	15.292	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
P10	5.744	2.5	12.017	11.967	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1				
CHANNEL DETAILS									
Name	Max Q (cu.m/s)	Max V (m/s)	Chainage (m)	Max HGL (m)	Due to Storm				
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	
OF9	0.4	0.4	0.256	0.06	0.04	15.94	0.75	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1	
OF12	0.185	0.185	0.256	0.044	0.03	12.89	0.59	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1	
OF26	0.617	0.617	0.256	0.071	0.06	18.28	0.84	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1	
OF40	0	0	0.256	0	0	0	0		
OF1	0.279	0.279	0.256	0.052	0.03	14.33	0.67	AR&R 2 year, 3 hours storm, average 18.9 mm/h, Zone 1	
OF19	2.424	2.424	0.256	0.125	0.15	29.06	1.21	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1	
OF17	2.424	2.424	0.256	0.125	0.15	29.06	1.21	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1	
StageDischarge_B	0.155	0.155	0.256	0.041	0.02	12.17	0.57	AR&R 2 year, 4.5 hours storm, average 13 mm/h, Zone 1	
OF43	3.805	3.805	0.256	0.15	0.2	34.08	1.38	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1	
OF44	0.785	0.785	0.256	0.079	0.07	19.72	0.9	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1	
OF46	0.185	0.185	0.256	0.044	0.03	12.89	0.59	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1	
OF47	0.06	0.06	0.256	0.029	0.01	9.73	0.42	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1	
OF51	0.3	0.3	0.256	0.053	0.04	14.69	0.68	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1	
OF58	7.002	7.002	0.256	0.193	0.31	42.53	1.58	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1	
OF59	0.819	0.819	0.256	0.08	0.07	20.08	0.9	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1	

2 Year ARI Results

OF60	1.185	1.185	0.256	0.094	0.09	22.77	0.99	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
OF61	0.076	0.076	0.256	0.032	0.01	10.38	0.45	AR&R 2 year, 1 hour storm, average 33.7 mm/h, Zone 1
OF64	1.72	1.72	0.256	0.109	0.12	25.82	1.1	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1
StageDischarge_A	0.656	0.656	0.256	0.073	0.06	18.64	0.85	AR&R 2 year, 4.5 hours storm, average 13 mm/h, Zone 1
StageDischarge_D	2.895	2.895	0.256	0.135	0.17	31.03	1.25	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1
OF102	3.427	3.427	0.256	0.144	0.19	32.83	1.32	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1
OF101	3.907	3.907	0.256	0.152	0.21	34.44	1.36	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1
OF131	0.617	0.617	0.256	0.071	0.06	18.28	0.84	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
OF104	0.268	0.268	0.256	0.051	0.03	14.15	0.67	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1
OF205	0.721	0.721	0.256	0.076	0.07	19.18	0.88	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1
OF485	0.618	0.618	0.256	0.071	0.06	18.28	0.84	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
OF305	0.648	0.648	0.256	0.073	0.06	18.64	0.84	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1
OF340	0.083	0.083	0.256	0.033	0.02	10.56	0.46	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1
OF28	0	0	0.256	0	0	0	0	
OF30	5.744	5.744	0.256	0.178	0.27	39.65	1.5	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1
OF487	0.618	0.618	0.256	0.071	0.06	18.28	0.84	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
DETENTION BASIN DETAILS								
Name	Max WL	Max Vol	Max Q	Max Q	Max Q			
			Total	Low Level	High Level			
DetBEx	14.41	4878.2	0.279	0	0.279			
DetAEx	14.03	2581.4	2.424	0	2.424			
DetB_Prop	14.87	7789.8	0.155	0	0.155			
DetA_Prop	14.85	10678.8	0.656	0	0.656			
DetC1	15.4	158.6	1.018	1.018	0			
DetD_Prop	15.27	6864.5	2.895	0	2.895			
DetC2	15.38	152.9	0.964	0.964	0			
DetC3	15.38	152.7	0.962	0.962	0			
DetC4	15.39	157.1	1.004	1.004	0			
DetC5	15.37	148.3	0.921	0.921	0			
DetC6	15.4	160.2	1.034	1.034	0			
CONTINUITY CHECK for AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1								
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %				
N4	2738.29	2738.29	0	0				
N5	154.26	154.26	0	0				
N8	918.79	918.79	0	0				
DetBEx	6196.01	2587.93	3610.15	0				
OutBEx	2734.38	2734.38	0	0				
DetAEx	7860.27	7860.33	0	0				
N40	7860.33	7860.33	0	0				
OutAEx	7860.33	7860.33	0	0				
OutCEx	14438.72	14438.72	0	0				
N57	0	0	0	0				
DetB_Prop	7179.35	1219.52	5960.83	0				
N62	5795.11	5795.11	0	0				
N63	1315.37	1315.37	0	0				
N64	154.26	154.26	0	0				
N65	78.4	78.4	0	0				
N69	1450.19	1450.19	0	0				
OutB_Prop	1448.18	1448.18	0	0				
N75	10663.14	10663.14	0	0				
N76	1507.58	1507.58	0	0				
N77	1820.55	1820.55	0	0				
N78	111.59	111.59	0	0				
N79	7309.26	7309.25	0	0				
OutA_Prop	7301.13	7301.13	0	0				
DetA_Prop	13194.12	5385.22	7813	0				
DetC1	1631.66	1530.95	0.72	0				
DetD_Prop	16271.57	15231.24	1042.43	0				
DetC2	1452.11	1451.4	0.71	0				
DetC3	1449.53	1448.82	0.71	0				
DetC4	1510.59	1509.88	0.71	0				
DetC5	1389.76	1389.05	0.71	0				
DetC6	1554.88	1554.16	0.72	0				
N92	16785.89	16785.89	0	0				
OutC_Prop	16781.74	16781.74	0	0				
N95	5548.72	5548.72	0	0				
N96	918.79	918.79	0	0				
N97	662.22	662.22	0	0				
N169	1023.4	1023.4	0	0				
N177	896.55	896.55	0	0				
N224	919.77	919.77	0	0				
N232	68.87	68.87	0	0				
HW2	14438.71	14438.72	0	0				
N50	14438.72	14438.72	0	0				
N294	896.55	896.55	0	0				
Run Log for Moorebank.drn run at 17:01:26 on 2/9/2010								
The maximum flow exceeded the safe value in the following overflow routes: OF487, OF485, OF305, OF205, OF131, OF104, OF102, OF101, StageDischarge_D, OF64, StageDischarge_A, OF60.								
DRAINS results prepared 02 September, 2010 from Version 2010.09								
PIT / NODE DETAILS								
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint	
HW2	12.06	3.217			2.14	0	None	
N50	11.78		0					
SUB-CATCHMENT DETAILS								
Name	Max Flow Q	Paved Max Q	Grassed Max Q	Paved Tc	Grassed Tc	Supp. Tc	Due to Storm	

2 Year ARI Results

	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)			
CatchB1Ex	0.07	0	0.07	3	8	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatchC1Ex	0.208	0.179	0.029	7	7	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatchBEx	1.753	0.684	1.069	14.5	24	0	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1		
CatchAEx	2.117	1.235	0.882	13.75	15	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatB1_Prop	1.213	1.213	0	6	3	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatB2(Swale)_Prop	0.275	0.275	0	9.5	8.5	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatB1Ext_Prop	0.07	0	0.07	5	8	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatB2Ext_Prop	0.035	0	0.035	8.5	15.5	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatA1_Prop	2.232	2.232	0	6	3	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatA2(Swale)_Prop	0.318	0.318	0	12	11	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatA1Ex_Prop	0.507	0.274	0.233	13.2	8.3	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatA2Ex_Prop	0.048	0	0.048	0	18	0	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1		
CatCa_Prop	0.321	0.321	0	3	0	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatCb_Prop	0.304	0.304	0	3	0	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatCc_Prop	0.303	0.303	0	3	0	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatCd_Prop	0.316	0.316	0	3	0	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatCe_Prop	0.291	0.291	0	3	0	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatCf_Prop	0.325	0.325	0	3	0	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatC2_Prop	1.161	1.161	0	3	0	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatCEX1_Prop	0.208	0.179	0.029	7	7	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatCEX2_Prop	0.163	0.091	0.071	21.7	25	0	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1		
Cat_A3_Prop	0.214	0.214	0	3	0	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
Cat Carpark_Ext	0.188	0.188	0	5	0	0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatC1_Prop	0.193	0.193	0	3	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatB3Ext_Prop	0.031	0	0.031	0	8	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
CatchCEX	2.87	1.904	0.966	25	30	0.0	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1		
Cat Carpark_Prop	0.188	0.188	0	5	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1		
Outflow Volumes for Total Catchment (142 Impervious + 56.3 pervious = 198 total ha)									
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff					
	cu.m	cu.m (Runoff)	cu.m (Runoff)	cu.m (Runoff %)					
AR&R 2 year, 6 hou	128472.47	100604.63 (77.95%)	90548.96 (98.12%)	10055.67 (27.5%)					
AR&R 2 year, 9 hou	148457.06	117073.04 (78.9%)	104858.02 (98.28%)	12215.03 (29.0%)					
AR&R 2 year, 12 hou	164635.09	130169.91 (79.1%)	116433.61 (95.6%)	13736.30 (29.4%)					
AR&R 2 year, 18 hou	190924.38	146875.19 (77.0%)	135258.25 (95.5%)	11416.94 (21.0%)					
AR&R 2 year, 24 hou	211741.67	160882.31 (76.0%)	150162.25 (93.5%)	10520.06 (17.5%)					
PIPE DETAILS									
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm				
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)					
Pipe13	0.321	1.5	15.09	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1				
P18	0.304	1.5	15.087	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1				
P20	0.303	1.5	15.086	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1				
P22	0.316	1.5	15.089	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1				
P24	0.291	1.4	15.084	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1				
P26	0.325	1.5	15.09	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1				
P10	3.217	2.1	11.831	11.781	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1				
CHANNEL DETAILS									
Name	Max Q	Max V	Chainage	Max	Due to Storm				
	(cu.m/s)	(m/s)	(m)	HGL (m)					
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	
OF9	0.32	0.32	7.665	0.054	0.04	14.9	0.71	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1	
OF12	0.07	0.07	7.665	0.031	0.01	10.2	0.44	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF26	0.208	0.208	7.665	0.046	0.03	13.3	0.61	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF40	0	0	7.665	0	0	0.0	0		
OF1	0.286	0.286	7.665	0.053	0.04	14.5	0.67	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1	
OF19	1.28	1.28	7.665	0.097	0.1	23.3	1.02	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1	
OF17	1.28	1.28	7.665	0.097	0.1	23.3	1.02	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1	
StageDischarge_B	0.18	0.18	7.665	0.044	0.03	12.7	0.59	AR&R 2 year, 12 hours storm, average 6.92 mm/h, Zone 1	
OF43	1.213	1.213	7.665	0.095	0.09	23.0	1.02	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF44	0.275	0.275	7.665	0.052	0.03	14.3	0.67	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF46	0.07	0.07	7.665	0.031	0.01	10.2	0.44	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF47	0.035	0.035	7.665	0.024	0.01	7.9	0.37	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF51	0.246	0.246	7.665	0.049	0.03	13.8	0.65	AR&R 2 year, 12 hours storm, average 6.92 mm/h, Zone 1	
OF58	2.232	2.232	7.665	0.121	0.14	28.2	1.19	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF59	0.316	0.316	7.665	0.054	0.04	14.9	0.7	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF60	0.507	0.507	7.665	0.066	0.05	17.2	0.79	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF61	0.048	0.048	7.665	0.026	0.01	8.8	0.41	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1	
OF64	1.16	1.16	7.665	0.093	0.09	22.6	0.99	AR&R 2 year, 12 hours storm, average 6.92 mm/h, Zone 1	
StageDischarge_A	0.712	0.712	7.665	0.076	0.07	19.2	0.87	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1	
StageDischarge_D	2.42	2.42	7.665	0.125	0.15	29.1	1.2	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF102	2.718	2.718	7.665	0.132	0.18	30.3	1.24	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF101	1.161	1.161	7.665	0.093	0.09	22.6	0.99	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF131	0.208	0.208	7.665	0.046	0.03	13.3	0.61	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF104	0.163	0.163	7.665	0.042	0.02	12.4	0.58	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1	
OF205	0.214	0.214	7.665	0.046	0.03	13.3	0.63	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF485	0.188	0.188	7.665	0.044	0.03	12.9	0.59	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF305	0.193	0.193	7.665	0.044	0.03	12.9	0.61	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF340	0.031	0.031	7.665	0.023	0.01	7.63	0.36	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
OF28	0	0	7.665	0	0	0	0		
OF30	3.217	3.217	7.665	0.141	0.18	32.11	1.3	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1	
OF487	0.188	0.188	7.665	0.044	0.03	12.89	0.59	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1	
DETENTION BASIN DETAILS									
Name	Max WL	Max Vol	Max Q	Max Q	Max Q				
			Total	Low Level	High Level				
DetBEx	14.44	5477.2	0.286	0	0.286				
DetAEx	13.95	1865.5	1.28	0	1.28				
DetB_Prop	15.12	10003.7	0.18	0	0.18				

2 Year ARI Results

[illegible]

DRAINS Input Data

CHANNEL DETAILS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																</
-----------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

20 Year ARI Results

DRAINS Model Name and File Path: F:\AA003210\ID-Calculation\Stormwater\DRAINS\Moorebank.drn									
DRAINS Version:		2010.09 - 5 August 2010							
Modeller's Name:		Chris McClelland							
Description:		Moorebank OSD							
DRAINS results prepared 02 September, 2010 from Version 2010.09									
PIT / NODE DETAILS								RESULTS 20 YEAR ARI	
Version 8									
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint		
HW2	12.76	10.166				1.44	0	None	
N50	12.25		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		
CatchB1Ex	0.381	0	0.381	3	8		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatchC1Ex	1.032	0.87	0.163	7	7		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatchBEx	5.832	2.538	3.35	14.5	24		0 AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1		
CatchAEx	7.717	4.854	3.112	13.75	15		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatB1_Prop	6.108	6.108	0	6	3		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatB2(Swale)_Prop	1.26	1.26	0	9.5	8.5		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatB1Ext_Prop	0.381	0	0.381	5	8		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatB2Ext_Prop	0.132	0	0.132	8.5	15.5		0 AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1		
CatA1_Prop	11.239	11.239	0	6	3		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatA2(Swale)_Prop	1.315	1.315	0	12	11		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatA1Ex_Prop	2.342	1.094	1.248	13.2	8.3		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatA2Ex_Prop	0.179	0	0.179	0	18		0 AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1		
CatCa_Prop	1.732	1.732	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1		
CatCb_Prop	1.642	1.642	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1		
CatCc_Prop	1.639	1.639	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1		
CatCd_Prop	1.708	1.708	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1		
CatCe_Prop	1.571	1.571	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1		
CatCf_Prop	1.758	1.758	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1		
CatC2_Prop	6.273	6.273	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1		
CatCEx1_Prop	1.032	0.87	0.163	7	7		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatCEx2_Prop	0.511	0.32	0.211	21.7	25		0 AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1		
Cat_A3_Prop	1.167	1.167	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1		
Cat Carpark_Ex	0.992	0.992	0	5	0		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatC1_Prop	1.04	1.04	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1		
CatB3Ext_Prop	0.17	0	0.17	0	8		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
CatchCEX	8.567	6.236	2.563	25	30		0 AR&R 20 year, 1 hour storm, average 54.4 mm/h, Zone 1		
Cat Carpark_Prop	0.992	0.992	0	5	0		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1		
Outflow Volumes for Total Catchment (142 impervious + 56.3 pervious = 198 total ha)									
Storm	Total Rainfall cu.m	Total Runoff cu.m (Runoff %)	Impervious Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)					
AR&R 20 year, 5 m	28912.92	21141.76 (73)	19278.57 (93)	1863.19 (22.7%)					
AR&R 20 year, 10 m	44278.07	35484.35 (80)	30278.09 (95)	5206.26 (41.4%)					
AR&R 20 year, 15 m	55512.8	45990.70 (82)	38320.65 (96)	7670.05 (48.6%)					
AR&R 20 year, 20 m	64897.1	54719.92 (84)	45038.60 (96)	9681.32 (52.5%)					
AR&R 20 year, 25 m	72530.12	61675.56 (85)	50502.84 (97)	11172.72 (54.2%)					
AR&R 20 year, 30 m	79204.87	67548.72 (85)	55281.07 (97)	12267.66 (54.5%)					
AR&R 20 year, 45 m	95313.5	81994.24 (86)	66812.62 (97)	15181.62 (56.1%)					
AR&R 20 year, 1 h	107853.43	93281.42 (86)	75789.75 (98)	17491.67 (57.1%)					
AR&R 20 year, 1.5 h	126985.53	110127.93 (86)	89485.90 (98)	20642.03 (57.2%)					
AR&R 20 year, 2 h	141954.16	123152.02 (86)	100201.45 (98)	22950.57 (56.9%)					
AR&R 20 year, 3 h	165348.81	143616.59 (86)	116949.47 (98)	26667.13 (56.8%)					
AR&R 20 year, 4.5 h	191816.53	165548.05 (86)	135896.13 (98)	29651.93 (54.4%)					
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				
Pipe13	1.549	1.4	15.728	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1				
P18	1.489	1.4	15.716	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1				
P20	1.487	1.4	15.716	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1				
P22	1.533	1.4	15.724	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1				
P24	1.449	1.3	15.707	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1				
P26	1.567	1.5	15.731	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1				
P10	10.166	3	12.303	12.253	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1				
CHANNEL DETAILS									
Name	Max Q (cu.m/s)	Max V (m/s)	Chainage (m)	Max HGL (m)	Due to Storm				
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	
OF9	0.652	0.632	0.256	0.073	0.06	18.64	0.85	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1	
OF12	0.381	0.381	0.256	0.059	0.04	15.76	0.73	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1	
OF26	1.032	1.032	0.256	0.088	0.08	21.69	0.96	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1	
OF40	0	0	0.256	0	0	0	0		
OF1	0.632	0.632	0.256	0.072	0.06	18.46	0.84	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1	
OF19	6.244	6.244	0.256	0.185	0.28	40.91	1.53	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1	
OF17	6.244	6.244	0.256	0.185	0.28	40.91	1.53	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1	
StageDischarge_B	0.21	0.21	0.256	0.046	0.03	13.25	0.62	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1	
OF43	6.108	6.108	0.256	0.183	0.28	40.55	1.52	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1	
OF44	1.26	1.26	0.256	0.096	0.1	23.13	1.02	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1	
OF46	0.381	0.381	0.256	0.059	0.04	15.76	0.73	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1	
OF47	0.132	0.132	0.256	0.039	0.02	11.81	0.53	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1	
OF51	0.565	0.565	0.256	0.069	0.06	17.74	0.82	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1	
OF58	11.239	11.239	0.256	0.23	0.42	49.99	1.83	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1	
OF59	1.315	1.315	0.256	0.097	0.1	23.49	1.03	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1	

20 Year ARI Results

OF60	2.342	2.342	0.256	0.123	0.15	28.7	1.2	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1
OF81	0.179	0.179	0.256	0.044	0.03	12.71	0.59	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1
OF64	2.935	2.935	0.256	0.135	0.17	31.03	1.27	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1
StageDischarge_A	0.901	0.901	0.256	0.083	0.08	20.61	0.94	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1
StageDischarge_D	7.154	7.154	0.256	0.194	0.31	42.89	1.59	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1
OF102	8.354	8.354	0.256	0.207	0.34	45.4	1.65	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1
OF101	6.273	6.273	0.256	0.185	0.28	40.91	1.54	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1
OF131	1.032	1.032	0.256	0.088	0.08	21.69	0.96	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1
OF104	0.511	0.511	0.256	0.066	0.05	17.2	0.8	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1
OF205	1.157	1.157	0.256	0.092	0.09	22.41	1	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1
OF485	0.992	0.992	0.256	0.087	0.08	21.33	0.96	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1
OF305	1.04	1.04	0.256	0.088	0.09	21.69	0.97	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1
OF340	0.17	0.17	0.256	0.043	0.02	12.53	0.58	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1
OF28	0	0	0.256	0	0	0	0	
OF30	10.166	10.166	0.256	0.224	0.39	48.81	1.74	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1
OF487	0.992	0.992	0.256	0.087	0.08	21.33	0.96	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1
DETENTION BASIN DETAILS								
Name	Max WL	MaxVol	Max Q	Max Q	Max Q			
			Total	Low Level	High Level			
DetBEx	14.69	11800.6	0.632	0	0.632			
DetAEx	14.14	3976	6.244	0	6.244			
DetB_Prop	15.52	13588.4	0.21	0	0.21			
DetA_Prop	15.42	19125.6	0.901	0	0.901			
DetC1	15.75	397.6	1.549	1.549	0			
DetD_Prop	15.65	8894.7	7.154	0	7.154			
DetC2	15.73	365.7	1.489	1.489	0			
DetC3	15.73	385.3	1.487	1.487	0			
DetC4	15.74	394.4	1.533	1.533	0			
DetC5	15.72	378.9	1.449	1.449	0			
DetC6	15.75	401.2	1.587	1.587	0			
CONTINUITY CHECK for AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1								
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %				
N4	4022.52	4022.52	0	0				
N5	440.09	440.09	0	0				
N8	1585.5	1585.5	0	0				
DetBEx	13202.29	3588.01	9617.16	0				
OutBEx	4016.95	4016.95	0	0				
DetAEx	15299.77	15299.78	0	0				
N40	15299.78	15299.78	0	0				
OutAEx	15299.78	15299.78	0	0				
OutCEX	26519.06	26519.06	0	0				
N57	0	0	0	0				
DetB_Prop	11870.87	1631.8	10240.45	0				
N62	9514.76	9514.76	0	0				
N63	2159.65	2159.65	0	0				
N64	440.09	440.09	0	0				
N65	224.69	224.69	0	0				
N69	2293.86	2293.86	0	0				
OutB_Prop	2291.16	2291.16	0	0				
N75	17507.38	17507.38	0	0				
N76	2475.24	2475.24	0	0				
N77	3610.76	3610.76	0	0				
N78	320.31	320.31	0	0				
N79	11412.44	11412.44	0	0				
OutA_Prop	11400.89	11400.89	0	0				
DetA_Prop	21662.89	7492.92	14175.77	0				
DetC1	2514.77	2514.02	0.75	0				
DetD_Prop	26795.02	25435.83	1357.83	0				
DetC2	2384.18	2383.42	0.75	0				
DetC3	2379.93	2379.18	0.75	0				
DetC4	2480.18	2479.43	0.75	0				
DetC5	2281.79	2281.05	0.74	0				
DetC6	2552.89	2552.15	0.75	0				
N92	28192.02	28192.02	0	0				
OutC_Prop	28188.63	28188.63	0	0				
N95	9110.22	9110.22	0	0				
N96	1585.5	1585.5	0	0				
N97	1289.56	1289.56	0	0				
N169	1680.28	1680.28	0	0				
N177	1472.01	1472.01	0	0				
N224	1510.13	1510.13	0	0				
N232	196.48	196.48	0	0				
HW2	26519.04	26519.06	0	0				
N50	26519.08	26519.08	0	0				
N294	1472.01	1472.01	0	0				
Run Log for Moorebank.drn run at 17:00:05 on 2/9/2010								
The maximum flow exceeded the safe value in the following overflow routes: OF487, OF485, OF305, OF205, OF131, OF104, OF102, OF101, StageDischarge_D, OF64, StageDischarge_A, OF80.								
DRAINS results prepared 02 September, 2010 from Version 2010.09								
PIT / NODE DETAILS								
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint	
HW2	12.4	6.295			1.8	0	None	
N50	12		0					
SUB-CATCHMENT DETAILS								
Name	Max Flow Q	Paved Max Q	Grassed Max Q	Paved Tc	Grassed Tc	Supp. Tc	Due to Storm	

20 Year ARI Results

	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)			
CatchB1Ex	0.139	0	0.139	3	8	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatchC1Ex	0.355	0.298	0.057	7	7	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatchBEx	3.523	1.305	2.218	14.5	24	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatchAEx	3.825	2.059	1.766	13.75	15	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatB1_Prop	2.022	2.022	0	6	3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatB2(Swale)_Prop	0.459	0.459	0	9.5	8.5	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatB1Ext_Prop	0.139	0	0.139	5	8	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatB2Ext_Prop	0.071	0	0.071	8.5	15.5	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatA1_Prop	3.72	3.72	0	6	3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatA2(Swale)_Prop	0.526	0.526	0	12	11	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatA1Ex_Prop	0.917	0.456	0.461	13.2	8.3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatA2Ex_Prop	0.101	0	0.101	0	18	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCa_Prop	0.534	0.534	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCb_Prop	0.507	0.507	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCc_Prop	0.508	0.508	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCd_Prop	0.527	0.527	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCe_Prop	0.485	0.485	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCf_Prop	0.542	0.542	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatC2_Prop	1.936	1.936	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCExt_Prop	0.355	0.298	0.057	7	7	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCEx2_Prop	0.322	0.174	0.148	21.7	25	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
Cat_A3_Prop	0.357	0.357	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCarpark_Ext	0.313	0.313	0	6	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatC1_Prop	0.321	0.321	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatB3Ext_Prop	0.062	0	0.062	0	8	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatchCEx	5.627	3.633	1.994	25	30	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
CatCarpark_Prop	0.313	0.313	0	5	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1		
Outflow Volumes for Total Catchment (142 impervious + 56.3 pervious = 198 total ha)									
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff					
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)					
AR&R 20 year, 6 h	214120.8	184181.44 (86.0%)	151861.70 (99.3%)	32319.73 (53.1%)					
AR&R 20 year, 9 h	249807.59	211575.89 (84.7%)	177413.33 (99.3%)	34162.56 (48.1%)					
AR&R 20 year, 12 h	278357.03	236380.27 (84.9%)	197848.50 (99.3%)	38531.77 (48.7%)					
AR&R 20 year, 18 h	327961.66	273387.85 (83.4%)	233369.67 (99.3%)	40018.18 (42.9%)					
AR&R 20 year, 24 h	368287.81	301332.22 (81.8%)	262250.53 (99.3%)	39081.69 (37.3%)					
PIPE DETAILS									
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm				
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)					
Pipe13	0.534	0.5	15.518	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
P18	0.508	0.5	15.514	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
P20	0.505	0.5	15.514	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
P22	0.526	0.5	15.517	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
P24	0.484	0.4	15.512	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
P26	0.542	0.5	15.519	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
P10	6.295	2.6	12.055	12.005	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CHANNEL DETAILS									
Name	Max Q	Max V	Chainage	Max	Due to Storm				
	(cu.m/s)	(m/s)	(m)	HGL (m)					
OVERFLOW ROUTE DETAILS									
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max Dv	Max Width	Max V	Due to Storm	
OF9	1.108	1.108	7.665	0.091	0.09	22.23	0.98	AR&R 20 year, 12 hours storm, average 11.7 mm/h, Zone 1	
OF12	0.139	0.139	7.665	0.039	0.02	11.81	0.56	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF26	0.355	0.355	7.665	0.057	0.04	15.41	0.72	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF40	0	0	7.665	0	0	0	0		
OF1	1.075	1.075	7.665	0.089	0.09	21.87	0.98	AR&R 20 year, 12 hours storm, average 11.7 mm/h, Zone 1	
OF19	3.46	3.46	7.665	0.145	0.19	33.01	1.32	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF17	3.46	3.46	7.665	0.145	0.19	33.01	1.32	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
StageDischarge_B	0.805	0.805	7.665	0.079	0.07	19.9	0.9	AR&R 20 year, 18 hours storm, average 9.19 mm/h, Zone 1	
OF43	2.022	2.022	7.665	0.116	0.13	27.26	1.15	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF44	0.459	0.459	7.665	0.063	0.05	16.66	0.77	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF46	0.139	0.139	7.665	0.039	0.02	11.81	0.56	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF47	0.071	0.071	7.665	0.031	0.01	10.2	0.44	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF51	0.855	0.855	7.665	0.081	0.08	20.25	0.92	AR&R 20 year, 18 hours storm, average 9.19 mm/h, Zone 1	
OF58	3.72	3.72	7.665	0.15	0.2	33.9	1.34	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF59	0.526	0.526	7.665	0.067	0.05	17.38	0.8	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF60	0.917	0.917	7.665	0.084	0.08	20.79	0.94	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF61	0.101	0.101	7.665	0.035	0.02	10.91	0.51	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF64	1.776	1.776	7.665	0.11	0.12	26	1.12	AR&R 20 year, 12 hours storm, average 11.7 mm/h, Zone 1	
StageDischarge_A	0.973	0.973	7.665	0.086	0.08	21.15	0.95	AR&R 20 year, 12 hours storm, average 11.7 mm/h, Zone 1	
StageDischarge_D	5.301	5.301	7.665	0.172	0.25	38.4	1.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF102	5.916	5.916	7.665	0.18	0.27	40.01	1.52	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF101	1.936	1.936	7.665	0.115	0.13	26.9	1.13	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF131	0.355	0.355	7.665	0.057	0.04	15.41	0.72	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF104	0.322	0.322	7.665	0.055	0.04	15.05	0.69	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF205	0.357	0.357	7.665	0.057	0.04	15.41	0.72	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF485	0.313	0.313	7.665	0.054	0.04	14.87	0.69	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF305	0.321	0.321	7.665	0.054	0.04	14.87	0.71	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF340	0.062	0.062	7.665	0.029	0.01	9.73	0.44	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF28	0	0	7.665	0	0	0	0		
OF30	6.295	6.295	7.665	0.185	0.28	40.91	1.54	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
OF487	0.313	0.313	7.665	0.054	0.04	14.87	0.69	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1	
DETENTION BASIN DETAILS									
Name	Max WL	MaxVol	Max Q	Max Q	Max Q				
			Total	Low Level	High Level				
DetBEx	14.72	12778.8	1.075	0	1.075				
DetAEx	14.07	3022.5	3.46	0	3.46				
DetB_Prop	15.87	16664	0.805	0	0.805				

20 Year ARI Results

DetA_Prop	15.52	22285.6	0.973	0	0.973
DetC1	15.53	220.8	0.534	0.534	0
DetD_Prop	15.48	7982.5	5.301	0	5.301
DetC2	15.52	217.3	0.506	0.506	0
DetC3	15.52	217.2	0.505	0.505	0
DetC4	15.52	219.9	0.526	0.526	0
DetC5	15.52	214.7	0.484	0.484	0
DetC6	15.53	221.9	0.542	0.542	0
CONTINUITY CHECK for AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1					
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %	
N4	10685.39	10685.4	0	0	
N5	615.82	615.82	0	0	
N8	2381.69	2381.69	0	0	
DetBEx	19264.64	10075.01	9192.28	0	
OutBEx	10679.95	10679.95	0	0	
DetAEx	22564.03	22564	0	0	
N40	22564	22564	0	0	
OutAEx	22564	22564	0	0	
OutCEX	39522.07	39522.07	0	0	
N57	0	0	0	0	
DetB_Prop	17968.42	4176.21	13793.81	0	
N62	14420.32	14420.32	0	0	
N63	3273.11	3273.11	0	0	
N64	615.82	615.82	0	0	
N85	315.6	315.6	0	0	
N69	5104.5	5104.48	0	0	
OutB_Prop	5101.33	5101.33	0	0	
N75	26533.87	26533.87	0	0	
N76	3751.43	3751.43	0	0	
N77	5302.78	5302.78	0	0	
N78	450.42	450.42	0	0	
N79	23469.25	23469.22	0	0	
OutA_Prop	23457.26	23457.26	0	0	
DetA_Prop	32831.63	17727.97	15109.91	0	
DetC1	3811.34	3810.68	0.65	0	
DetD_Prop	40591.9	39837.63	752.57	0	
DetC2	3613.4	3612.74	0.65	0	
DetC3	3606.96	3606.32	0.65	0	
DetC4	3758.69	3758.25	0.65	0	
DetC5	3458.23	3457.6	0.65	0	
DetC6	3869.14	3868.47	0.66	0	
N92	43970.65	43970.64	0	0	
OutC_Prop	43967.65	43967.65	0	0	
N95	13807.34	13807.34	0	0	
N96	2381.69	2381.69	0	0	
N97	1905.04	1905.04	0	0	
N169	2546.6	2546.6	0	0	
N177	2230.95	2230.95	0	0	
N224	2288.74	2288.74	0	0	
N232	274.91	274.91	0	0	
HW2	39522.06	39522.07	0	0	
N50	39522.07	39522.07	0	0	
N294	2230.95	2230.95	0	0	
Run Log for Moorebank.drn run at 17:00:37 on 2/9/2010					
The following detention basins have little effect (less than 2%) in reducing peak discharge: DetC6, DetC5, DetC4, DetC3, DetC2, DetC1 You might consider upsizing these, or removing them					

100 Year ARI Results

DRAINS Model Name and File Path:		F:\AA003210\ID-Calculations\C-Civil\Stormwater\DRAINS\Moorebank.drn									
DRAINS Version:		2010.09 - 5 August 2010									
Modeller's Name:		Chris McClelland									
Description:		Moorebank OSD									
DRAINS results prepared 02 September, 2010 from Version 2010.09											
PIT / NODE DETAILS								Version 8			
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint				
HW2	12.97	12.746			1.23	0	None				
N50	12.41		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				
CatchB1Ex	0.465	0	0.465	3	8		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CatchC1Ex	1.231	1.034	0.197	7	7		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CatchBEx	7.538	3.077	4.462	14.5	24		0 AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1				
CatchAEx	9.881	5.94	4.252	13.75	15		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalB1_Prop	7.233	7.233	0	6	3		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalB2(Swale)_Prop	1.51	1.51	0	9.5	8.5		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalB1Ext_Prop	0.465	0	0.465	5	8		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalB2Ext_Prop	0.17	0	0.17	8.5	15.5		0 AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1				
CalA1_Prop	13.308	13.308	0	6	3		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalA2(Swale)_Prop	1.595	1.595	0	12	11		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalA1Ex_Prop	2.608	1.335	1.531	13.2	8.3		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalA2Ex_Prop	0.231	0	0.231	0	18		0 AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1				
CalCa_Prop	2.216	2.216	0	3	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCb_Prop	2.101	2.101	0	3	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCc_Prop	2.098	2.098	0	3	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCd_Prop	2.166	2.166	0	3	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCe_Prop	2.011	2.011	0	3	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCf_Prop	2.25	2.25	0	3	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalC2_Prop	8.029	8.029	0	3	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCExt1_Prop	1.231	1.034	0.197	7	7		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalCE2_Prop	0.656	0.391	0.288	21.7	25		0 AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1				
Cal_A3_Prop	1.461	1.461	0	3	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
Cal Carpark_Ext	1.228	1.228	0	5	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalC1_Prop	1.331	1.331	0	3	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalB3Ext_Prop	0.208	0	0.208	0	8		0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CatchCEX	10.983	7.698	3.592	25	30		0 AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1				
Cal Carpark_Prop	1.228	1.228	0	5	0		0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
Outflow Volumes for Total Catchment (142 impervious + 56.3 pervious = 198 total ha)											
Storm	Total Rainfall cu.m	Total Runoff cu.m (Runoff %)	Impervious Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)							
AR&R 100 year, 5 min	37008.53	29088.43 (78.6%)	25074.09 (68.1%)	4014.34 (38.2%)							
AR&R 100 year, 10 min	56834.53	47930.48 (84.3%)	39266.84 (69.1%)	8663.64 (53.7%)							
AR&R 100 year, 15 min	71373.59	61701.68 (86.5%)	49874.88 (69.9%)	12026.80 (59.3%)							
AR&R 100 year, 20 min	83269.2	72908.14 (87.6%)	58190.62 (69.9%)	14717.52 (62.2%)							
AR&R 100 year, 25 min	92521.33	81332.79 (87.9%)	64814.00 (69.9%)	16518.80 (62.8%)							
AR&R 100 year, 30 min	101112.6	89230.76 (88.2%)	70964.27 (69.9%)	18266.49 (63.6%)							
AR&R 100 year, 45 min	122078.59	108532.58 (88.9%)	85973.19 (69.9%)	22559.39 (65.0%)							
AR&R 100 year, 1 h	138187.2	123320.74 (89.2%)	97504.91 (69.9%)	25815.83 (65.8%)							
AR&R 100 year, 1.5 h	163267.09	146174.80 (89.5%)	115458.91 (69.9%)	30715.90 (66.2%)							
AR&R 100 year, 2 h	182795.72	163812.55 (89.6%)	129438.98 (69.9%)	34373.57 (66.2%)							
AR&R 100 year, 3 h	213528.02	191312.87 (89.6%)	151437.14 (69.9%)	39875.73 (65.7%)							
AR&R 100 year, 4.5 h	248023.27	221265.07 (89.2%)	176132.27 (69.9%)	45132.80 (64.0%)							
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						
Pipe13	1.77	1.6	15.986	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
P18	1.693	1.6	15.972	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
P20	1.69	1.6	15.972	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
P22	1.749	1.6	15.982	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
P24	1.634	1.5	15.963	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
P26	1.793	1.7	15.99	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
P10	12.746	3.2	12.46	12.41	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1						
CHANNEL DETAILS											
Name	Max Q (cu.m/s)	Max V (m/s)	Chainage (m)	Max HGL (m)	Due to Storm						
OVERFLOW ROUTE DETAILS											
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max D x V	Max Width	Max V	Due to Storm			
OF9	1.627	1.627	0.256	0.106	0.12	25.28	1.09	AR&R 100 year, 3 hours storm, average 35.9 mm/h, Zone 1			
OF12	0.465	0.465	0.256	0.063	0.05	16.66	0.78	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1			
OF26	1.231	1.231	0.256	0.095	0.1	22.95	1.01	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1			
OF40	0	0	0.256	0	0	0	0				
OF1	1.672	1.672	0.256	0.105	0.11	24.92	1.08	AR&R 100 year, 3 hours storm, average 35.9 mm/h, Zone 1			
OF19	8.334	8.334	0.256	0.207	0.34	45.4	1.65	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1			
OF17	8.334	8.334	0.256	0.207	0.34	45.4	1.65	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1			
StageDischarge_B	0.868	0.868	0.256	0.082	0.08	20.43	0.92	AR&R 100 year, 4.5 hours storm, average 27.8 mm/h, Zone 1			
OF43	7.233	7.233	0.256	0.195	0.31	43.07	1.59	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1			
OF44	1.51	1.51	0.256	0.103	0.11	24.57	1.07	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1			
OF46	0.465	0.465	0.256	0.063	0.05	16.66	0.78	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1			
OF47	0.17	0.17	0.256	0.043	0.02	12.53	0.58	AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1			
OF51	0.923	0.923	0.256	0.084	0.08	20.79	0.94	AR&R 100 year, 4.5 hours storm, average 27.8 mm/h, Zone 1			
OF58	13.308	13.308	0.256	0.23	0.5	49.99	2.16	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1			
OF59	1.595	1.595	0.256	0.106	0.11	25.1	1.08	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1			

100 Year ARI Results

OF60	2.808	2.808	0.258	0.133	0.17	30.67	1.25	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1
OF61	0.231	0.231	0.258	0.048	0.03	13.61	0.64	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1
OF64	3.542	3.542	0.258	0.146	0.19	33.19	1.34	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1
StageDischarge_A	1.461	1.461	0.258	0.102	0.11	24.39	1.05	AR&R 100 year, 4.5 hours storm, average 27.8 mm/h, Zone 1
StageDischarge_D	7.816	7.816	0.258	0.202	0.33	44.32	1.62	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1
OF102	9.195	9.195	0.258	0.215	0.38	47.02	1.69	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1
OF101	8.029	8.029	0.258	0.203	0.33	44.68	1.64	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1
OF131	1.231	1.231	0.258	0.095	0.1	22.95	1.01	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1
OF104	0.656	0.656	0.258	0.073	0.06	18.64	0.85	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1
OF205	1.481	1.481	0.258	0.103	0.11	24.57	1.05	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1
OF485	1.228	1.228	0.258	0.095	0.1	22.95	1.01	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1
OF305	1.331	1.331	0.258	0.098	0.1	23.67	1.02	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1
OF340	0.208	0.208	0.258	0.046	0.03	13.25	0.61	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1
OF28	0	0	0.258	0	0	0	0	
OF30	12.746	12.746	0.258	0.23	0.48	49.99	2.07	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1
OF487	1.228	1.228	0.258	0.095	0.1	22.95	1.01	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q	Max Q	Max Q
			Total	Low Level	High Level
DetBEx	14.74	13506.8	1.572	0	1.572
DetAEx	14.19	4567.1	8.334	0	8.334
DetB_Prop	15.87	16681.5	0.868	0	0.868
DetA_Prop	15.78	24891.2	1.461	0	1.461
DetC1	16.01	606.6	1.77	1.77	0
DetD_Prop	15.9	10227.8	7.816	0	7.816
DetC2	15.99	592.8	1.693	1.693	0
DetC3	15.99	592.4	1.69	1.69	0
DetC4	16	602.8	1.749	1.749	0
DetC5	15.98	582.8	1.634	1.634	0
DetC6	16.01	610.9	1.793	1.793	0

CONTINUITY CHECK for AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %
N4	3835.12	3835.11	0	0
N5	497.8	497.8	0	0
N8	1571.57	1571.57	0	0
DetBEx	13909.64	3343.19	10569.76	0
OutBEx	3829.24	3829.24	0	0
DetAEx	15759.35	15759.39	0	0
N40	15759.39	15759.39	0	0
OutAEx	15759.39	15759.39	0	0
OutCEx	26769.13	26769.13	0	0
N57	0	0	0	0
DetB_Prop	11582.45	1128.4	10455.42	0
N62	9258.7	9258.7	0	0
N63	2101.53	2101.53	0	0
N64	497.8	497.8	0	0
N65	253.49	253.49	0	0
N69	1876.98	1876.98	0	0
OutB_Prop	1874.28	1874.28	0	0
N75	17036.23	17036.23	0	0
N76	2408.62	2408.62	0	0
N77	3744.73	3744.73	0	0
N78	360.94	360.94	0	0
N79	9405.76	9405.76	0	0
OutA_Prop	9393.51	9393.51	0	0
DetA_Prop	21079.91	5312.32	15773.72	0
DetC1	2447.09	2445.91	1.19	0
DetD_Prop	26100.04	24155.4	1948.41	0
DetC2	2320	2318.81	1.19	0
DetC3	2315.88	2314.69	1.19	0
DetC4	2413.43	2412.24	1.19	0
DetC5	2220.38	2219.2	1.19	0
DetC6	2484.19	2483	1.19	0
N92	26905.66	26905.66	0	0
OutC_Prop	26897.93	26897.93	0	0
N95	8865.05	8865.05	0	0
N98	1571.57	1571.57	0	0
N97	1325.57	1325.57	0	0
N169	1635.06	1635.06	0	0
N177	1432.39	1432.39	0	0
N224	1469.49	1469.49	0	0
N232	222.22	222.22	0	0
HW2	26769.13	26769.13	0	0
N50	26769.13	26769.13	0	0
N294	1432.39	1432.39	0	0

Run Log for Moorebank.drn run at 16:55:56 on 2/9/2010

The maximum flow exceeded the safe value in the following overflow routes: OF487, OF485, OF305, OF205, OF131, OF104, OF102, OF101, StageDischarge_D, OF64, StageDischarge_A, OF60.

DRAINS results prepared 02 September, 2010 from Version 2010.09

PIT / NODE DETAILS				Version 8			
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
HW2	12.54	7.698			1.66	0	None
N50	12.1		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q	Paved Max Q	Grassed Max Q	Paved Tc	Grassed Tc	Supp. Tc	Due to Storm
------	---------------	----------------	------------------	-------------	---------------	-------------	--------------

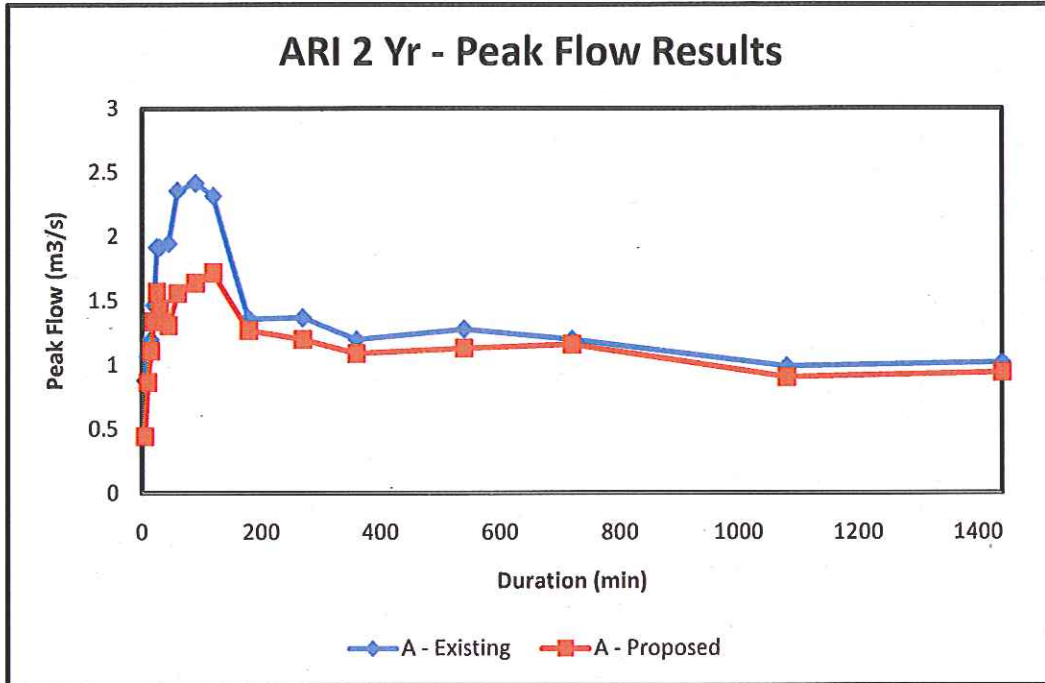
100 Year ARI Results

	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)					
CatchB1Ex	0.173	0	0.173	3	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatchC1Ex	0.431	0.36	0.071	7	7	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatchBEx	4.358	1.575	2.782	14.5	24	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatchAEx	4.693	2.484	2.209	13.75	15	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatB1_Prop	2.439	2.439	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatB2(Swale)_Prop	0.554	0.554	0	9.5	8.5	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatB1Ext_Prop	0.173	0	0.173	5	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatB2Ext_Prop	0.088	0	0.088	8.5	15.5	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatA1_Prop	4.488	4.488	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatA2(Swale)_Prop	0.634	0.634	0	12	11	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatA1Ex_Prop	1.126	0.55	0.576	13.2	8.3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatA2Ex_Prop	0.126	0	0.126	0	18	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatCa_Prop	0.645	0.645	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatCb_Prop	0.611	0.611	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatCo_Prop	0.61	0.61	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatCd_Prop	0.636	0.636	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatCe_Prop	0.585	0.585	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatCf_Prop	0.654	0.654	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatC2_Prop	2.335	2.335	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatCEX1_Prop	0.431	0.36	0.071	7	7	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatCEX2_Prop	0.395	0.21	0.186	21.7	26	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
Cat_A3_Prop	0.431	0.431	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
Cat Carpark_Ext	0.377	0.377	0	5	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatC1_Prop	0.387	0.387	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatB3Ext_Prop	0.077	0	0.077	0	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
CatchCEx	6.889	4.383	2.506	25	30	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
Cat Carpark_Prop	0.377	0.377	0	5	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
Outflow Volumes for Total Catchment (142 impervious + 56.3 pervious = 198 total ha)											
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff							
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)							
AR&R 100 year, 6 h	277167.5	245007.27 (88.36%)	196995.98 (95.11%)	49011.29 (62.2%)							
AR&R 100 year, 9 h	324749.88	284506.83 (87.63%)	231049.34 (95.53%)	53457.49 (57.9%)							
AR&R 100 year, 12 h	364005.34	318045.67 (87.37%)	259161.44 (95.88%)	58884.23 (56.9%)							
AR&R 100 year, 18 h	431810.28	371191.56 (86.19%)	307692.44 (95.63%)	63499.13 (51.8%)							
AR&R 100 year, 24 h	490098.66	414839.37 (84.65%)	349419.16 (95.64%)	65420.21 (47.0%)							
PIPE DETAILS											
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm						
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)							
Pipe13	0.631	0.6	15.568	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
P18	0.598	0.6	15.56	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
P20	0.597	0.6	15.559	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
P22	0.623	0.6	15.564	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
P24	0.572	0.5	15.555	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
P26	0.641	0.6	15.568	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
P10	7.698	2.8	12.148	12.098	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CHANNEL DETAILS											
Name	Max Q	Max V	Chainage	Max	Due to Storm						
	(cu.m/s)	(m/s)	(m)	HGL (m)							
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			
OF9	2.626	2.626	7.665	0.13	0.16	29.95	1.23	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1			
OF12	0.173	0.173	7.665	0.043	0.03	12.53	0.59	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF26	0.431	0.431	7.665	0.062	0.05	16.3	0.76	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF40	0	0	7.665	0	0	0	0				
OF1	2.537	2.537	7.665	0.128	0.16	29.99	1.21	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1			
OF19	4.585	4.585	7.665	0.162	0.23	36.42	1.43	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF17	4.585	4.585	7.665	0.162	0.23	36.42	1.43	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
StageDischarge_B	1.847	1.847	7.665	0.112	0.13	26.36	1.13	AR&R 100 year, 12 hours storm, average 15.3 mm/h, Zone 1			
OF43	2.439	2.439	7.665	0.125	0.15	29.06	1.21	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF44	0.554	0.554	7.665	0.069	0.08	17.74	0.81	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF46	0.173	0.173	7.665	0.043	0.03	12.53	0.59	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF47	0.088	0.088	7.665	0.034	0.02	10.74	0.47	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF51	2.01	2.01	7.665	0.116	0.13	27.26	1.14	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1			
OF58	4.488	4.488	7.665	0.161	0.23	36.24	1.41	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF59	0.634	0.634	7.665	0.072	0.06	18.46	0.84	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF60	1.126	1.126	7.665	0.091	0.09	22.23	0.99	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF61	0.126	0.126	7.665	0.038	0.02	11.63	0.53	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF64	2.734	2.734	7.665	0.132	0.16	30.31	1.24	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1			
StageDischarge_A	1.951	1.951	7.665	0.115	0.13	26.9	1.14	AR&R 100 year, 12 hours storm, average 15.3 mm/h, Zone 1			
StageDischarge_D	6.735	6.735	7.665	0.19	0.3	41.99	1.56	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF102	7.507	7.507	7.665	0.198	0.32	43.6	1.61	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF101	2.335	2.335	7.665	0.123	0.15	28.7	1.19	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF131	0.431	0.431	7.665	0.062	0.05	16.3	0.76	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF104	0.395	0.395	7.665	0.06	0.04	15.94	0.74	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF205	0.431	0.431	7.665	0.062	0.05	16.3	0.76	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF485	0.377	0.377	7.665	0.059	0.04	15.76	0.72	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF305	0.387	0.387	7.665	0.059	0.04	15.76	0.74	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF340	0.077	0.077	7.665	0.032	0.01	10.38	0.46	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF28	0	0	7.665	0	0	0	0				
OF30	7.698	7.698	7.665	0.201	0.32	44.14	1.61	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
OF487	0.377	0.377	7.665	0.059	0.04	15.76	0.72	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1			
DETENTION BASIN DETAILS											
Name	Max WL	Max Vol	Max Q	Max Q	Max Q						
			Total	Low Level	High Level						
DetBEx	14.77	14733.9	2.537	0	2.537						
DetAEx	14.1	3385.6	4.585	0	4.585						
DetB_Prop	15.91	17055.5	1.847	0	1.847						

100 Year ARI Results

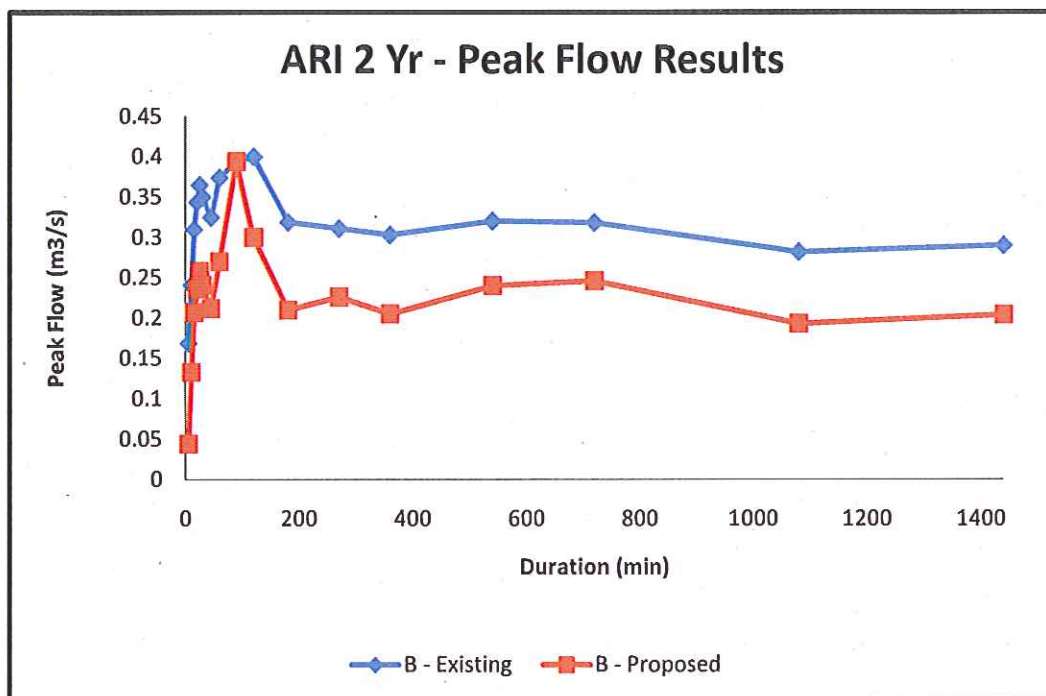
DetA_Pro	15.91	26975.3	1.951	0	1.951
DetC1	15.58	264.1	0.631	0.631	0
DetD_Pro	15.5	8112.2	6.735	0	6.735
DetC2	15.57	258	0.598	0.598	0
DetC3	15.57	257.8	0.597	0.597	0
DetC4	15.58	262.5	0.623	0.623	0
DetC5	15.57	253.4	0.572	0.572	0
DetC6	15.58	266	0.641	0.641	0
CONTINUITY CHECK for AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1					
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %	
N4	18363.92	18363.94	0	0	
N5	934.22	934.22	0	0	
N8	3145.34	3145.34	0	0	
DetBEx	27171.37	17435.32	9738.48	0	
OutBEx	18358.32	18358.32	0	0	
DetAEx	30999.18	30999.08	0	0	
N40	30999.08	30999.08	0	0	
OutAEx	30999.08	30999.08	0	0	
OutCEX	53292.52	53292.52	0	0	
N57	0	0	0	0	
DetB_Pro	23368.79	7704.15	15666.21	0	
N62	18706.2	18706.2	0	0	
N63	4245.87	4245.87	0	0	
N64	934.22	934.22	0	0	
N65	478.68	478.68	0	0	
N69	9113.47	9113.47	0	0	
OutB_Pro	9110.02	9110.02	0	0	
N75	34419.8	34419.8	0	0	
N76	4866.35	4866.35	0	0	
N77	7329.11	7329.11	0	0	
N78	683.11	683.11	0	0	
N79	30880.07	30880.13	0	0	
OutA_Pro	30866.4	30866.4	0	0	
DetA_Pro	42589.45	22881.83	19714.63	0	
DetC1	4944.05	4943.38	0.69	0	
DetD_Pro	52711.73	51825.04	885.07	0	
DetC2	4687.28	4686.58	0.69	0	
DetC3	4678.94	4678.26	0.69	0	
DetC4	4876.12	4875.35	0.69	0	
DetC5	4488.04	4485.33	0.69	0	
DetC6	5019.05	5018.32	0.7	0	
N92	57332.42	57332.39	0	0	
OutC_Pro	57328.88	57328.88	0	0	
N95	17910.6	17910.6	0	0	
N96	3145.34	3145.34	0	0	
N97	2616.88	2616.88	0	0	
N169	3303.44	3303.44	0	0	
N177	2893.97	2893.97	0	0	
N224	2968.94	2968.94	0	0	
N232	417.05	417.05	0	0	
HW2	53292.54	53292.52	0	0	
N50	53292.52	53292.52	0	0	
N294	2893.97	2893.97	0	0	
Run Log for Moorebank.dgn run at 16:57:31 on 2/9/2010					
The maximum flow exceeded the safe value in the following overflow routes: OF30					
The following detention basins have little effect (less than 2%) in reducing peak discharge: DetD_Pro You might consider upsizing these, or removing them from the model.					

Outlet A



Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	0.882	0.443	0.058	14.23
10	1.07	0.867	0.086	14.35
15	1.2	1.11	0.299	14.43
20	1.47	1.34	0.432	14.49
25	1.92	1.57	0.466	14.54
30	1.92	1.44	0.492	14.57
45	1.95	1.31	0.548	14.66
60	2.36	1.56	0.582	14.72
90	2.42	1.64	0.613	14.77
120	2.32	1.72	0.634	14.81
180	1.36	1.27	0.651	14.84
270	1.37	1.2	0.656	14.85
360	1.2	1.09	0.67	14.88
540	1.28	1.13	0.712	14.96
720	1.2	1.16	0.699	14.94
1080	0.99	0.905	0.677	14.89
1440	1.02	0.94	0.693	14.93
Peak	2.42	1.72	0.712	14.96

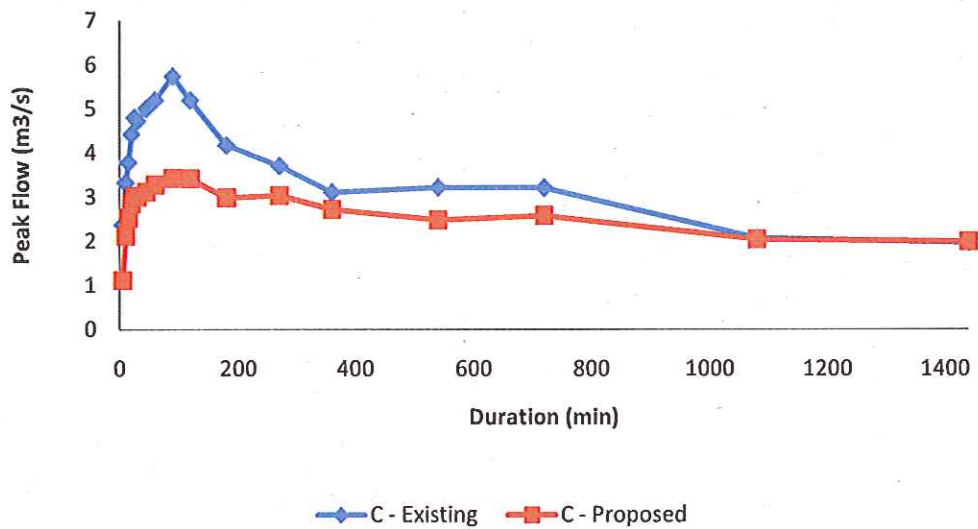
Outlet B



ARI 2 Yr - Peak Flow Results				
Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WL(mAHD)
5	0.169	0.044	0.037	14.15
10	0.241	0.133	0.057	14.24
15	0.31	0.207	0.07	14.3
20	0.344	0.236	0.081	14.35
25	0.365	0.258	0.089	14.4
30	0.35	0.241	0.097	14.43
45	0.325	0.212	0.113	14.52
60	0.374	0.27	0.12	14.58
90	0.395	0.394	0.132	14.66
120	0.4	0.3	0.14	14.72
180	0.319	0.21	0.15	14.8
270	0.311	0.226	0.155	14.87
360	0.303	0.205	0.16	14.93
540	0.32	0.24	0.17	15.03
720	0.318	0.246	0.18	15.11
1080	0.282	0.193	0.18	15.11
1440	0.29	0.204	0.18	15.12
Peak	0.4	0.394	0.18	15.12

Outlet C

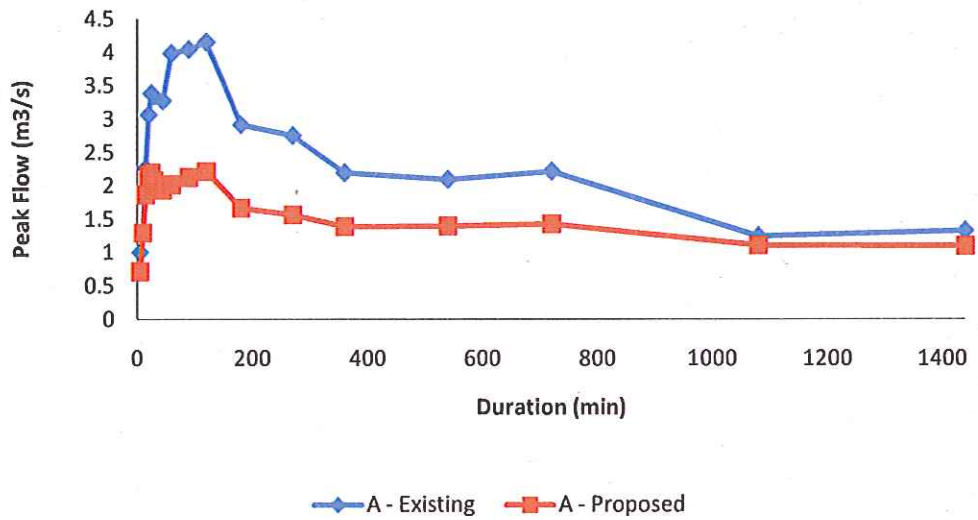
ARI 2 Yr - Peak Flow Results



ARI 2 Yr - Peak Flow Results				
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	2.38	1.12	0.963	14.47
10	3.33	2.12	1.8	14.72
15	3.79	2.53	2.2	14.89
20	4.43	2.86	2.44	15.01
25	4.81	3.02	2.56	15.07
30	4.73	3	2.59	15.09
45	5.01	3.12	2.71	15.16
60	5.2	3.28	2.83	15.23
90	5.74	3.43	2.84	15.24
120	5.2	3.42	2.89	15.27
180	4.18	2.99	2.61	15.1
270	3.71	3.04	2.68	15.15
360	3.11	2.72	2.42	15
540	3.22	2.48	2.2	14.89
720	3.21	2.58	2.27	14.92
1080	2.07	2.04	1.83	14.73
1440	1.97	1.99	1.79	14.71
Peak	5.74	3.43	2.89	15.27

Outlet A

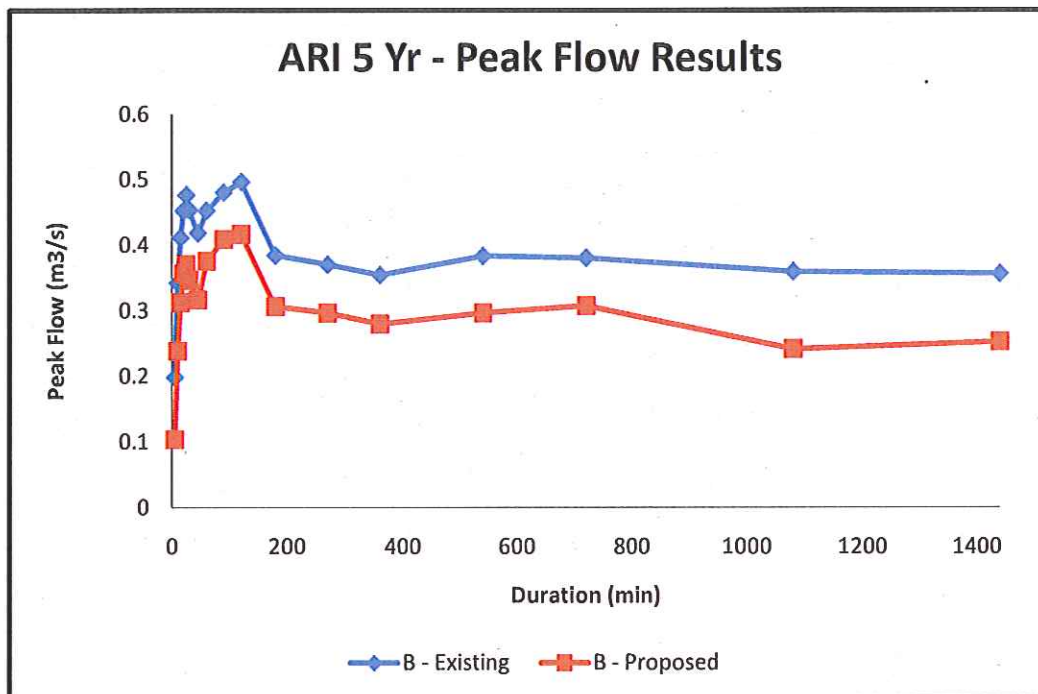
ARI 5 Yr - Peak Flow Results



ARI 5 Yr - Peak Flow Results

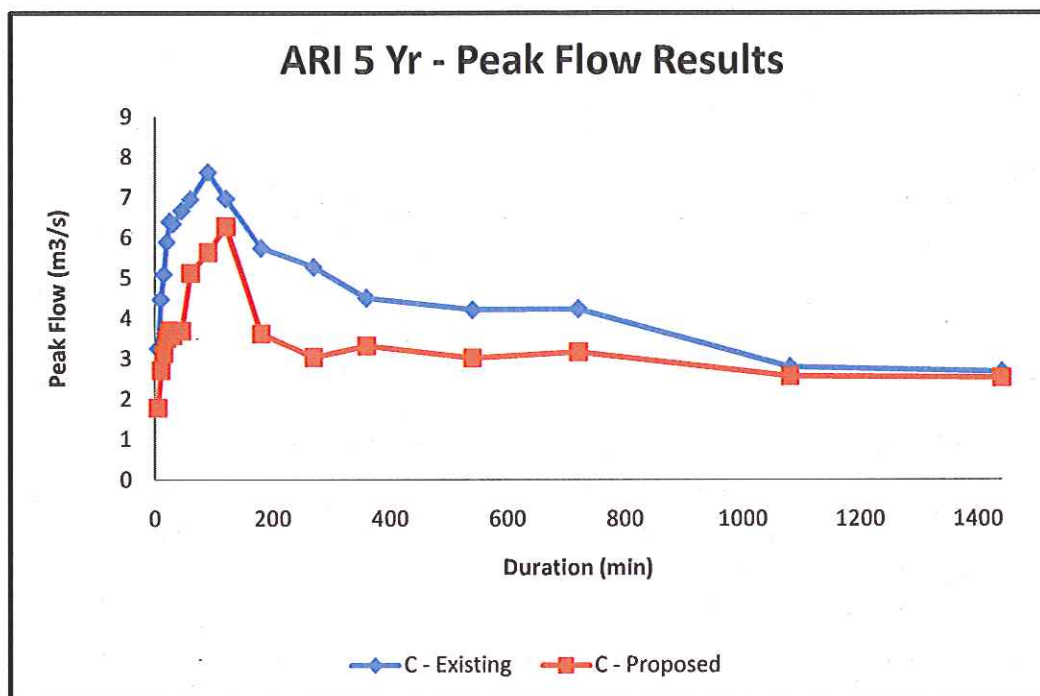
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	1.01	0.72	0.074	14.29
10	1.29	1.3	0.298	14.43
15	2.27	1.87	0.46	14.53
20	3.07	2.15	0.512	14.6
25	3.39	2.2	0.549	14.66
30	3.35	2.08	0.577	14.71
45	3.28	1.94	0.637	14.81
60	3.99	2.02	0.674	14.89
90	4.05	2.13	0.711	14.96
120	4.16	2.22	0.735	15.02
180	2.92	1.67	0.761	15.07
270	2.76	1.57	0.768	15.09
360	2.2	1.39	0.788	15.13
540	2.1	1.4	0.831	15.24
720	2.22	1.43	0.824	15.22
1080	1.25	1.11	0.808	15.18
1440	1.33	1.1	0.809	15.18
Peak	4.16	2.22	0.831	15.24

Outlet B



ARI 5 Yr - Peak Flow Results				
Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WL(mAHD)
5	0.199	0.104	0.048	14.19
10	0.343	0.239	0.071	14.3
15	0.412	0.313	0.088	14.39
20	0.453	0.357	0.101	14.45
25	0.477	0.371	0.111	14.51
30	0.454	0.347	0.12	14.55
45	0.419	0.317	0.132	14.66
60	0.453	0.376	0.14	14.74
90	0.481	0.409	0.15	14.85
120	0.497	0.417	0.16	14.93
180	0.385	0.307	0.17	15.04
270	0.371	0.297	0.18	15.14
360	0.355	0.28	0.188	15.24
540	0.384	0.297	0.2	15.36
720	0.381	0.308	0.21	15.47
1080	0.36	0.242	0.21	15.51
1440	0.357	0.253	0.211	15.55
Peak	0.497	0.417	0.211	15.55

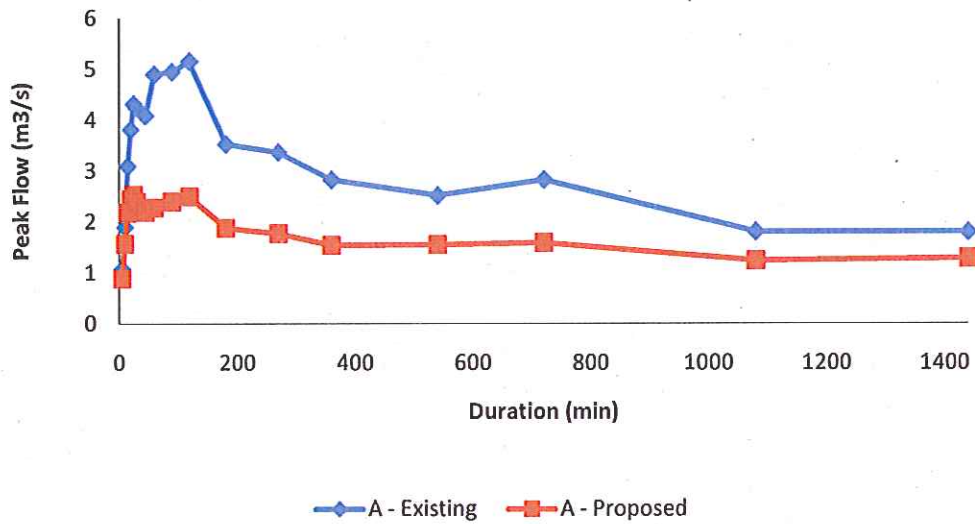
Outlet C



ARI 5 Yr - Peak Flow Results				
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	3.26	1.79	1.46	14.6
10	4.48	2.71	2.26	14.92
15	5.1	3.14	2.68	15.14
20	5.9	3.51	2.88	15.26
25	6.41	3.7	2.97	15.32
30	6.35	3.58	3	15.34
45	6.68	3.69	3.11	15.42
60	6.96	5.12	4.52	15.47
90	7.63	5.64	4.87	15.47
120	6.98	6.28	5.56	15.48
180	5.75	3.62	3.03	15.36
270	5.28	3.04	2.68	15.15
360	4.51	3.32	2.87	15.26
540	4.22	3.02	2.71	15.16
720	4.24	3.17	2.76	15.19
1080	2.8	2.57	2.29	14.93
1440	2.68	2.53	2.27	14.92
Peak	7.63	6.28	5.56	15.48

Outlet A

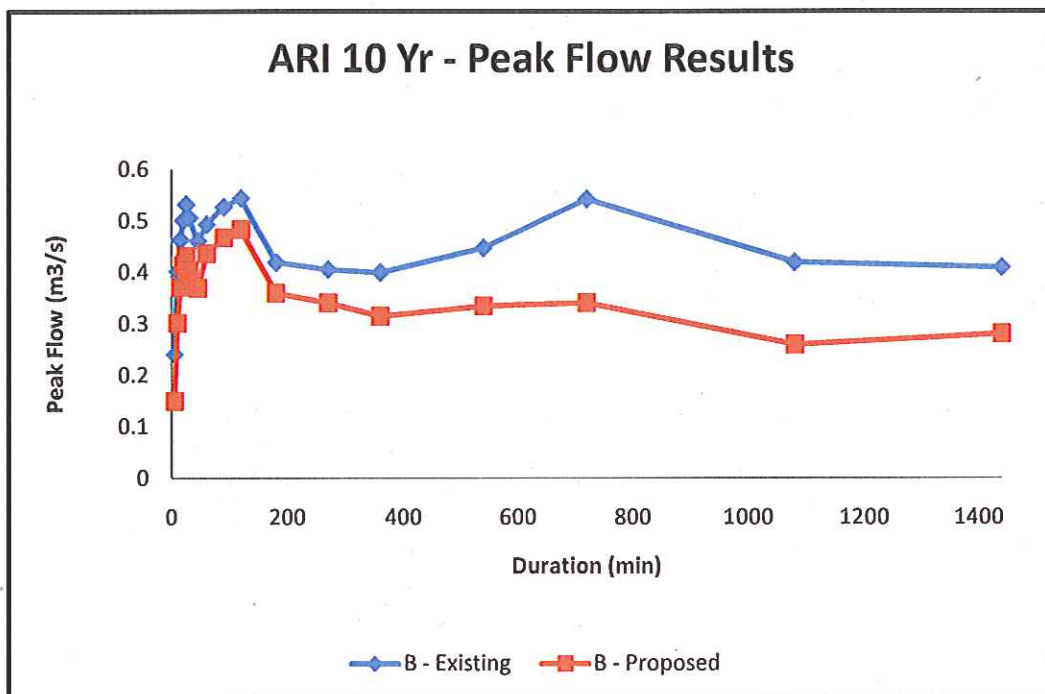
ARI 10 Yr - Peak Flow Results



ARI 10 Yr - Peak Flow Results

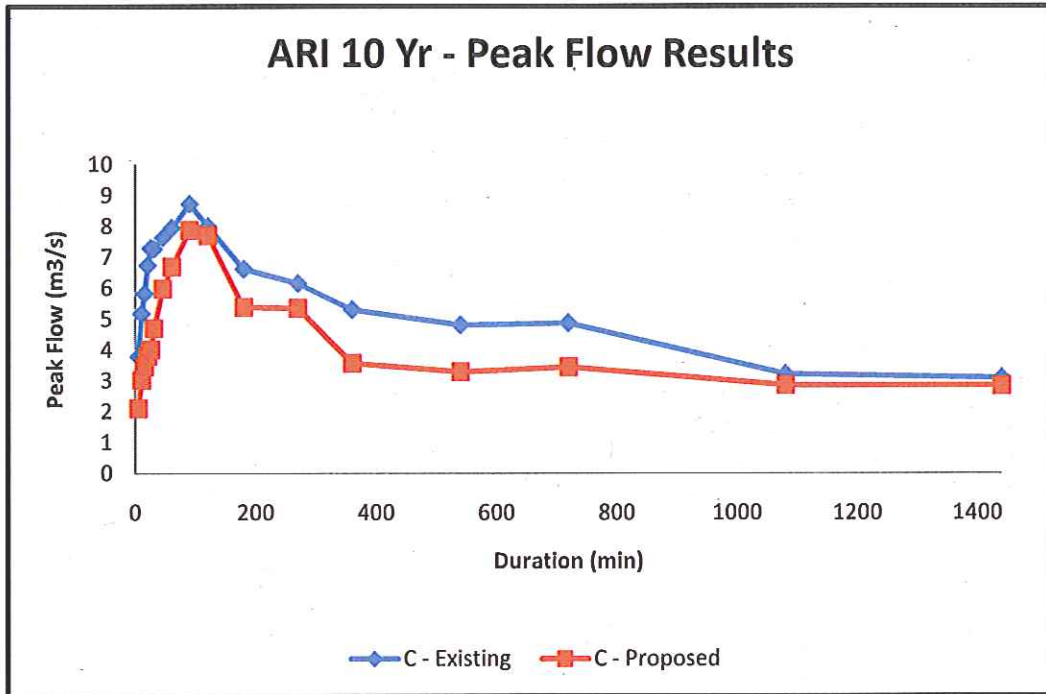
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	1.08	0.887	0.81	14.33
10	1.9	1.57	0.421	14.48
15	3.1	2.18	0.499	14.58
20	3.82	2.44	0.552	14.67
25	4.32	2.53	0.59	14.73
30	4.25	2.4	0.619	14.78
45	4.09	2.2	0.682	14.9
60	4.9	2.28	0.721	14.99
90	4.95	2.4	0.762	15.07
120	5.16	2.5	0.788	15.13
180	3.53	1.88	0.816	15.2
270	3.37	1.77	0.828	15.23
360	2.83	1.54	0.845	15.27
540	2.52	1.55	0.892	15.39
720	2.83	1.59	0.895	15.4
1080	1.81	1.24	0.879	15.36
1440	1.8	1.28	0.87	15.33
Peak	5.16	2.53	0.895	15.4

Outlet B



ARI 10 Yr - Peak Flow Results				
Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WL(mAHD)
5	0.241	0.15	0.054	14.22
10	0.403	0.302	0.079	14.34
15	0.464	0.372	0.097	14.44
20	0.502	0.414	0.112	14.51
25	0.533	0.432	0.12	14.57
30	0.507	0.405	0.124	14.62
45	0.462	0.37	0.14	14.74
60	0.494	0.437	0.15	14.83
90	0.528	0.468	0.163	14.96
120	0.545	0.484	0.171	15.06
180	0.42	0.36	0.18	15.18
270	0.406	0.341	0.192	15.31
360	0.4	0.315	0.202	15.41
540	0.448	0.335	0.211	15.56
720	0.543	0.341	0.221	15.7
1080	0.42	0.26	0.23	15.75
1440	0.41	0.281	0.23	15.81
Peak	0.545	0.484	0.23	15.81

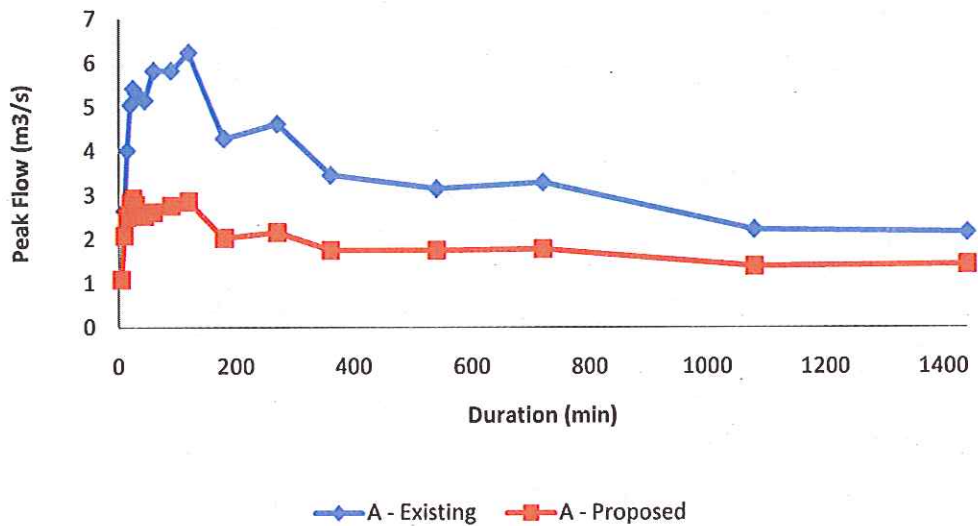
Outlet C



ARI 10 Yr - Peak Flow Results				
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	3.79	2.11	1.7	14.68
10	5.18	3.03	2.5	15.04
15	5.83	3.47	2.88	15.26
20	6.74	3.81	3.07	15.38
25	7.29	4.01	3.16	15.45
30	7.27	4.7	4.08	15.46
45	7.64	5.98	5.27	15.48
60	7.95	6.69	5.94	15.49
90	8.73	7.88	6.82	15.53
120	8.01	7.71	6.82	15.53
180	6.62	5.38	4.73	15.47
270	6.16	5.35	4.78	15.47
360	5.3	3.57	3.1	15.4
540	4.81	3.29	2.94	15.3
720	4.87	3.44	2.97	15.32
1080	3.22	2.86	2.54	15.06
1440	3.09	2.84	2.53	15.06
Peak	8.73	7.88	6.82	15.53

Outlet A

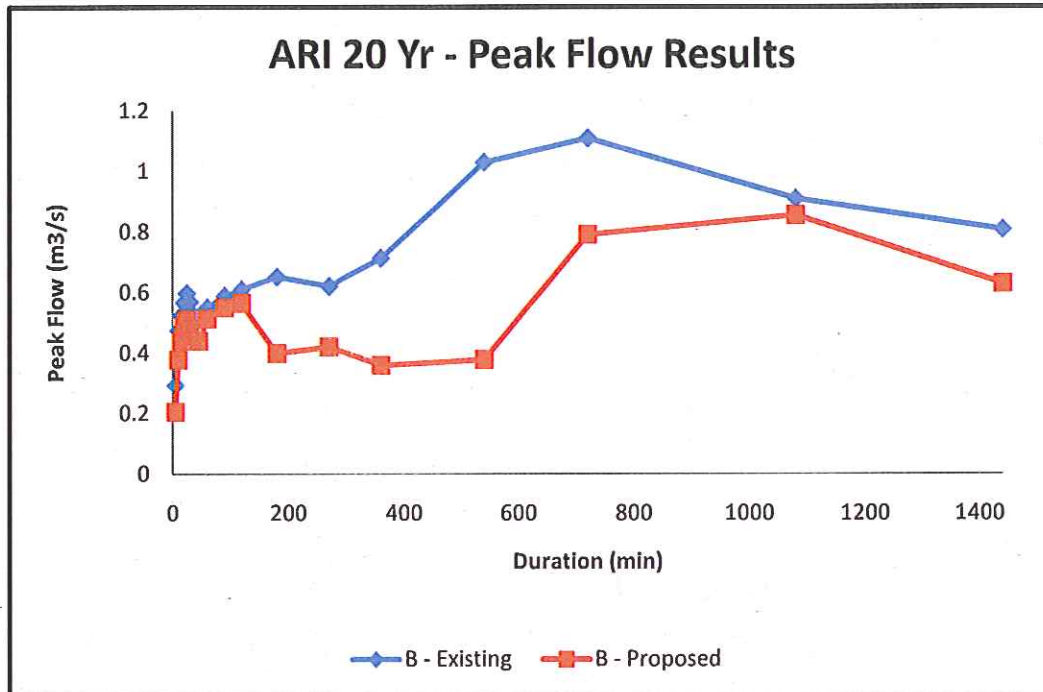
ARI 20 Yr - Peak Flow Results



ARI 20 Yr - Peak Flow Results

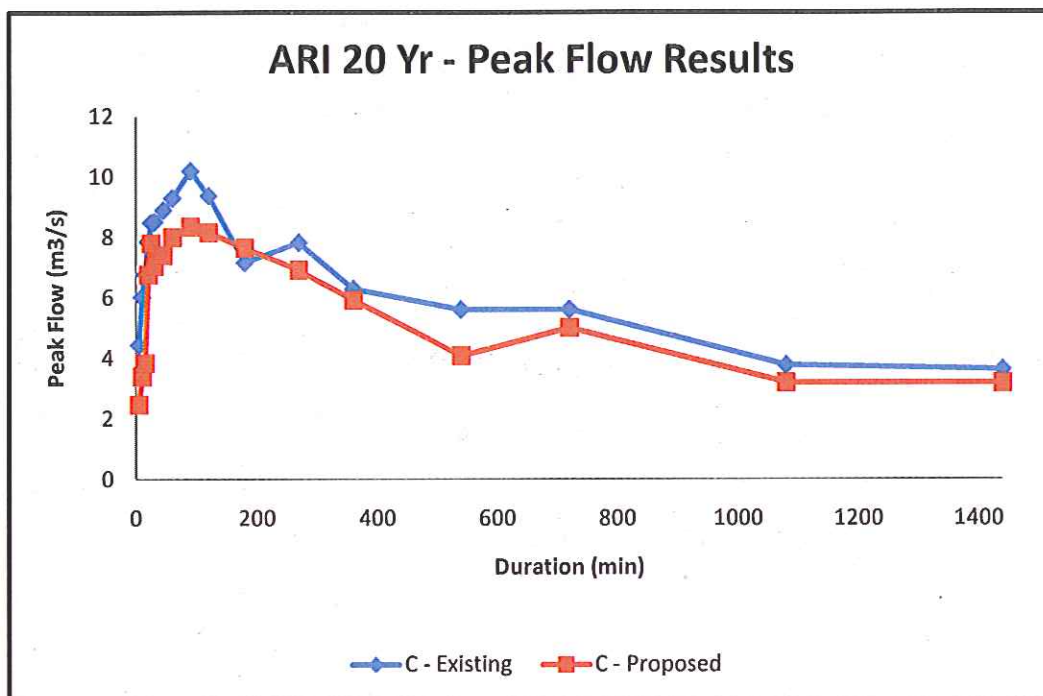
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	1.17	1.09	0.088	14.37
10	2.65	2.09	0.465	14.54
15	4.02	2.51	0.545	14.65
20	5.06	2.81	0.601	14.75
25	5.43	2.93	0.641	14.82
30	5.33	2.78	0.671	14.88
45	5.16	2.54	0.737	15.02
60	5.83	2.62	0.779	15.11
90	5.83	2.76	0.823	15.22
120	6.24	2.86	0.851	15.29
180	4.29	2.03	0.901	15.42
270	4.62	2.16	0.885	15.37
360	3.46	1.75	0.922	15.47
540	3.15	1.75	0.97	15.61
720	3.29	1.78	0.973	15.62
1080	2.22	1.39	0.964	1.39
1440	2.16	1.43	0.945	15.54
Peak	6.24	2.93	0.973	15.62

Outlet B



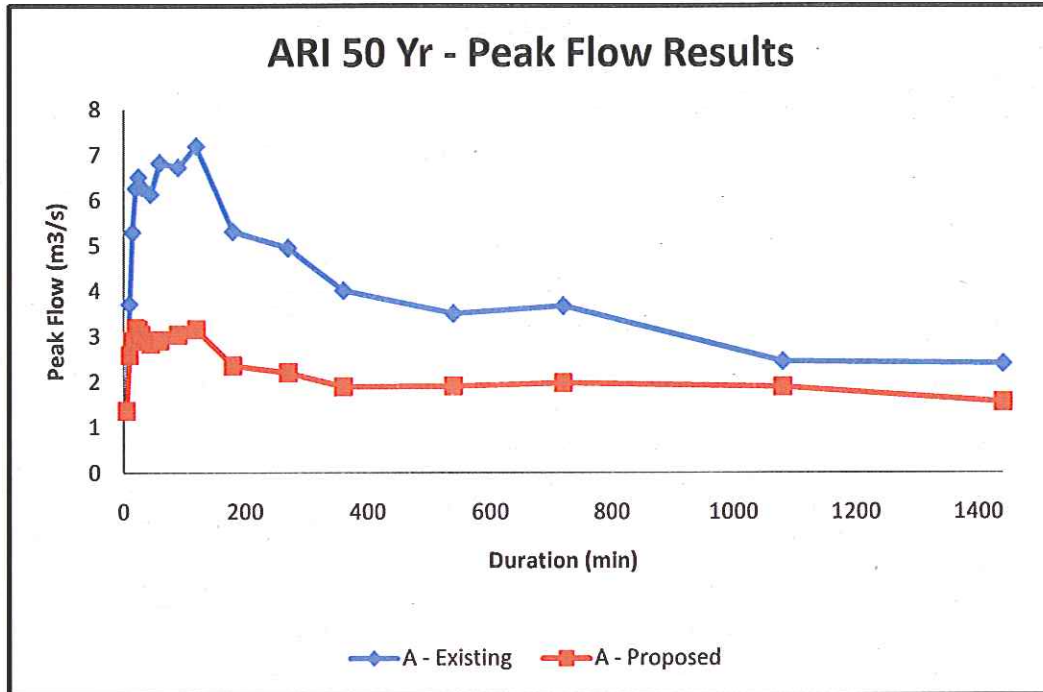
Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WL(mAHD)
5	0.294	0.205	0.06	14.25
10	0.475	0.378	0.089	14.39
15	0.524	0.44	0.11	14.5
20	0.567	0.49	0.12	14.59
25	0.598	0.511	0.131	14.65
30	0.569	0.48	0.14	14.71
45	0.52	0.44	0.151	14.85
60	0.551	0.513	0.162	14.96
90	0.589	0.55	0.18	15.11
120	0.61	0.565	0.184	15.22
180	0.652	0.399	0.21	15.52
270	0.621	0.42	0.2	15.37
360	0.714	0.359	0.22	15.65
540	1.03	0.378	0.23	15.83
720	1.11	0.791	0.744	15.87
1080	0.91	0.855	0.805	15.87
1440	0.808	0.629	0.598	15.86
Peak	1.11	0.855	0.805	15.87

Outlet C



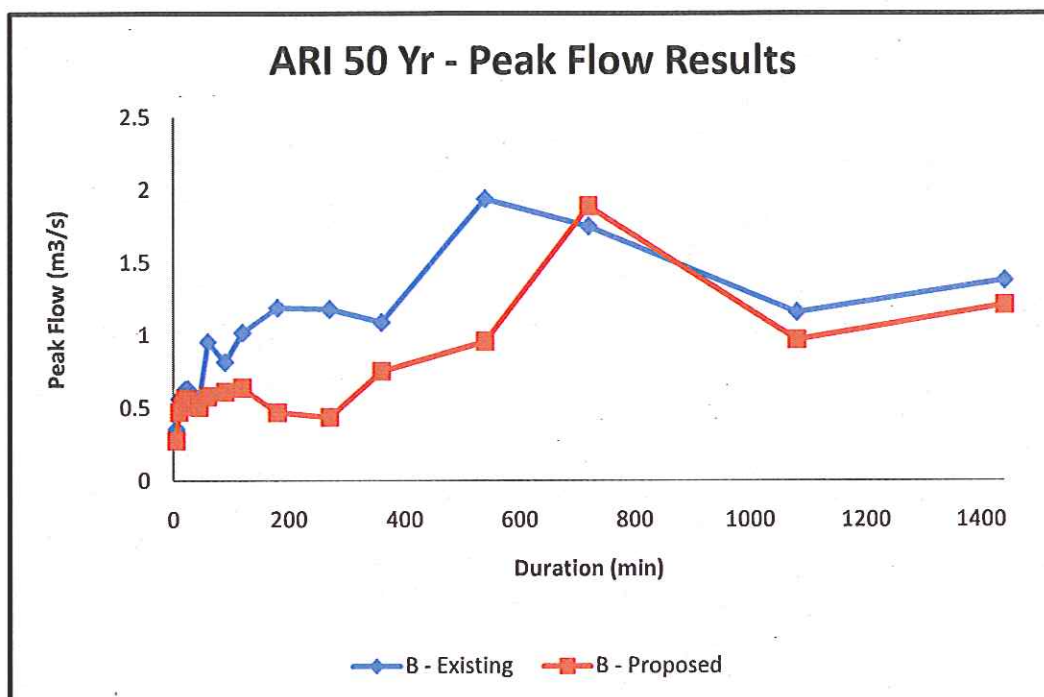
ARI 20 Yr - Peak Flow Results				
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	4.45	2.47	1.96	14.78
10	6.03	3.4	2.78	15.2
15	6.78	3.84	3.1	15.4
20	7.86	6.77	5.93	15.49
25	8.49	7.8	6.75	15.51
30	8.51	7.05	6.14	15.49
45	8.9	7.41	6.57	15.5
60	9.3	8	6.93	15.57
90	10.2	8.35	7.15	15.65
120	9.38	8.16	7.15	15.65
180	7.17	7.65	6.78	15.52
270	7.83	6.92	6.19	15.49
360	6.29	5.92	5.3	15.48
540	5.61	4.08	3.68	15.46
720	5.62	5.01	4.49	15.47
1080	3.77	3.19	2.81	15.22
1440	3.63	3.18	2.82	15.23
Peak	10.2	8.35	7.15	15.65

Outlet A



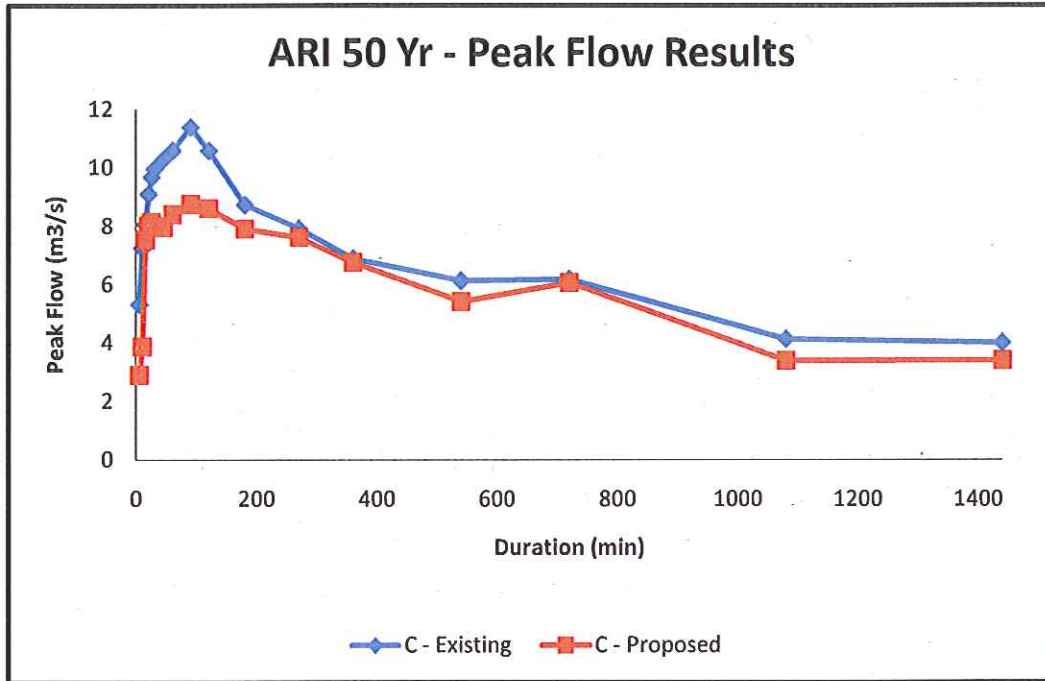
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	1.43	1.37	0.235	14.42
10	3.72	2.6	0.519	14.61
15	5.3	2.91	0.601	14.75
20	6.27	3.19	0.66	14.86
25	6.52	3.16	0.701	14.94
30	6.3	3.04	0.732	15.01
45	6.14	2.85	0.803	15.17
60	6.83	2.92	0.847	15.28
90	6.73	3.04	0.896	15.4
120	7.2	3.16	0.93	15.49
180	5.32	2.36	0.962	15.59
270	4.96	2.21	0.987	15.66
360	4.02	1.9	1.01	15.72
540	3.51	1.91	1.53	15.78
720	3.68	1.98	1.65	15.79
1080	2.46	1.9	1.58	15.78
1440	2.41	1.56	1.01	15.73
Peak	7.2	3.19	1.65	15.79

Outlet B



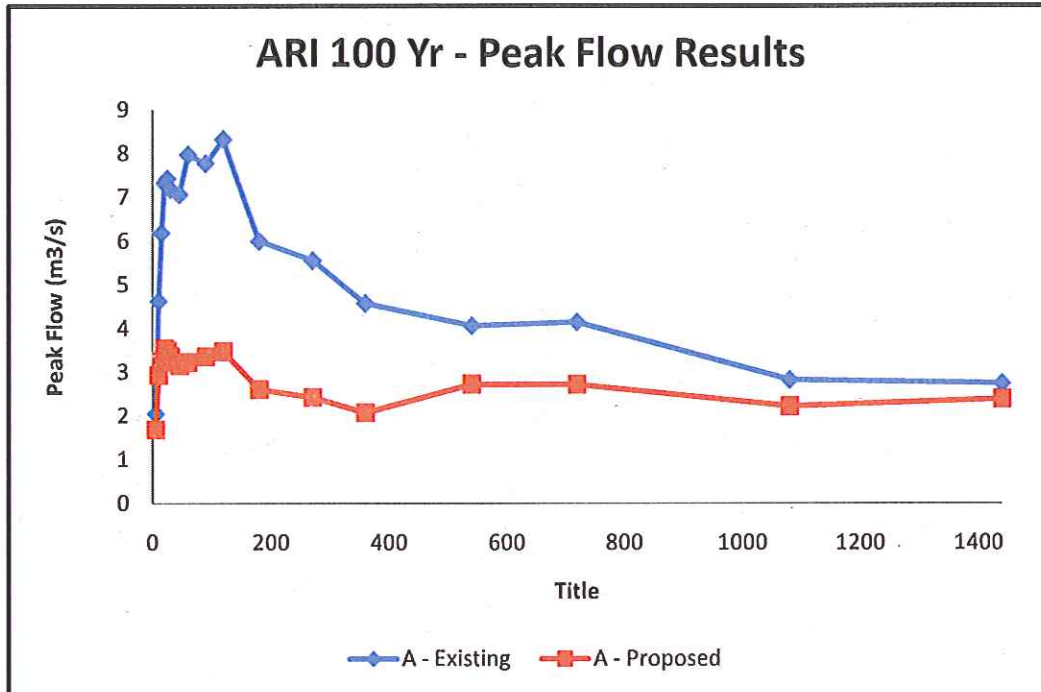
Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WL(mAHD)
5	0.358	0.279	0.069	14.3
10	0.565	0.474	0.103	14.46
15	0.588	0.514	0.12	14.58
20	0.628	0.568	0.137	14.68
25	0.632	0.558	0.143	14.76
30	0.609	0.533	0.15	14.83
45	0.572	0.507	0.17	15
60	0.957	0.581	0.18	15.12
90	0.817	0.613	0.19	15.3
120	1.02	0.64	0.207	15.43
180	1.19	0.47	0.22	15.62
270	1.18	0.437	0.23	15.81
360	1.09	0.753	0.711	15.86
540	1.94	0.958	0.898	15.87
720	1.75	1.89	1.75	15.9
1080	1.16	0.971	0.911	15.87
1440	1.38	1.21	1.13	15.88
Peak	1.94	1.89	1.75	15.9

Outlet C



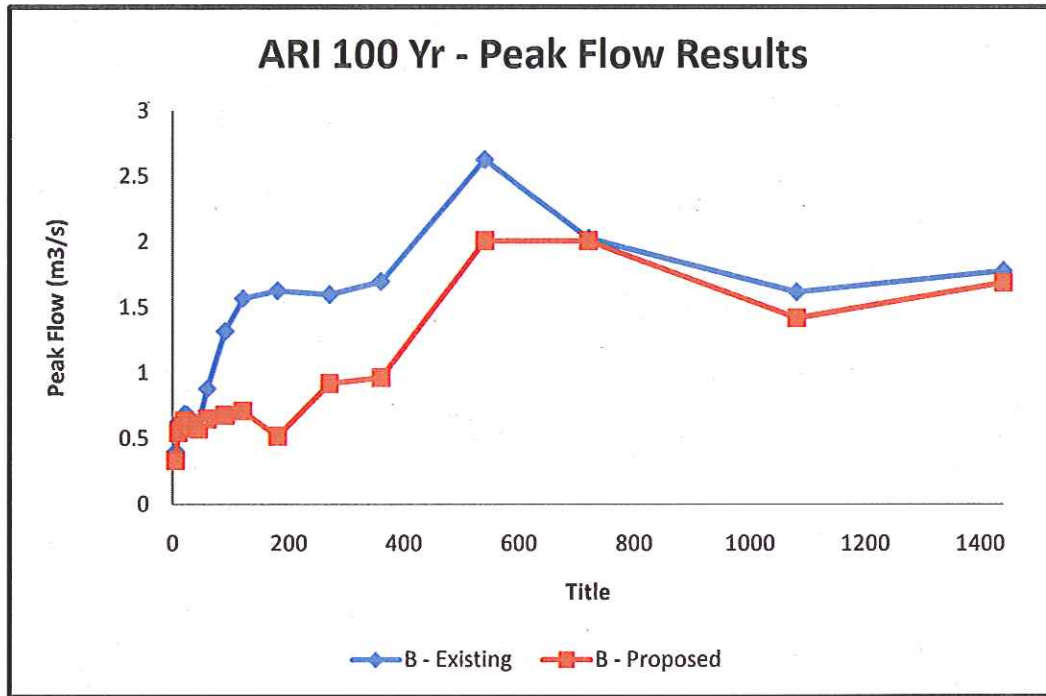
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	5.33	2.9	2.26	14.92
10	7.26	3.88	3.04	15.37
15	8.08	7.54	6.72	15.5
20	9.11	8.02	6.95	15.58
25	9.69	8.14	6.98	15.59
30	9.98	8	6.89	15.56
45	10.3	7.97	6.98	15.59
60	10.6	8.41	7.26	15.69
90	11.4	8.76	7.45	15.76
120	10.6	8.61	7.48	15.77
180	8.74	7.91	6.96	15.58
270	7.93	7.62	6.81	15.53
360	6.9	6.77	6.09	15.49
540	6.14	5.42	4.84	15.47
720	6.19	6.07	5.46	15.48
1080	4.14	3.39	2.98	15.33
1440	4.02	3.41	3.02	15.35
Peak	11.4	8.76	7.48	15.77

Outlet A



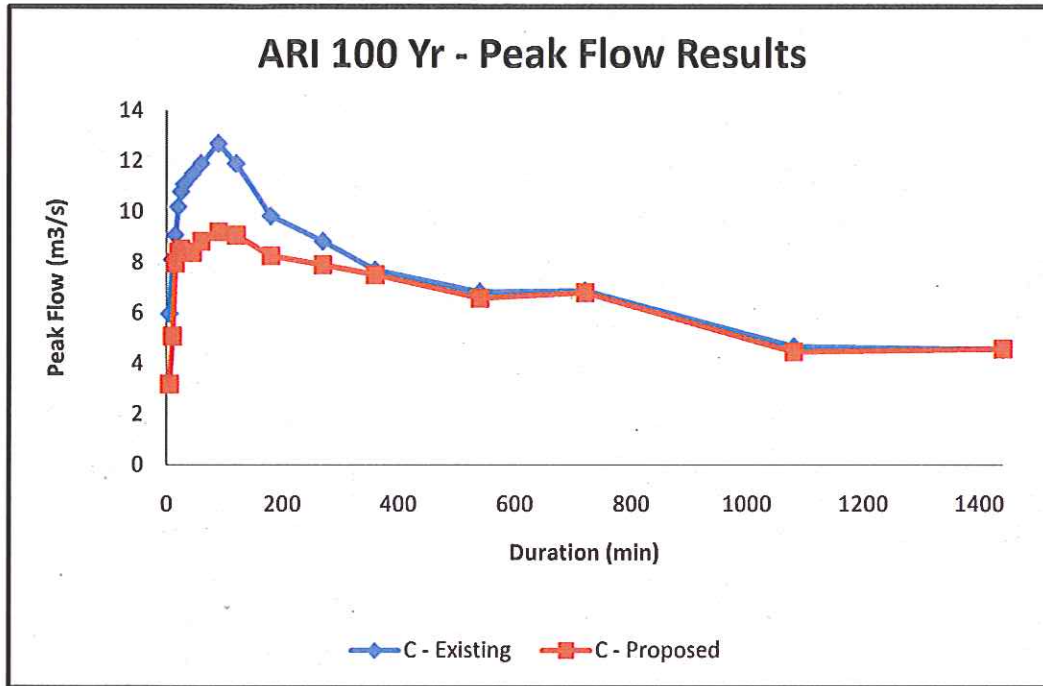
ARI 100 Yr - Peak Flow Results				
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	2.06	1.69	0.404	14.46
10	4.63	2.94	0.555	14.67
15	6.19	3.24	0.641	14.82
20	7.33	3.54	0.7	14.94
25	7.43	3.49	0.74	15.03
30	7.19	3.37	0.774	15.1
45	7.07	3.16	0.848	15.28
60	7.98	3.23	0.894	15.4
90	7.78	3.36	0.947	15.54
120	8.33	3.48	0.982	15.64
180	6	2.61	1.04	15.75
270	5.56	2.43	1.46	15.78
360	4.58	2.08	1.62	15.78
540	4.07	2.73	1.94	15.88
720	4.15	2.72	1.95	15.91
1080	2.83	2.22	1.85	15.8
1440	2.75	2.39	1.91	15.84
Peak	8.33	3.54	1.95	15.91

Outlet B



Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WL(mAHD)
5	0.406	0.335	0.076	14.33
10	0.628	0.547	0.113	14.51
15	0.649	0.584	0.13	14.65
20	0.687	0.641	0.142	14.76
25	0.684	0.625	0.15	14.84
30	0.661	0.6	0.16	14.92
45	0.624	0.574	0.18	15.11
60	0.882	0.653	0.189	15.24
90	1.32	0.682	0.209	15.44
120	1.57	0.713	0.219	15.59
180	1.63	0.522	0.23	15.8
270	1.6	0.923	0.868	15.87
360	1.7	0.969	0.908	15.87
540	2.63	2.01	1.84	15.91
720	2.03	2.01	1.85	15.91
1080	1.62	1.42	1.32	15.88
1440	1.78	1.69	1.56	15.89
Peak	2.63	2.01	1.85	15.91

Outlet C

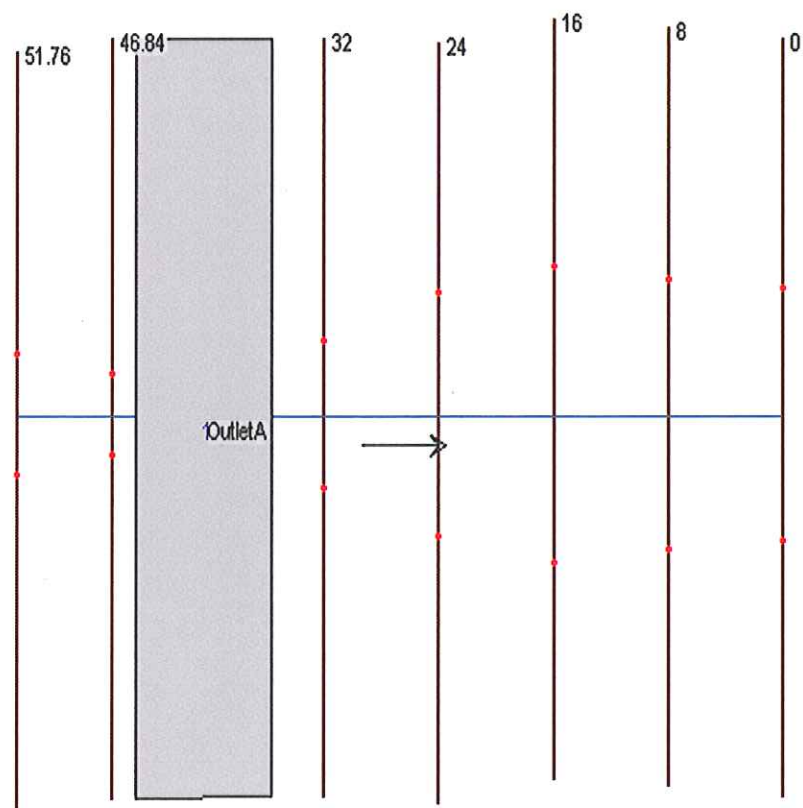


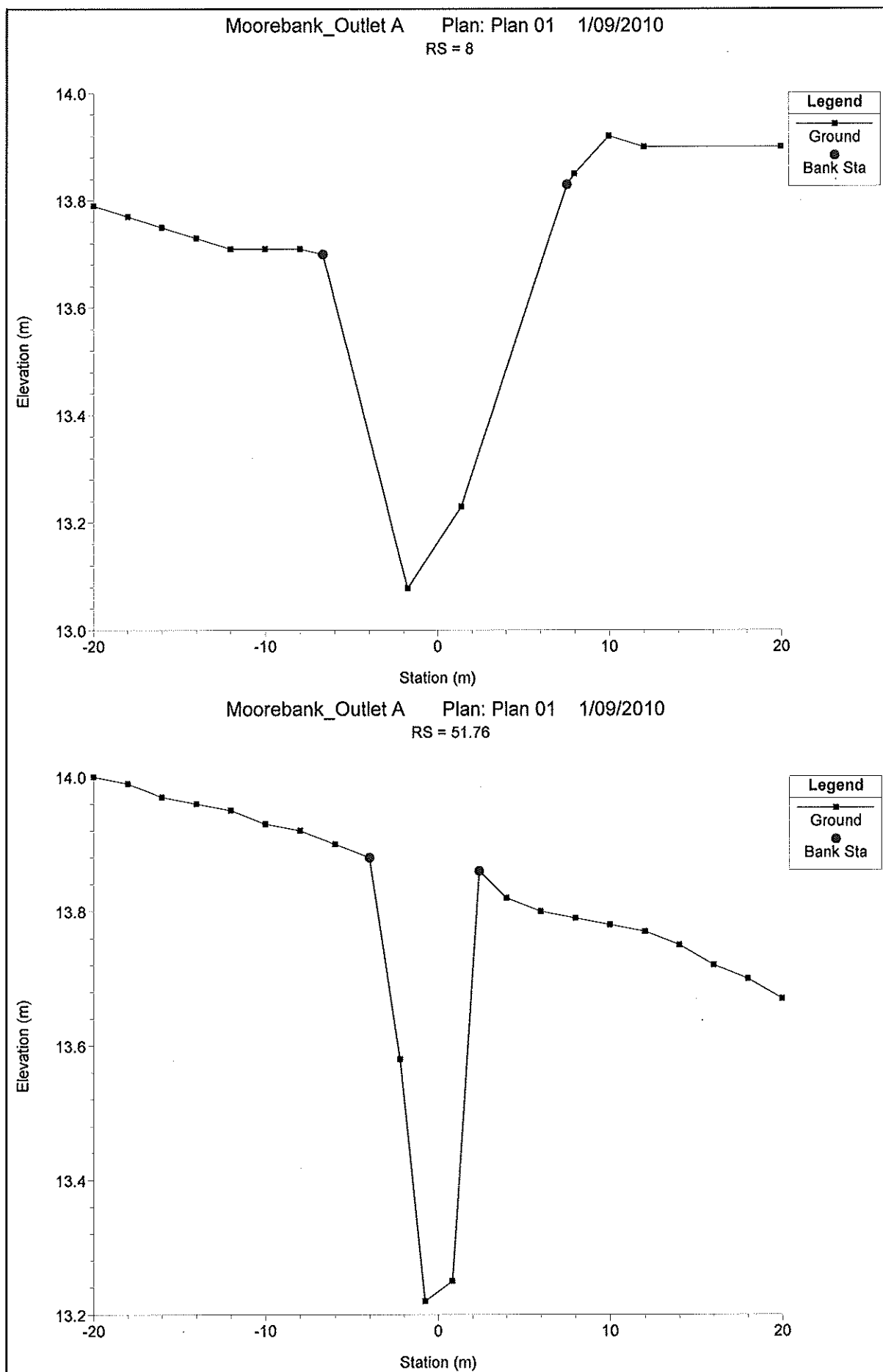
ARI 100 Yr - Peak Flow Results				
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	5.98	3.18	2.47	15.02
10	8.12	5.08	4.33	15.47
15	9.09	7.97	6.93	15.57
20	10.2	8.4	7.22	15.67
25	10.8	8.52	7.24	15.68
30	11.1	8.37	7.16	15.65
45	11.5	8.39	7.3	15.7
60	11.9	8.83	7.6	15.81
90	12.7	9.2	7.74	15.87
120	11.9	9.07	7.82	15.9
180	9.84	8.26	7.22	15.67
270	8.84	7.91	7.03	15.6
360	7.7	7.51	6.74	15.5
540	6.84	6.59	5.91	15.49
720	6.89	6.81	6.12	15.49
1080	4.68	4.47	4.2	15.46
1440	4.55	4.58	4.12	15.46
Peak	12.7	9.2	7.82	15.9

APPENDIX B

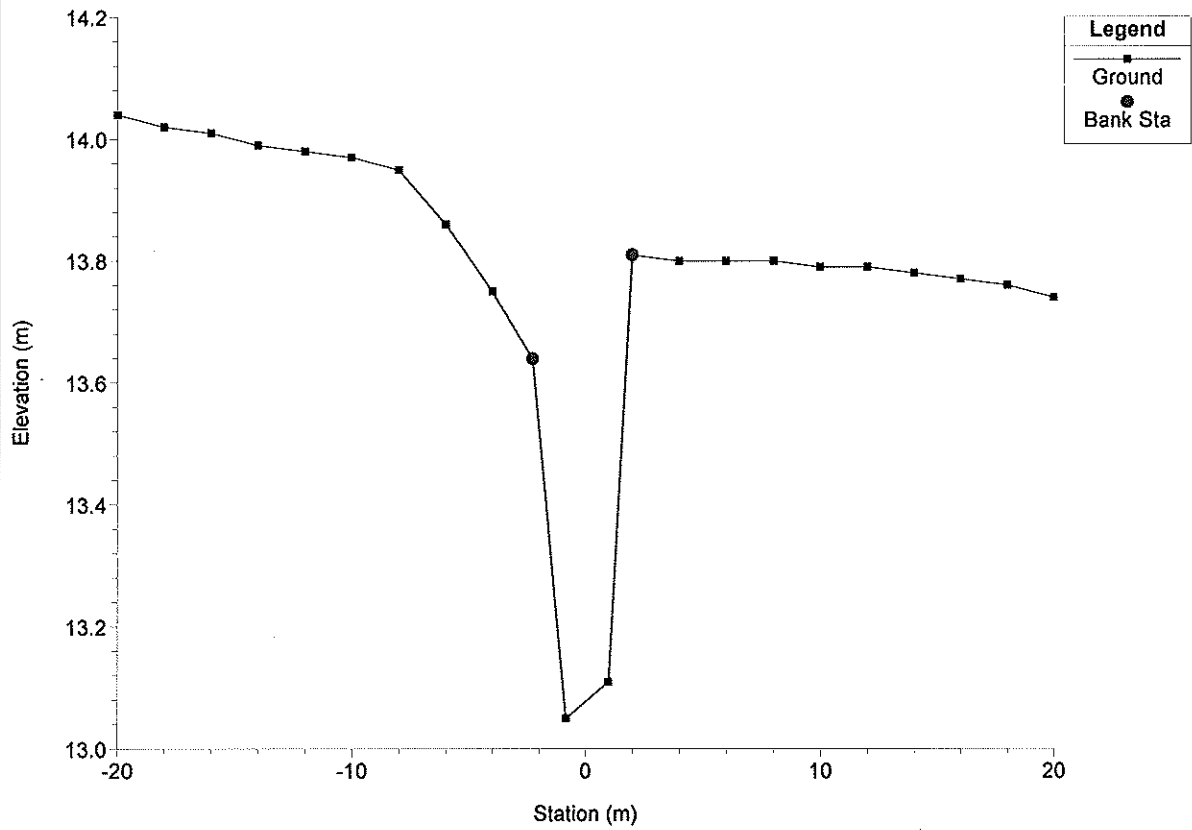
HEC-RAS MODEL INPUT AND OUTPUT DATA – EXISTING AND PROPOSED CONDITIONS

OUTLET A EXISTING CASE – HEC-RAS MODEL FILES

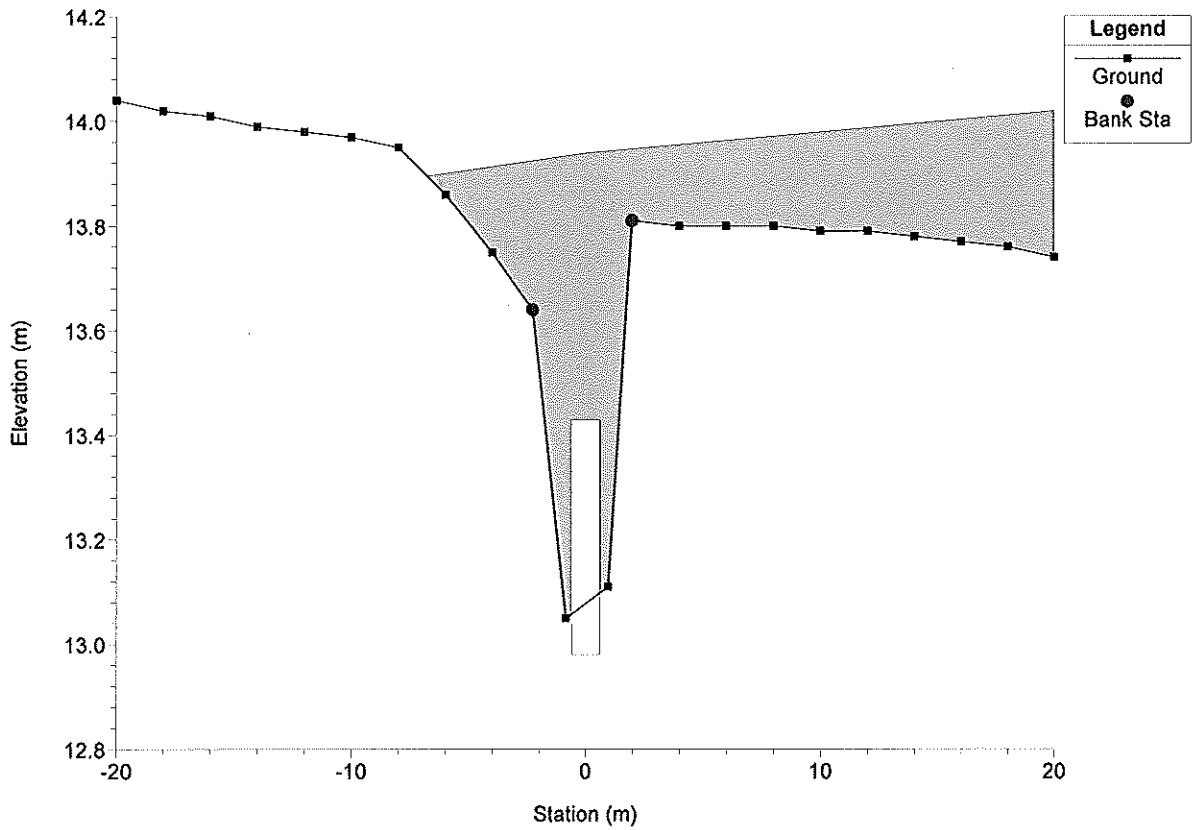


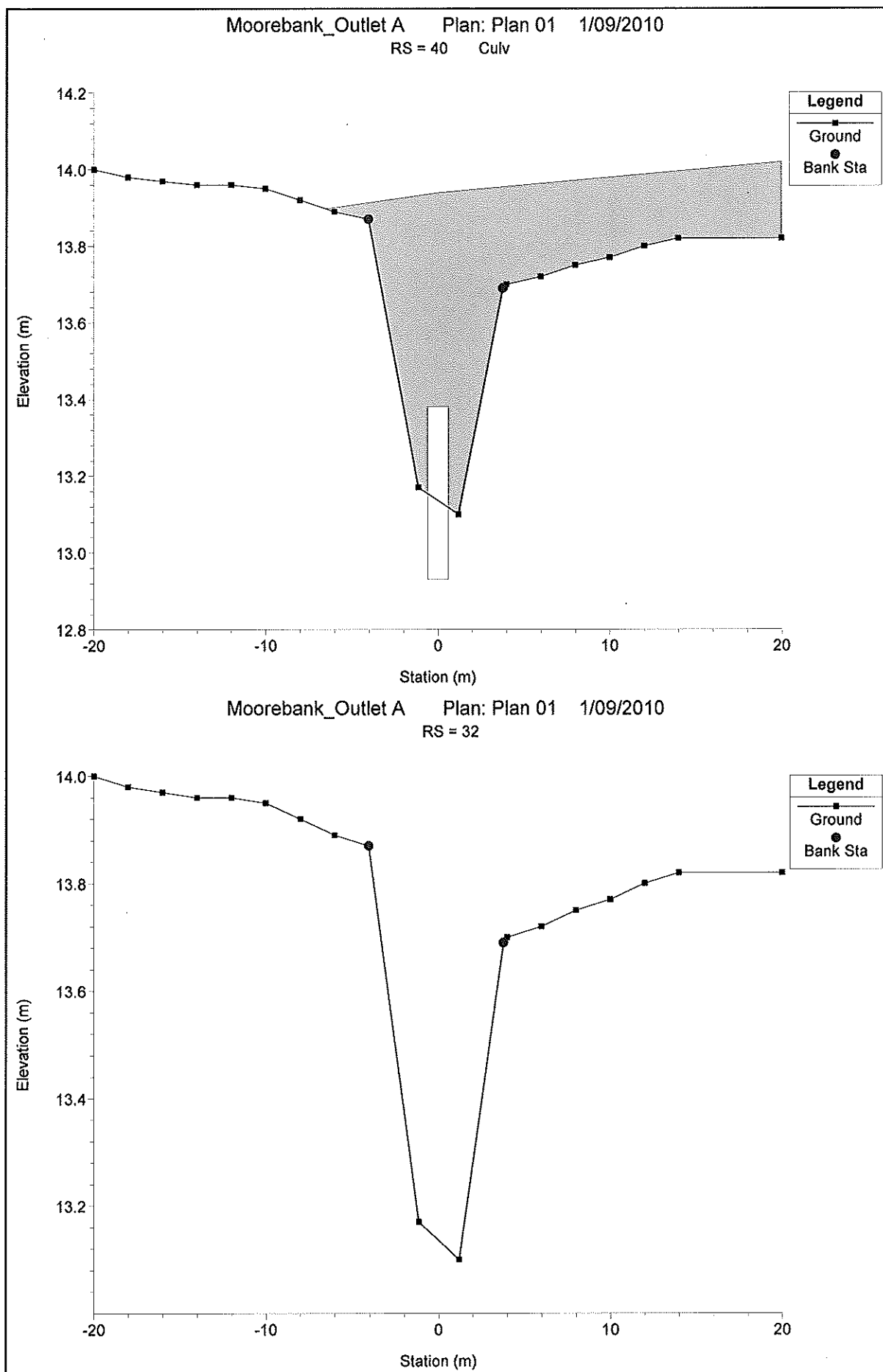


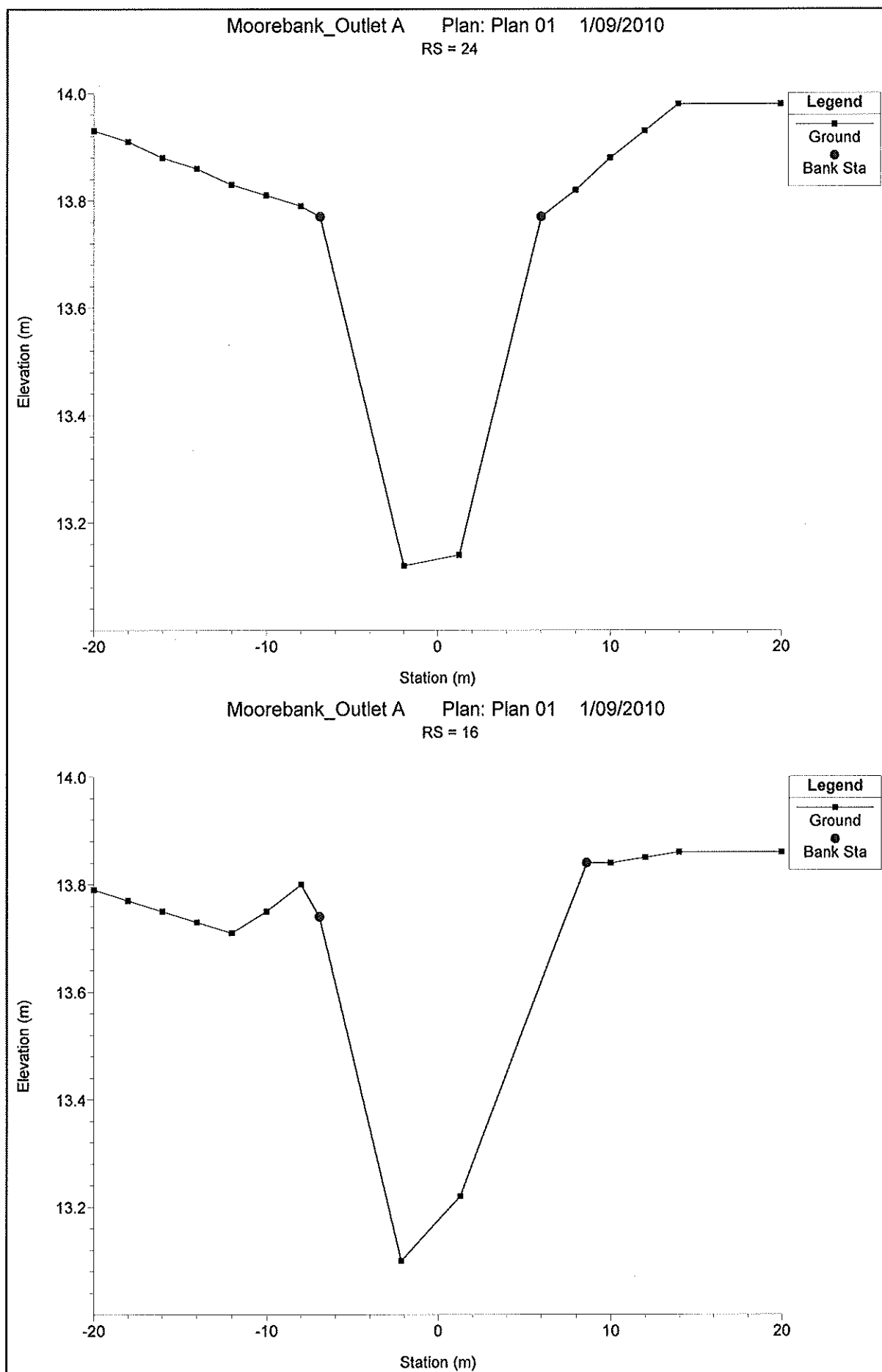
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 46.84



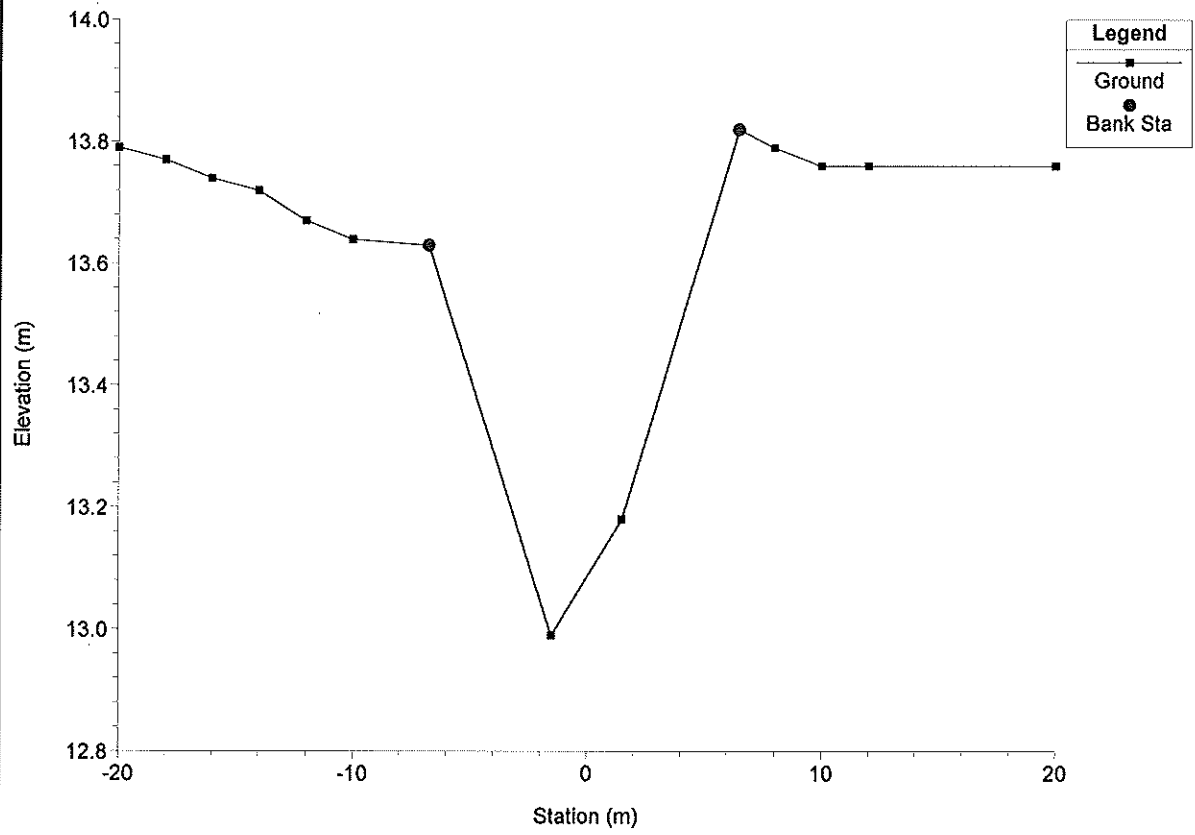
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 40 Culv

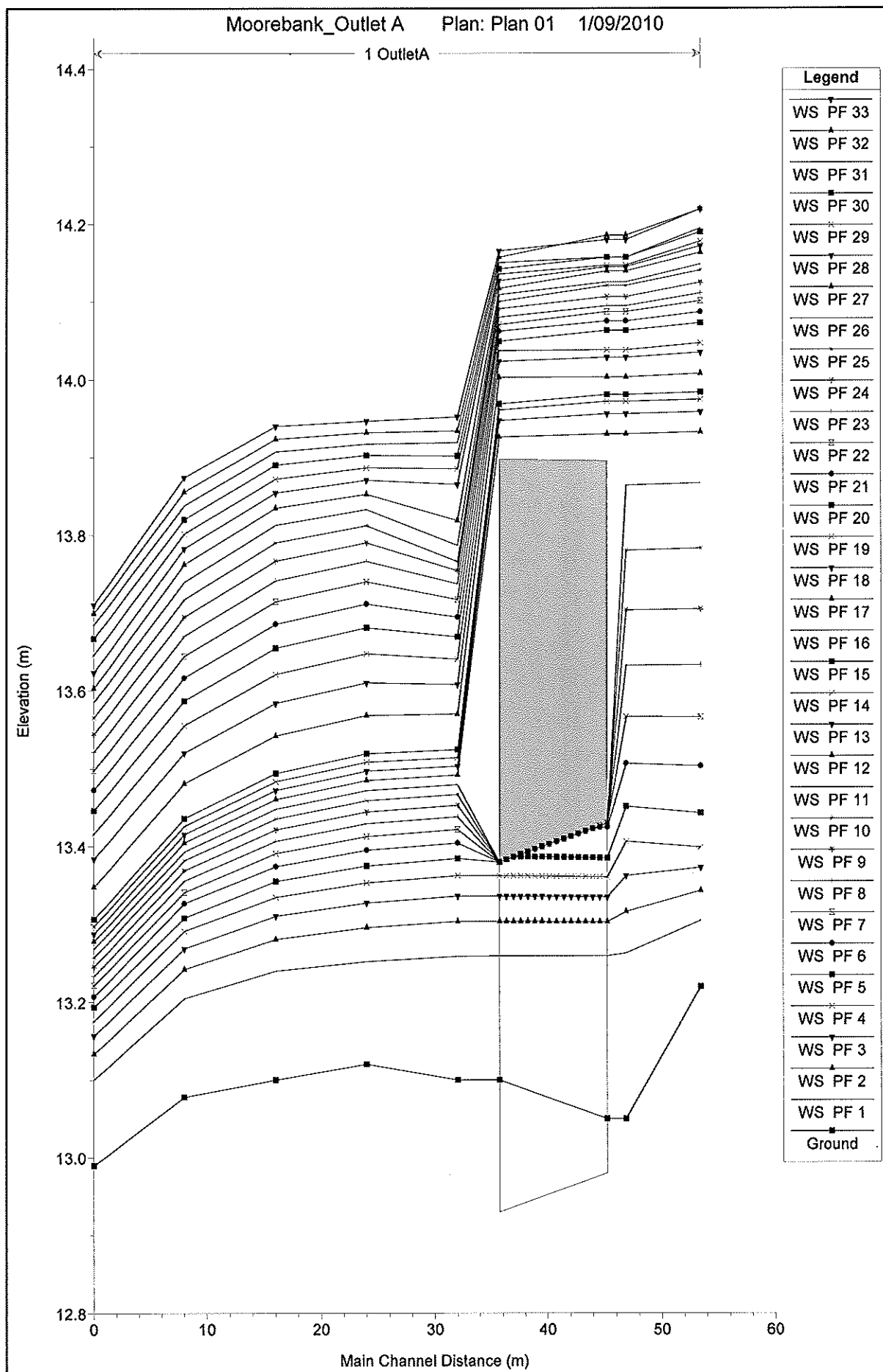






Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 0





HEC-RAS Plan: Plan 01 River: 1 Reach: OutletA

Reach	River Sta	Profile	Q Total (m3/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 (m2)	Top Width (m)	Froude # Chl
OutletA	51.76	PF 1	0.10	13.22	13.30	13.30	13.34	0.022426	0.78	0.13	2.06	1.00
OutletA	51.76	PF 2	0.20	13.22	13.34	13.34	13.39	0.019839	0.95	0.21	2.31	1.00
OutletA	51.76	PF 3	0.30	13.22	13.37	13.37	13.43	0.018971	1.06	0.28	2.51	1.01
OutletA	51.76	PF 4	0.40	13.22	13.40	13.40	13.47	0.018102	1.14	0.35	2.68	1.01
OutletA	51.76	PF 5	0.60	13.22	13.44		13.50	0.011802	1.05	0.48	2.97	0.84
OutletA	51.76	PF 6	0.80	13.22	13.50		13.54	0.006543	0.90	0.67	3.37	0.65
OutletA	51.76	PF 7	0.70	13.22	13.57		13.60	0.003953	0.79	0.89	3.79	0.52
OutletA	51.76	PF 8	0.80	13.22	13.63		13.66	0.002550	0.69	1.16	4.34	0.42
OutletA	51.76	PF 9	0.90	13.22	13.70		13.72	0.001659	0.60	1.54	7.43	0.35
OutletA	51.76	PF 10	1.00	13.22	13.78		13.80	0.001009	0.51	2.41	16.20	0.28
OutletA	51.76	PF 11	1.10	13.22	13.87		13.87	0.000526	0.39	4.21	23.92	0.20
OutletA	51.76	PF 12	1.20	13.22	13.93		13.94	0.000305	0.33	5.93	30.24	0.16
OutletA	51.76	PF 13	1.30	13.22	13.96		13.96	0.000274	0.33	6.75	33.65	0.15
OutletA	51.76	PF 14	1.40	13.22	13.97		13.98	0.000271	0.33	7.32	36.46	0.15
OutletA	51.76	PF 15	1.60	13.22	13.98		13.99	0.000284	0.34	7.65	37.36	0.16
OutletA	51.76	PF 16	2.00	13.22	14.01		14.01	0.000401	0.42	8.60	40.00	0.19
OutletA	51.76	PF 17	2.00	13.22	14.01		14.01	0.000401	0.42	8.60	40.00	0.19
OutletA	51.76	PF 18	2.50	13.22	14.03		14.04	0.000485	0.48	9.68	40.00	0.21
OutletA	51.76	PF 19	3.00	13.22	14.05		14.06	0.000626	0.55	10.16	40.00	0.24
OutletA	51.76	PF 20	3.50	13.22	14.07		14.09	0.000678	0.59	11.21	40.00	0.25
OutletA	51.76	PF 21	4.00	13.22	14.09		14.10	0.000786	0.65	11.77	40.00	0.27
OutletA	51.76	PF 22	4.50	13.22	14.10		14.12	0.000886	0.70	12.34	40.00	0.29
OutletA	51.76	PF 23	5.00	13.22	14.11		14.13	0.001010	0.76	12.74	40.00	0.31
OutletA	51.76	PF 24	5.50	13.22	14.13		14.15	0.001097	0.80	13.29	40.00	0.32
OutletA	51.76	PF 25	6.00	13.22	14.14		14.16	0.001168	0.84	13.92	40.00	0.33
OutletA	51.76	PF 26	6.50	13.22	14.15		14.17	0.001285	0.89	14.22	40.00	0.35
OutletA	51.76	PF 27	7.00	13.22	14.16		14.19	0.001334	0.92	14.84	40.00	0.36
OutletA	51.76	PF 28	7.50	13.22	14.17		14.20	0.001443	0.98	15.17	40.00	0.37
OutletA	51.76	PF 29	8.00	13.22	14.18		14.21	0.001574	1.01	15.41	40.00	0.39
OutletA	51.76	PF 30	8.50	13.22	14.19		14.22	0.001635	1.04	15.90	40.00	0.40
OutletA	51.76	PF 31	9.00	13.22	14.19		14.23	0.001776	1.09	16.08	40.00	0.42
OutletA	51.76	PF 32	9.50	13.22	14.22		14.25	0.001683	1.09	17.06	40.00	0.41
OutletA	51.76	PF 33	10.00	13.22	14.22		14.26	0.001859	1.14	17.08	40.00	0.43
OutletA	46.84	PF 1	0.10	13.05	13.26	13.15	13.27	0.000686	0.25	0.40	2.54	0.20
OutletA	46.84	PF 2	0.20	13.05	13.32	13.18	13.32	0.001123	0.37	0.54	2.75	0.26
OutletA	46.84	PF 3	0.30	13.05	13.36	13.21	13.37	0.001345	0.44	0.67	2.93	0.30
OutletA	46.84	PF 4	0.40	13.05	13.41	13.24	13.42	0.001428	0.50	0.81	3.10	0.31
OutletA	46.84	PF 5	0.50	13.05	13.45	13.26	13.47	0.001398	0.53	0.95	3.28	0.31
OutletA	46.84	PF 6	0.60	13.05	13.51	13.28	13.52	0.001211	0.53	1.14	3.60	0.30
OutletA	46.84	PF 7	0.70	13.05	13.57	13.31	13.58	0.001010	0.52	1.35	3.73	0.27
OutletA	46.84	PF 8	0.80	13.05	13.63	13.32	13.65	0.000817	0.50	1.61	3.99	0.25
OutletA	46.84	PF 9	0.90	13.05	13.70	13.34	13.71	0.000623	0.47	1.93	5.11	0.22
OutletA	46.84	PF 10	1.00	13.05	13.78	13.36	13.79	0.000466	0.45	2.47	12.57	0.20
OutletA	46.84	PF 11	1.10	13.05	13.86	13.38	13.87	0.000294	0.39	4.41	26.09	0.16
OutletA	46.84	PF 12	1.20	13.05	13.93	13.39	13.94	0.000203	0.35	6.18	27.56	0.13
OutletA	46.84	PF 13	1.30	13.05	13.96	13.41	13.96	0.000184	0.35	6.90	28.60	0.13
OutletA	46.84	PF 14	1.40	13.05	13.97	13.42	13.98	0.000201	0.36	7.37	30.42	0.14
OutletA	46.84	PF 15	1.50	13.05	13.98	13.44	13.99	0.000217	0.38	7.65	32.16	0.14
OutletA	46.84	PF 16	2.00	13.05	14.00	13.50	14.01	0.000327	0.47	8.41	35.32	0.17
OutletA	46.84	PF 17	2.00	13.05	14.00	13.50	14.01	0.000327	0.47	8.41	35.32	0.17
OutletA	46.84	PF 18	2.50	13.05	14.03	13.56	14.04	0.000424	0.55	9.36	38.88	0.20
OutletA	46.84	PF 19	3.00	13.05	14.04	13.61	14.05	0.000568	0.64	9.73	39.82	0.23
OutletA	46.84	PF 20	3.50	13.05	14.06	13.66	14.08	0.000637	0.69	10.73	40.00	0.25
OutletA	46.84	PF 21	4.00	13.05	14.08	13.71	14.10	0.000769	0.76	11.21	40.00	0.27
OutletA	46.84	PF 22	4.50	13.05	14.09	13.75	14.11	0.000878	0.83	11.70	40.00	0.29
OutletA	46.84	PF 23	5.00	13.05	14.09	13.88	14.12	0.001027	0.90	11.99	40.00	0.31
OutletA	46.84	PF 24	5.50	13.05	14.11	13.90	14.14	0.001140	0.96	12.47	40.00	0.33
OutletA	46.84	PF 25	6.00	13.05	14.12	13.92	14.15	0.001225	1.00	13.05	40.00	0.35
OutletA	46.84	PF 26	6.50	13.05	14.13	13.94	14.16	0.001393	1.07	13.23	40.00	0.37
OutletA	46.84	PF 27	7.00	13.05	14.14	13.95	14.18	0.001466	1.11	13.79	40.00	0.38
OutletA	46.84	PF 28	7.50	13.05	14.15	13.96	14.19	0.001621	1.18	14.01	40.00	0.40
OutletA	46.84	PF 29	8.00	13.05	14.15	13.99	14.20	0.001816	1.25	14.10	40.00	0.42
OutletA	46.84	PF 30	8.50	13.05	14.16	14.02	14.21	0.001915	1.29	14.51	40.00	0.43
OutletA	46.84	PF 31	9.00	13.05	14.16	14.03	14.22	0.002150	1.37	14.50	40.00	0.46
OutletA	46.84	PF 32	9.50	13.05	14.19	14.06	14.24	0.001992	1.34	15.64	40.00	0.45
OutletA	46.84	PF 33	10.00	13.05	14.18	14.07	14.24	0.002290	1.43	15.41	40.00	0.48
OutletA	40		Culvert									
OutletA	32	PF 1	0.10	13.10	13.26		13.26	0.001387	0.28	0.36	3.40	0.27
OutletA	32	PF 2	0.20	13.10	13.30		13.31	0.001872	0.38	0.52	3.78	0.33
OutletA	32	PF 3	0.30	13.10	13.34		13.35	0.002242	0.46	0.65	4.06	0.37
OutletA	32	PF 4	0.40	13.10	13.38		13.38	0.002553	0.53	0.78	4.28	0.40
OutletA	32	PF 5	0.50	13.10	13.38		13.40	0.002836	0.58	0.86	4.47	0.43
OutletA	32	PF 6	0.60	13.10	13.40		13.42	0.003067	0.63	0.95	4.64	0.45
OutletA	32	PF 7	0.70	13.10	13.42		13.45	0.003296	0.68	1.03	4.79	0.47
OutletA	32	PF 8	0.80	13.10	13.44		13.46	0.003497	0.72	1.11	4.93	0.49
OutletA	32	PF 9	0.90	13.10	13.45		13.48	0.003700	0.76	1.18	5.05	0.50
OutletA	32	PF 10	1.00	13.10	13.47		13.50	0.003880	0.80	1.25	5.17	0.52
OutletA	32	PF 11	1.10	13.10	13.48		13.51	0.004061	0.83	1.32	5.28	0.53
OutletA	32	PF 12	1.20	13.10	13.49		13.53	0.004225	0.87	1.38	5.38	0.55
OutletA	32	PF 13	1.30	13.10	13.50		13.54	0.004386	0.90	1.45	5.48	0.58

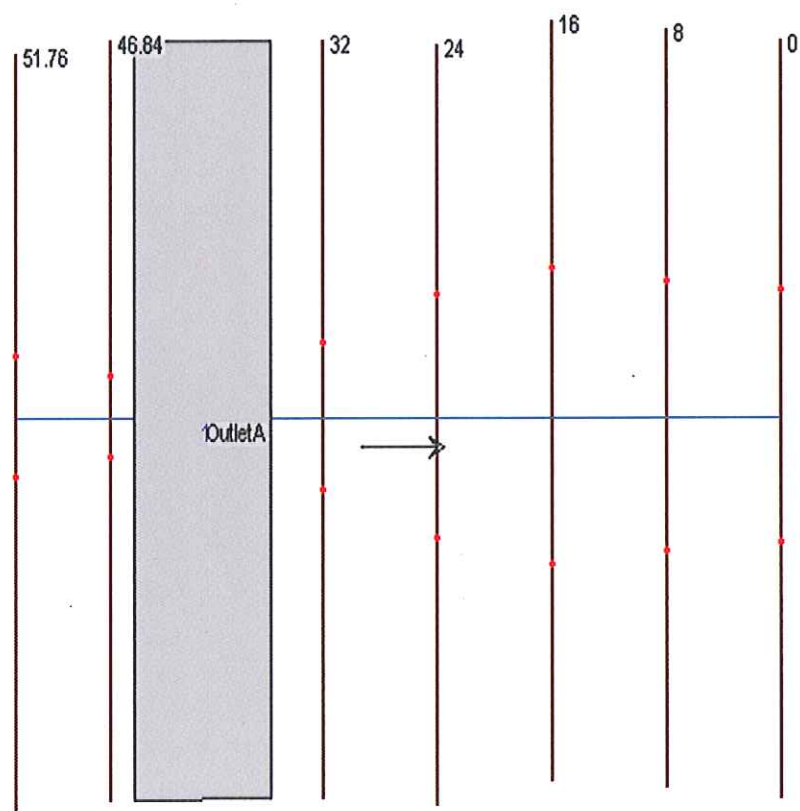
HEC-RAS Plan: Plan 01 River: 1 Reach: OutletA (Continued)

Reach	River Sta	Profile	Q Total (m3/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 (m2)	Top Width (m)	Froude # Chl
OutletA	32	PF 14	1.40	13.10	13.51		13.56	0.004542	0.93	1.51	5.57	0.57
OutletA	32	PF 15	1.50	13.10	13.52		13.57	0.004894	0.96	1.58	5.68	0.58
OutletA	32	PF 16	2.00	13.10	13.57		13.63	0.005395	1.09	1.83	6.05	0.63
OutletA	32	PF 17	2.00	13.10	13.57		13.63	0.005395	1.09	1.83	6.05	0.63
OutletA	32	PF 18	2.50	13.10	13.61		13.68	0.006038	1.21	2.07	6.37	0.68
OutletA	32	PF 19	3.00	13.10	13.64		13.73	0.006644	1.32	2.28	6.65	0.72
OutletA	32	PF 20	3.50	13.10	13.67		13.77	0.007223	1.41	2.48	6.89	0.75
OutletA	32	PF 21	4.00	13.10	13.69		13.81	0.007787	1.51	2.65	7.18	0.79
OutletA	32	PF 22	4.50	13.10	13.72	13.66	13.85	0.008238	1.60	2.83	9.11	0.82
OutletA	32	PF 23	5.00	13.10	13.74	13.68	13.88	0.008696	1.69	3.03	10.63	0.84
OutletA	32	PF 24	5.50	13.10	13.75	13.72	13.91	0.009251	1.78	3.22	11.98	0.87
OutletA	32	PF 25	6.00	13.10	13.77	13.78	13.95	0.010101	1.88	3.37	13.20	0.92
OutletA	32	PF 26	6.50	13.10	13.79	13.79	13.98	0.010158	1.93	3.68	14.80	0.93
OutletA	32	PF 27	7.00	13.10	13.82	13.82	14.00	0.009356	1.92	4.18	17.69	0.90
OutletA	32	PF 28	7.50	13.10	13.87	13.87	14.03	0.007605	1.82	5.28	24.00	0.82
OutletA	32	PF 29	8.00	13.10	13.89	13.89	14.05	0.007359	1.83	5.78	25.55	0.81
OutletA	32	PF 30	8.50	13.10	13.90	13.90	14.06	0.007291	1.86	6.20	26.78	0.81
OutletA	32	PF 31	9.00	13.10	13.92	13.92	14.08	0.007134	1.88	6.67	27.93	0.80
OutletA	32	PF 32	9.50	13.10	13.93	13.93	14.10	0.007078	1.90	7.10	28.93	0.80
OutletA	32	PF 33	10.00	13.10	13.95	13.95	14.12	0.006831	1.91	7.64	30.40	0.79
OutletA	24	PF 1	0.10	13.12	13.25		13.25	0.000748	0.20	0.51	5.08	0.20
OutletA	24	PF 2	0.20	13.12	13.30		13.30	0.000992	0.27	0.74	5.74	0.24
OutletA	24	PF 3	0.30	13.12	13.33		13.33	0.001168	0.32	0.93	6.22	0.26
OutletA	24	PF 4	0.40	13.12	13.35		13.36	0.001307	0.36	1.10	6.61	0.28
OutletA	24	PF 5	0.50	13.12	13.38		13.38	0.001432	0.40	1.25	6.94	0.30
OutletA	24	PF 6	0.60	13.12	13.40		13.40	0.001524	0.43	1.39	7.24	0.31
OutletA	24	PF 7	0.70	13.12	13.41		13.42	0.001616	0.46	1.52	7.50	0.33
OutletA	24	PF 8	0.80	13.12	13.43		13.44	0.001692	0.49	1.65	7.75	0.34
OutletA	24	PF 9	0.90	13.12	13.44		13.46	0.001762	0.51	1.76	7.98	0.35
OutletA	24	PF 10	1.00	13.12	13.46		13.47	0.001825	0.53	1.88	8.20	0.35
OutletA	24	PF 11	1.10	13.12	13.47		13.49	0.001887	0.55	1.99	8.40	0.36
OutletA	24	PF 12	1.20	13.12	13.48		13.50	0.001941	0.57	2.10	8.59	0.37
OutletA	24	PF 13	1.30	13.12	13.50		13.51	0.001992	0.59	2.20	8.77	0.38
OutletA	24	PF 14	1.40	13.12	13.51		13.53	0.002041	0.61	2.30	8.94	0.38
OutletA	24	PF 15	1.50	13.12	13.52		13.54	0.002088	0.62	2.40	9.11	0.39
OutletA	24	PF 16	2.00	13.12	13.57		13.59	0.002282	0.70	2.87	9.85	0.41
OutletA	24	PF 17	2.00	13.12	13.57		13.59	0.002282	0.70	2.87	9.85	0.41
OutletA	24	PF 18	2.50	13.12	13.61		13.64	0.002440	0.76	3.30	10.48	0.43
OutletA	24	PF 19	3.00	13.12	13.65		13.68	0.002572	0.81	3.70	11.04	0.45
OutletA	24	PF 20	3.50	13.12	13.68		13.72	0.002685	0.86	4.08	11.55	0.46
OutletA	24	PF 21	4.00	13.12	13.71		13.75	0.002787	0.90	4.44	12.01	0.47
OutletA	24	PF 22	4.50	13.12	13.74		13.79	0.002874	0.94	4.78	12.44	0.48
OutletA	24	PF 23	5.00	13.12	13.77		13.81	0.002959	0.98	5.11	12.83	0.49
OutletA	24	PF 24	5.50	13.12	13.79		13.84	0.002963	1.01	5.44	14.85	0.50
OutletA	24	PF 25	6.00	13.12	13.81		13.87	0.002969	1.05	5.80	17.93	0.50
OutletA	24	PF 26	6.50	13.12	13.83		13.89	0.002977	1.08	6.21	20.84	0.51
OutletA	24	PF 27	7.00	13.12	13.85		13.92	0.002987	1.12	6.63	22.61	0.51
OutletA	24	PF 28	7.50	13.12	13.87		13.94	0.003016	1.15	7.05	24.75	0.52
OutletA	24	PF 29	8.00	13.12	13.89		13.96	0.003066	1.18	7.47	26.70	0.53
OutletA	24	PF 30	8.50	13.12	13.90		13.98	0.003098	1.21	7.90	28.41	0.53
OutletA	24	PF 31	9.00	13.12	13.92		13.99	0.003141	1.25	8.34	30.23	0.54
OutletA	24	PF 32	9.50	13.12	13.93		14.01	0.003174	1.27	8.79	32.07	0.54
OutletA	24	PF 33	10.00	13.12	13.95		14.03	0.003176	1.30	9.27	32.67	0.54
OutletA	16	PF 1	0.10	13.10	13.24		13.24	0.002352	0.29	0.35	4.72	0.33
OutletA	16	PF 2	0.20	13.10	13.28		13.29	0.002446	0.36	0.56	5.50	0.36
OutletA	16	PF 3	0.30	13.10	13.31		13.32	0.002570	0.41	0.73	6.07	0.38
OutletA	16	PF 4	0.40	13.10	13.33		13.35	0.002677	0.45	0.88	6.54	0.39
OutletA	16	PF 5	0.50	13.10	13.36		13.37	0.002791	0.49	1.02	6.93	0.41
OutletA	16	PF 6	0.60	13.10	13.37		13.39	0.002834	0.52	1.16	7.30	0.42
OutletA	16	PF 7	0.70	13.10	13.39		13.41	0.002807	0.55	1.28	7.62	0.43
OutletA	16	PF 8	0.80	13.10	13.41		13.42	0.002847	0.57	1.40	7.93	0.43
OutletA	16	PF 9	0.90	13.10	13.42		13.44	0.002889	0.59	1.52	8.21	0.44
OutletA	16	PF 10	1.00	13.10	13.44		13.45	0.003018	0.61	1.64	8.48	0.44
OutletA	16	PF 11	1.10	13.10	13.45		13.47	0.003060	0.63	1.75	8.72	0.45
OutletA	16	PF 12	1.20	13.10	13.46		13.48	0.003082	0.65	1.86	8.96	0.45
OutletA	16	PF 13	1.30	13.10	13.47		13.49	0.003107	0.66	1.96	9.18	0.46
OutletA	16	PF 14	1.40	13.10	13.48		13.51	0.003130	0.68	2.07	9.40	0.46
OutletA	16	PF 15	1.50	13.10	13.49		13.52	0.003150	0.69	2.17	9.61	0.46
OutletA	16	PF 16	2.00	13.10	13.54		13.57	0.003228	0.75	2.65	10.54	0.48
OutletA	16	PF 17	2.00	13.10	13.54		13.57	0.003228	0.75	2.65	10.54	0.48
OutletA	16	PF 18	2.50	13.10	13.58		13.62	0.003281	0.80	3.11	11.34	0.49
OutletA	16	PF 19	3.00	13.10	13.62		13.66	0.003317	0.85	3.54	12.05	0.50
OutletA	16	PF 20	3.50	13.10	13.65		13.69	0.003338	0.88	3.96	12.70	0.50
OutletA	16	PF 21	4.00	13.10	13.69		13.73	0.003360	0.92	4.36	13.30	0.51
OutletA	16	PF 22	4.50	13.10	13.71		13.76	0.003369	0.95	4.76	14.57	0.52
OutletA	16	PF 23	5.00	13.10	13.74		13.79	0.003377	0.97	5.21	19.08	0.52
OutletA	16	PF 24	5.50	13.10	13.77		13.82	0.003319	1.00	5.75	23.46	0.52
OutletA	16	PF 25	6.00	13.10	13.79		13.84	0.003267	1.02	6.34	27.44	0.52
OutletA	16	PF 26	6.50	13.10	13.81		13.87	0.003189	1.03	6.98	28.30	0.52
OutletA	16	PF 27	7.00	13.10	13.83		13.89	0.003116	1.04	7.60	28.56	0.51
OutletA	16	PF 28	7.50	13.10	13.85		13.91	0.003029	1.06	8.21	32.80	0.51

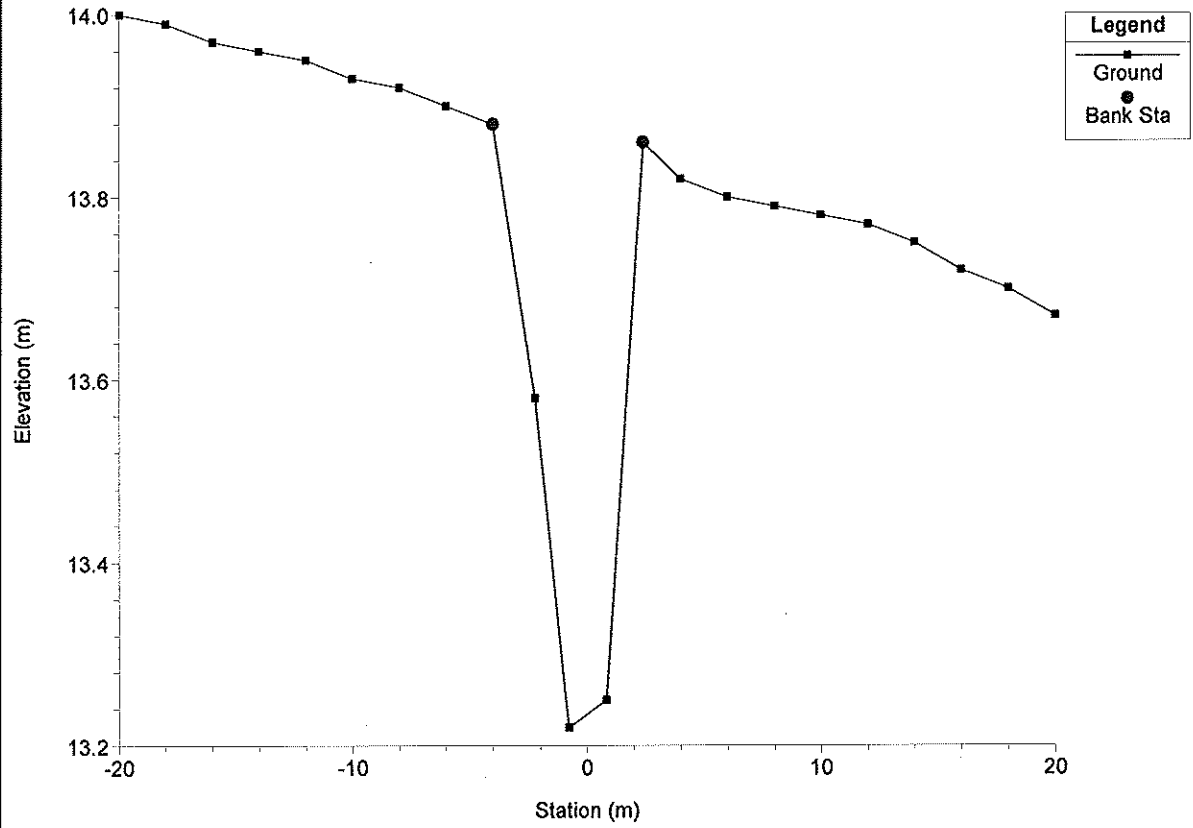
HEC-RAS Plan: Plan 01 River: 1 Reach: OutletA (Continued)

Reach	River Sta	Profile	Q Total (m3/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 (m2)	Top Width (m)	Froude # Chl
OutletA	16	PF 29	8.00	13.10	13.87		13.93	0.002964	1.07	8.89	40.00	0.51
OutletA	16	PF 30	8.50	13.10	13.89		13.95	0.002878	1.09	9.61	40.00	0.50
OutletA	16	PF 31	9.00	13.10	13.91		13.96	0.002815	1.10	10.28	40.00	0.50
OutletA	16	PF 32	9.50	13.10	13.92		13.98	0.002752	1.11	10.93	40.00	0.50
OutletA	16	PF 33	10.00	13.10	13.94		14.00	0.002679	1.12	11.60	40.00	0.49
OutletA	8	PF 1	0.10	13.08	13.20		13.21	0.006915	0.44	0.23	3.59	0.68
OutletA	8	PF 2	0.20	13.08	13.24		13.26	0.006727	0.52	0.38	4.64	0.68
OutletA	8	PF 3	0.30	13.08	13.27		13.29	0.006555	0.59	0.51	5.02	0.59
OutletA	8	PF 4	0.40	13.08	13.29		13.31	0.006543	0.64	0.63	5.44	0.60
OutletA	8	PF 5	0.50	13.08	13.31		13.33	0.006924	0.69	0.72	5.74	0.62
OutletA	8	PF 6	0.60	13.08	13.33		13.35	0.006672	0.72	0.83	6.08	0.62
OutletA	8	PF 7	0.70	13.08	13.34		13.37	0.006881	0.76	0.92	6.34	0.64
OutletA	8	PF 8	0.80	13.08	13.36		13.39	0.006828	0.79	1.02	6.61	0.64
OutletA	8	PF 9	0.90	13.08	13.37		13.40	0.006851	0.81	1.10	6.85	0.65
OutletA	8	PF 10	1.00	13.08	13.38		13.42	0.006804	0.84	1.20	7.09	0.65
OutletA	8	PF 11	1.10	13.08	13.39		13.43	0.006901	0.86	1.27	7.29	0.66
OutletA	8	PF 12	1.20	13.08	13.40		13.44	0.006852	0.88	1.36	7.50	0.66
OutletA	8	PF 13	1.30	13.08	13.42		13.46	0.006851	0.90	1.44	7.70	0.66
OutletA	8	PF 14	1.40	13.08	13.43		13.47	0.006849	0.92	1.52	7.89	0.67
OutletA	8	PF 15	1.50	13.08	13.44		13.48	0.006846	0.94	1.60	8.07	0.67
OutletA	8	PF 16	2.00	13.08	13.48		13.53	0.006795	1.01	1.88	8.89	0.68
OutletA	8	PF 17	2.00	13.08	13.48		13.53	0.006795	1.01	1.88	8.89	0.68
OutletA	8	PF 18	2.50	13.08	13.52		13.58	0.006728	1.07	2.35	9.60	0.69
OutletA	8	PF 19	3.00	13.08	13.56		13.62	0.006852	1.11	2.70	10.25	0.69
OutletA	8	PF 20	3.50	13.08	13.59		13.66	0.006594	1.15	3.03	10.82	0.70
OutletA	8	PF 21	4.00	13.08	13.62		13.69	0.006526	1.19	3.36	11.38	0.70
OutletA	8	PF 22	4.50	13.08	13.64		13.72	0.006453	1.22	3.68	11.87	0.70
OutletA	8	PF 23	5.00	13.08	13.67		13.75	0.006398	1.25	3.99	12.34	0.70
OutletA	8	PF 24	5.50	13.08	13.69		13.78	0.006339	1.28	4.30	12.78	0.70
OutletA	8	PF 25	6.00	13.08	13.72		13.80	0.006228	1.31	4.64	13.13	0.70
OutletA	8	PF 26	6.50	13.08	13.74	13.65	13.83	0.006048	1.33	5.09	21.57	0.70
OutletA	8	PF 27	7.00	13.08	13.76	13.66	13.85	0.005813	1.34	5.61	24.07	0.69
OutletA	8	PF 28	7.50	13.08	13.78	13.68	13.87	0.005635	1.35	6.13	26.36	0.68
OutletA	8	PF 29	8.00	13.08	13.80	13.70	13.89	0.005496	1.36	6.65	27.28	0.68
OutletA	8	PF 30	8.50	13.08	13.82	13.72	13.91	0.005364	1.37	7.14	27.47	0.67
OutletA	8	PF 31	9.00	13.08	13.84	13.74	13.93	0.005188	1.38	7.64	27.74	0.67
OutletA	8	PF 32	9.50	13.08	13.86	13.76	13.95	0.004979	1.39	8.13	28.16	0.66
OutletA	8	PF 33	10.00	13.08	13.87	13.78	13.97	0.004748	1.39	8.68	28.69	0.65
OutletA	0	PF 1	0.10	12.99	13.10	13.10	13.12	0.020011	0.68	0.16	2.65	0.93
OutletA	0	PF 2	0.20	12.99	13.13	13.13	13.17	0.020020	0.81	0.25	3.43	0.97
OutletA	0	PF 3	0.30	12.99	13.16	13.16	13.20	0.020008	0.90	0.33	4.00	0.99
OutletA	0	PF 4	0.40	12.99	13.18	13.18	13.22	0.020013	0.97	0.41	4.45	1.01
OutletA	0	PF 5	0.50	12.99	13.19	13.19	13.25	0.018878	1.01	0.50	4.76	1.00
OutletA	0	PF 6	0.60	12.99	13.21	13.21	13.27	0.018973	1.07	0.56	4.98	1.02
OutletA	0	PF 7	0.70	12.99	13.22	13.22	13.28	0.018213	1.10	0.64	5.21	1.01
OutletA	0	PF 8	0.80	12.99	13.23	13.23	13.30	0.018053	1.14	0.70	5.41	1.01
OutletA	0	PF 9	0.90	12.99	13.25	13.25	13.32	0.017748	1.17	0.77	5.60	1.01
OutletA	0	PF 10	1.00	12.99	13.26	13.26	13.33	0.017354	1.20	0.83	5.79	1.01
OutletA	0	PF 11	1.10	12.99	13.27	13.27	13.35	0.016915	1.22	0.90	5.97	1.01
OutletA	0	PF 12	1.20	12.99	13.28	13.28	13.36	0.016961	1.25	0.96	6.12	1.01
OutletA	0	PF 13	1.30	12.99	13.29	13.29	13.37	0.016755	1.28	1.02	6.28	1.01
OutletA	0	PF 14	1.40	12.99	13.30	13.30	13.38	0.016564	1.30	1.08	6.43	1.01
OutletA	0	PF 15	1.50	12.99	13.31	13.31	13.40	0.016377	1.32	1.14	6.58	1.01
OutletA	0	PF 16	2.00	12.99	13.35	13.35	13.45	0.015703	1.41	1.42	7.24	1.01
OutletA	0	PF 17	2.00	12.99	13.35	13.35	13.45	0.015703	1.41	1.42	7.24	1.01
OutletA	0	PF 18	2.50	12.99	13.38	13.38	13.50	0.015184	1.48	1.69	7.82	1.01
OutletA	0	PF 19	3.00	12.99	13.42	13.42	13.54	0.014784	1.54	1.95	8.34	1.01
OutletA	0	PF 20	3.50	12.99	13.45	13.45	13.57	0.014356	1.58	2.21	8.82	1.01
OutletA	0	PF 21	4.00	12.99	13.47	13.47	13.61	0.014177	1.63	2.45	9.25	1.01
OutletA	0	PF 22	4.50	12.99	13.50	13.50	13.64	0.013979	1.67	2.69	9.65	1.01
OutletA	0	PF 23	5.00	12.99	13.52	13.52	13.67	0.013736	1.71	2.92	10.03	1.01
OutletA	0	PF 24	5.50	12.99	13.54	13.54	13.70	0.013547	1.74	3.15	10.39	1.01
OutletA	0	PF 25	6.00	12.99	13.57	13.57	13.73	0.013380	1.78	3.38	10.73	1.01
OutletA	0	PF 26	6.50	12.99	13.59	13.59	13.75	0.013267	1.81	3.59	11.05	1.01
OutletA	0	PF 27	7.00	12.99	13.60	13.60	13.78	0.013294	1.84	3.79	11.34	1.02
OutletA	0	PF 28	7.50	12.99	13.62	13.62	13.80	0.012985	1.86	4.03	11.66	1.01
OutletA	0	PF 29	8.00	12.99	13.65	13.65	13.82	0.012257	1.86	4.33	15.54	0.99
OutletA	0	PF 30	8.50	12.99	13.67	13.67	13.84	0.011594	1.87	4.68	17.13	0.97
OutletA	0	PF 31	9.00	12.99	13.68	13.68	13.86	0.011279	1.88	4.98	18.04	0.96
OutletA	0	PF 32	9.50	12.99	13.70	13.70	13.88	0.011180	1.91	5.25	18.74	0.96
OutletA	0	PF 33	10.00	12.99	13.71	13.71	13.90	0.011348	1.95	5.47	19.28	0.97

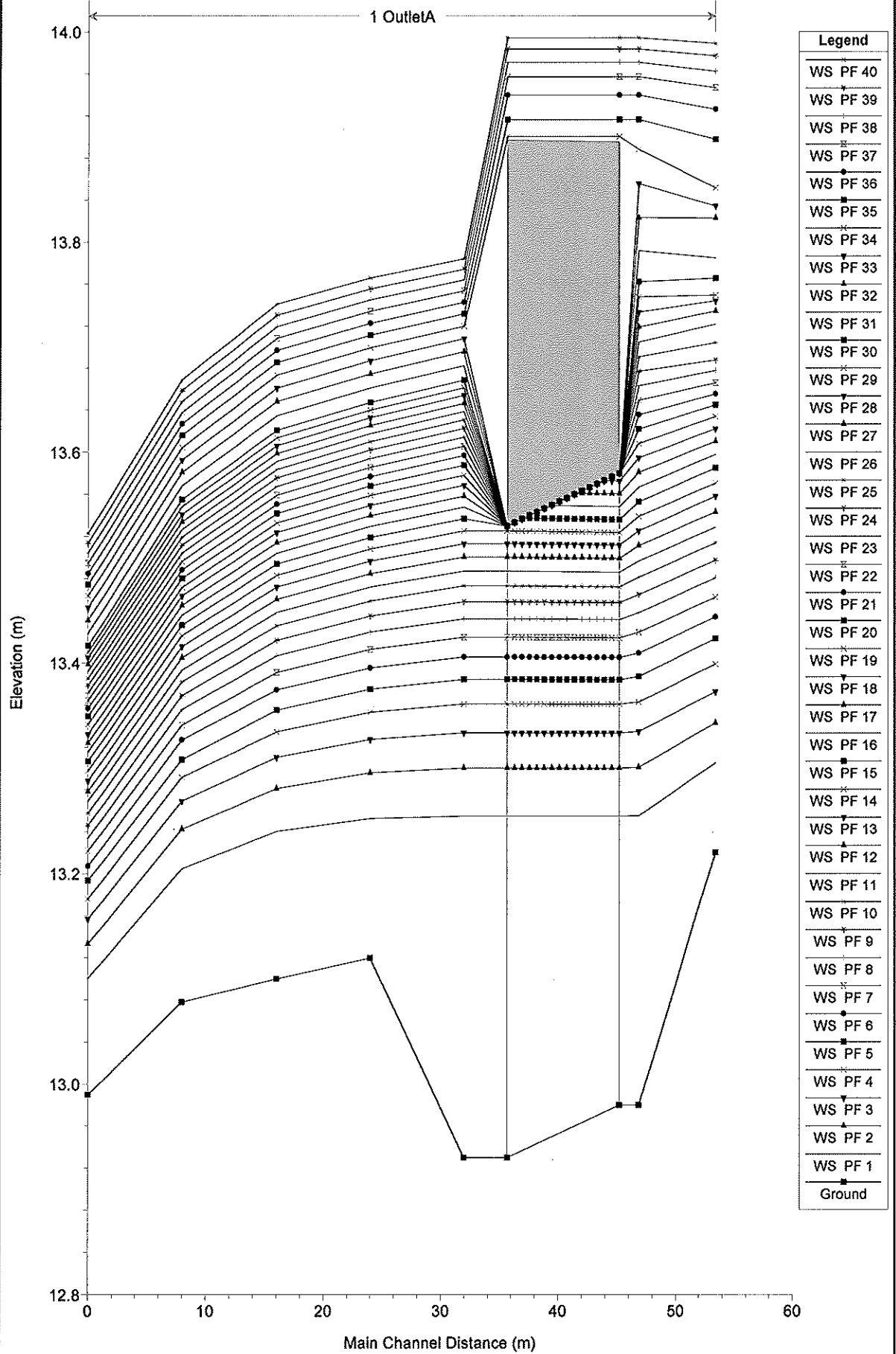
OUTLET A PROPOSED – HEC-RAS MODEL FILES



Moorebank_Outlet A Proposed Plan: Plan 02 25/08/2010
RS = 51.76



Moorebank_Outlet A Proposed Plan: Plan 02 25/08/2010



Reach	River Sta	Profile	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 # Chl
OutletA	51.76	PF 1	0.10	13.22	13.30	13.30	13.34	0.022426	0.78	0.13	2.06	1.00
OutletA	51.76	PF 2	0.20	13.22	13.34	13.34	13.39	0.019839	0.95	0.21	2.31	1.00
OutletA	51.76	PF 3	0.30	13.22	13.37	13.37	13.43	0.018971	1.06	0.28	2.51	1.01
OutletA	51.76	PF 4	0.40	13.22	13.40	13.40	13.47	0.018102	1.14	0.35	2.68	1.01
OutletA	51.76	PF 5	0.50	13.22	13.42	13.42	13.50	0.017140	1.20	0.42	2.84	1.00
OutletA	51.76	PF 6	0.60	13.22	13.44	13.44	13.52	0.016812	1.26	0.48	2.98	1.00
OutletA	51.76	PF 7	0.70	13.22	13.46	13.46	13.55	0.016612	1.31	0.53	3.10	1.01
OutletA	51.76	PF 8	0.80	13.22	13.48	13.48	13.57	0.016226	1.35	0.59	3.22	1.01
OutletA	51.76	PF 9	0.90	13.22	13.50	13.50	13.60	0.016001	1.39	0.65	3.33	1.01
OutletA	51.76	PF 10	1.00	13.22	13.51	13.51	13.62	0.015670	1.42	0.70	3.44	1.01
OutletA	51.76	PF 11	1.10	13.22	13.53	13.53	13.64	0.015542	1.46	0.75	3.54	1.01
OutletA	51.76	PF 12	1.20	13.22	13.54	13.54	13.66	0.015348	1.49	0.81	3.64	1.01
OutletA	51.76	PF 13	1.30	13.22	13.56	13.56	13.67	0.014982	1.51	0.86	3.74	1.00
OutletA	51.76	PF 14	1.40	13.22	13.57	13.57	13.69	0.015029	1.54	0.91	3.82	1.01
OutletA	51.76	PF 15	1.50	13.22	13.59	13.59	13.71	0.014656	1.56	0.96	3.92	1.00
OutletA	51.76	PF 16	1.60	13.22	13.60	13.60	13.72	0.014547	1.57	1.02	4.03	1.00
OutletA	51.76	PF 17	1.70	13.22	13.61	13.61	13.74	0.014453	1.59	1.07	4.14	1.00
OutletA	51.76	PF 18	1.80	13.22	13.62	13.62	13.75	0.014369	1.61	1.12	4.24	1.00
OutletA	51.76	PF 19	1.90	13.22	13.63	13.63	13.77	0.014278	1.63	1.17	4.34	1.00
OutletA	51.76	PF 20	2.00	13.22	13.65	13.65	13.78	0.014207	1.65	1.22	4.44	1.00
OutletA	51.76	PF 21	2.10	13.22	13.66	13.66	13.80	0.014191	1.66	1.26	4.53	1.01
OutletA	51.76	PF 22	2.20	13.22	13.67	13.67	13.81	0.014118	1.68	1.31	4.61	1.01
OutletA	51.76	PF 23	2.30	13.22	13.68	13.68	13.82	0.013848	1.69	1.37	5.23	1.00
OutletA	51.76	PF 24	2.40	13.22	13.69	13.69	13.83	0.013780	1.70	1.42	5.98	1.00
OutletA	51.76	PF 25	2.50	13.22	13.70	13.70	13.85	0.012886	1.67	1.53	7.35	0.97
OutletA	51.76	PF 26	2.60	13.22	13.72	13.72	13.86	0.011875	1.64	1.68	9.22	0.94
OutletA	51.76	PF 27	2.70	13.22	13.73	13.73	13.87	0.011434	1.62	1.80	10.15	0.92
OutletA	51.76	PF 28	2.80	13.22	13.74	13.74	13.88	0.011245	1.63	1.90	10.88	0.92
OutletA	51.76	PF 29	2.90	13.22	13.75	13.75	13.89	0.011474	1.65	1.96	11.29	0.93
OutletA	51.76	PF 30	3.00	13.22	13.77	13.77	13.90	0.010608	1.61	2.16	13.03	0.89
OutletA	51.76	PF 31	3.20	13.22	13.79</							

HEC-RAS Plan: Plan 02 River: 1 Reach: OutletA (Continued)

Reach	River Sta	Profile	Q Total (m3/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 (m2)	Top Width (m)	Froude # Chl
OutletA	32	PF 1	0.10	12.93	13.25		13.25	0.000020	0.06	1.59	5.59	0.04
OutletA	32	PF 2	0.20	12.93	13.30		13.30	0.000050	0.11	1.65	5.78	0.06
OutletA	32	PF 3	0.30	12.93	13.33		13.33	0.000083	0.15	2.04	6.92	0.08
OutletA	32	PF 4	0.40	12.93	13.36		13.36	0.000118	0.18	2.21	6.04	0.10
OutletA	32	PF 5	0.50	12.93	13.38		13.39	0.000153	0.21	2.35	6.14	0.11
OutletA	32	PF 6	0.60	12.93	13.41		13.41	0.000188	0.24	2.48	6.23	0.12
OutletA	32	PF 7	0.70	12.93	13.42		13.43	0.000223	0.27	2.60	6.31	0.13
OutletA	32	PF 8	0.80	12.93	13.44		13.45	0.000258	0.30	2.71	6.38	0.14
OutletA	32	PF 9	0.90	12.93	13.46		13.46	0.000292	0.32	2.81	6.45	0.15
OutletA	32	PF 10	1.00	12.93	13.47		13.48	0.000326	0.34	2.91	6.52	0.16
OutletA	32	PF 11	1.10	12.93	13.49		13.49	0.000361	0.37	3.00	6.58	0.17
OutletA	32	PF 12	1.20	12.93	13.50		13.51	0.000395	0.39	3.09	6.63	0.18
OutletA	32	PF 13	1.30	12.93	13.51		13.52	0.000428	0.41	3.18	6.69	0.19
OutletA	32	PF 14	1.40	12.93	13.53		13.53	0.000462	0.43	3.26	6.74	0.20
OutletA	32	PF 15	1.50	12.93	13.54		13.55	0.000495	0.45	3.34	6.79	0.20
OutletA	32	PF 16	1.60	12.93	13.55		13.56	0.000528	0.47	3.41	6.84	0.21
OutletA	32	PF 17	1.70	12.93	13.58		13.57	0.000561	0.49	3.48	6.88	0.22
OutletA	32	PF 18	1.80	12.93	13.57		13.58	0.000593	0.51	3.55	6.93	0.23
OutletA	32	PF 19	1.90	12.93	13.58		13.59	0.000626	0.52	3.62	6.97	0.23
OutletA	32	PF 20	2.00	12.93	13.59		13.60	0.000658	0.54	3.69	7.01	0.24
OutletA	32	PF 21	2.10	12.93	13.60		13.61	0.000690	0.56	3.75	7.05	0.24
OutletA	32	PF 22	2.20	12.93	13.61		13.62	0.000722	0.58	3.81	7.08	0.25
OutletA	32	PF 23	2.30	12.93	13.61		13.63	0.000754	0.59	3.88	7.12	0.26
OutletA	32	PF 24	2.40	12.93	13.62		13.64	0.000786	0.61	3.94	7.16	0.26
OutletA	32	PF 25	2.50	12.93	13.63		13.65	0.000818	0.63	3.99	7.19	0.27
OutletA	32	PF 26	2.60	12.93	13.64		13.66	0.000849	0.64	4.05	7.22	0.27
OutletA	32	PF 27	2.70	12.93	13.65		13.67	0.000881	0.66	4.11	7.26	0.28
OutletA	32	PF 28	2.80	12.93	13.65		13.68	0.000912	0.67	4.18	7.29	0.28
OutletA	32	PF 29	2.90	12.93	13.66		13.69	0.000943	0.69	4.22	7.32	0.29
OutletA	32	PF 30	3.00	12.93	13.67		13.69	0.000974	0.70	4.27	7.35	0.29
OutletA	32	PF 31	3.20	12.93	13.68		13.71	0.001036	0.73	4.37	7.41	0.30
OutletA	32	PF 32	3.40	12.93	13.70		13.73	0.001094	0.76	4.47	7.57	0.31
OutletA	32	PF 33	3.60	12.93	13.71		13.74	0.001151	0.79	4.57	8.62	0.32
OutletA	32	PF 34	3.80	12.93	13.72		13.76	0.001208	0.82	4.68	9.73	0.33
OutletA	32	PF 35	4.00	12.93	13.73		13.77	0.001262	0.84	4.79	10.52	0.34
OutletA	32	PF 36	4.20	12.93	13.74		13.78	0.001317	0.87	4.91	11.28	0.35
OutletA	32	PF 37	4.40	12.93	13.75		13.79	0.001370	0.90	5.04	12.15	0.36
OutletA	32	PF 38	4.60	12.93	13.76		13.81	0.001423	0.92	5.17	13.23	0.36
OutletA	32	PF 39	4.80	12.93	13.77		13.82	0.001474	0.95	5.31	14.11	0.37
OutletA	32	PF 40	5.00	12.93	13.78		13.83	0.001524	0.97	5.46	14.79	0.38
OutletA	24	PF 1	0.10	13.12	13.25		13.25	0.000748	0.20	0.51	5.08	0.20
OutletA	24	PF 2	0.20	13.12	13.30		13.30	0.000992	0.27	0.74	5.74	0.24
OutletA	24	PF 3	0.30	13.12	13.33		13.33	0.001168	0.32	0.93	6.22	0.26
OutletA	24	PF 4	0.40	13.12	13.35		13.36	0.001307	0.38	1.10	6.61	0.28
OutletA	24	PF 5	0.50	13.12	13.38		13.38	0.001432	0.40	1.26	6.94	0.30
OutletA	24	PF 6	0.60	13.12	13.40		13.40	0.001524	0.43	1.39	7.24	0.31
OutletA	24	PF 7	0.70	13.12	13.41		13.42	0.001616	0.46	1.52	7.50	0.33
OutletA	24	PF 8	0.80	13.12	13.43		13.44	0.001692	0.49	1.65	7.75	0.34
OutletA	24	PF 9	0.90	13.12	13.44		13.46	0.001762	0.51	1.76	7.98	0.35
OutletA	24	PF 10	1.00	13.12	13.46		13.47	0.001825	0.53	1.88	8.20	0.35
OutletA	24	PF 11	1.10	13.12	13.47		13.49	0.001887	0.55	1.99	8.40	0.36
OutletA	24	PF 12	1.20	13.12	13.48		13.50	0.001941	0.57	2.10	8.59	0.37
OutletA	24	PF 13	1.30	13.12	13.50		13.51	0.001992	0.59	2.20	8.77	0.38
OutletA	24	PF 14	1.40	13.12	13.51		13.53	0.002041	0.61	2.30	8.94	0.38
OutletA	24	PF 15	1.50	13.12	13.52		13.54	0.002086	0.62	2.40	9.11	0.39
OutletA	24	PF 16	1.60	13.12	13.53		13.55	0.002129	0.64	2.50	9.27	0.39
OutletA	24	PF 17	1.70	13.12	13.54		13.56	0.002170	0.65	2.60	9.42	0.40
OutletA	24	PF 18	1.80	13.12	13.55		13.57	0.002209	0.67	2.69	9.57	0.40
OutletA	24	PF 19	1.90	13.12	13.56		13.58	0.002250	0.68	2.78	9.71	0.41
OutletA	24	PF 20	2.00	13.12	13.57		13.59	0.002285	0.70	2.87	9.85	0.41
OutletA	24	PF 21	2.10	13.12	13.58		13.60	0.002319	0.71	2.96	9.98	0.42
OutletA	24	PF 22	2.20	13.12	13.59		13.61	0.002352	0.72	3.04	10.11	0.42
OutletA	24	PF 23	2.30	13.12	13.59		13.62	0.002383	0.74	3.13	10.24	0.42
OutletA	24	PF 24	2.40	13.12	13.60		13.63	0.002414	0.75	3.21	10.36	0.43
OutletA	24	PF 25	2.50	13.12	13.61		13.64	0.002443	0.78	3.30	10.48	0.43
OutletA	24	PF 26	2.60	13.12	13.62		13.65	0.002471	0.77	3.38	10.60	0.44
OutletA	24	PF 27	2.70	13.12	13.63		13.66	0.002499	0.78	3.46	10.71	0.44
OutletA	24	PF 28	2.80	13.12	13.63		13.66	0.002525	0.79	3.54	10.82	0.44
OutletA	24	PF 29	2.90	13.12	13.64		13.67	0.002548	0.80	3.62	10.94	0.44
OutletA	24	PF 30	3.00	13.12	13.65		13.68	0.002572	0.81	3.70	11.04	0.45
OutletA	24	PF 31	3.20	13.12	13.66		13.70	0.002620	0.83	3.85	11.25	0.45
OutletA	24	PF 32	3.40	13.12	13.67		13.71	0.002662	0.85	4.00	11.45	0.46
OutletA	24	PF 33	3.60	13.12	13.69		13.73	0.002707	0.87	4.15	11.64	0.46
OutletA	24	PF 34	3.80	13.12	13.70		13.74	0.002750	0.89	4.29	11.83	0.47
OutletA	24	PF 35	4.00	13.12	13.71		13.75	0.002789	0.90	4.43	12.01	0.47
OutletA	24	PF 36	4.20	13.12	13.72		13.77	0.002829	0.92	4.57	12.18	0.48
OutletA	24	PF 37	4.40	13.12	13.73		13.78	0.002863	0.93	4.71	12.35	0.48
OutletA	24	PF 38	4.60	13.12	13.75		13.79	0.002898	0.95	4.85	12.52	0.49
OutletA	24	PF 39	4.80	13.12	13.76		13.80	0.002933	0.96	4.98	12.67	0.49
OutletA	24	PF 40	5.00	13.12	13.77		13.81	0.002965	0.98	5.11	12.83	0.49

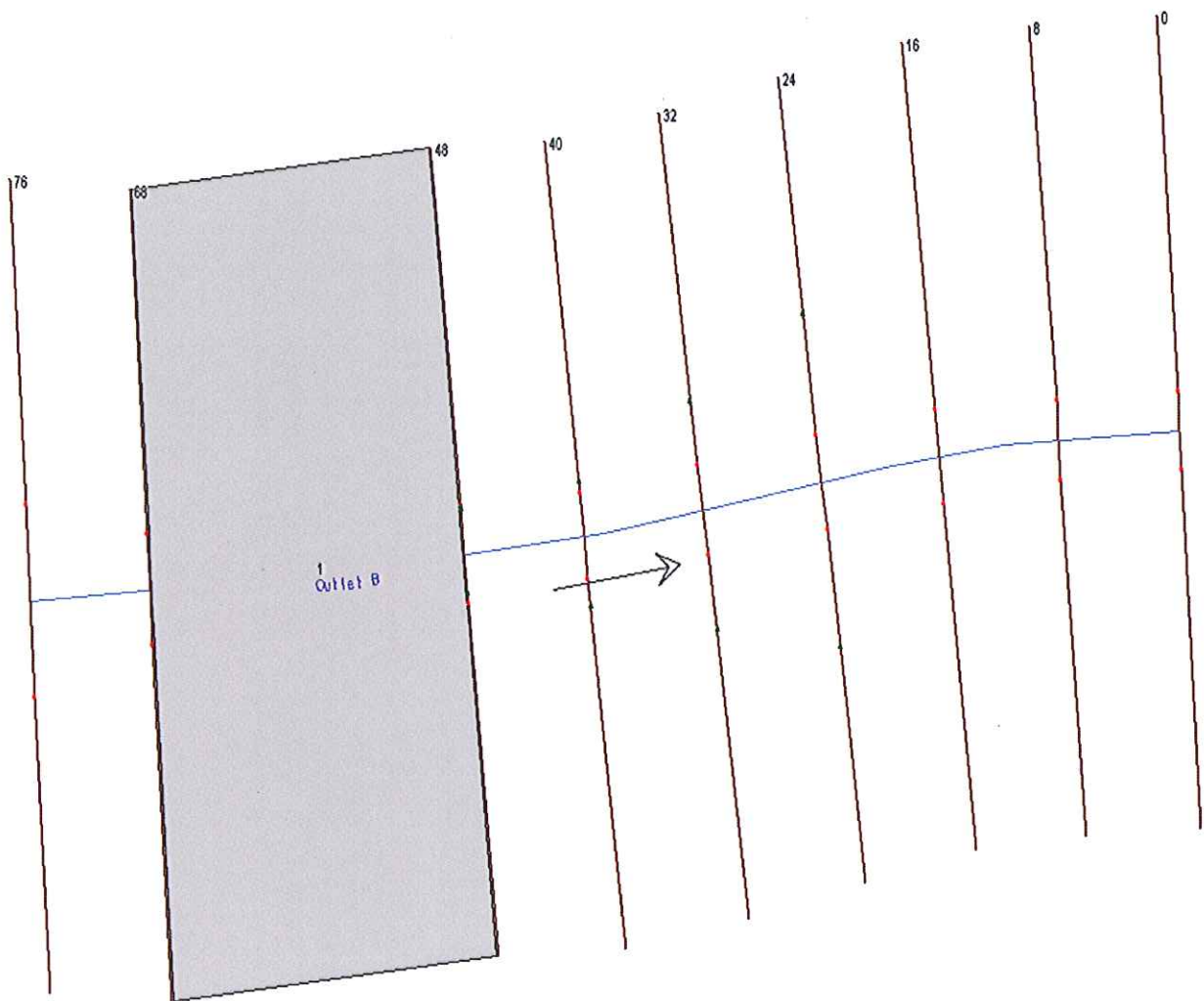
HEC-RAS Plan: Plan 02 River: 1 Reach: OutletA (Continued)

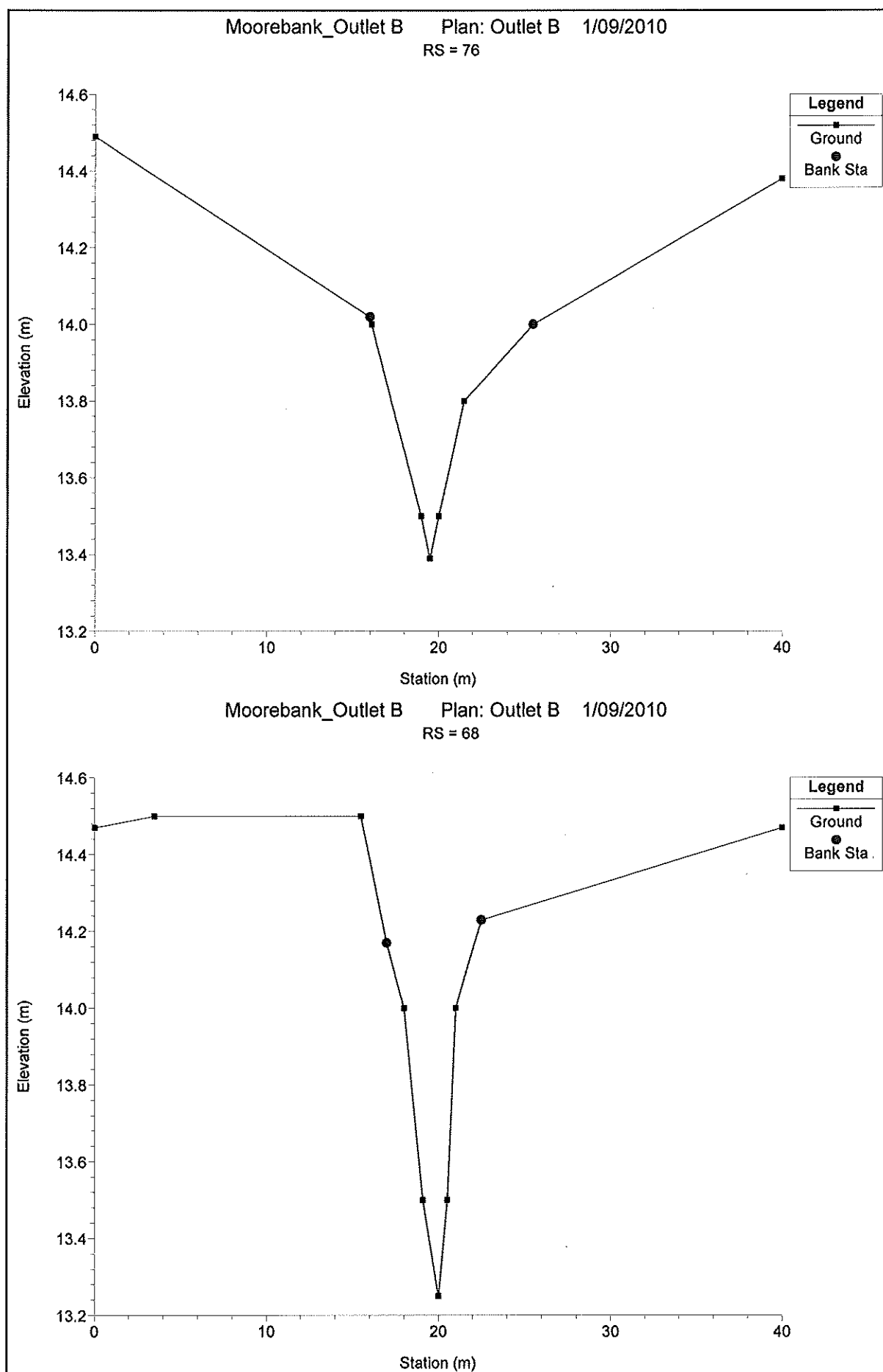
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
OutletA	16	PF 1	0.10	13.10	13.24		13.24	0.002352	0.29	0.35	4.72	0.33
OutletA	16	PF 2	0.20	13.10	13.28		13.29	0.002448	0.36	0.56	5.50	0.38
OutletA	16	PF 3	0.30	13.10	13.31		13.32	0.002570	0.41	0.73	6.07	0.38
OutletA	16	PF 4	0.40	13.10	13.33		13.35	0.002677	0.45	0.88	6.54	0.39
OutletA	16	PF 5	0.50	13.10	13.36		13.37	0.002791	0.49	1.02	6.93	0.41
OutletA	16	PF 6	0.60	13.10	13.37		13.39	0.002834	0.52	1.16	7.30	0.42
OutletA	16	PF 7	0.70	13.10	13.39		13.41	0.002907	0.55	1.28	7.62	0.43
OutletA	16	PF 8	0.80	13.10	13.41		13.42	0.002947	0.57	1.40	7.93	0.43
OutletA	16	PF 9	0.90	13.10	13.42		13.44	0.002989	0.59	1.52	8.21	0.44
OutletA	16	PF 10	1.00	13.10	13.44		13.45	0.003018	0.61	1.64	8.48	0.44
OutletA	16	PF 11	1.10	13.10	13.45		13.47	0.003060	0.63	1.75	8.72	0.45
OutletA	16	PF 12	1.20	13.10	13.46		13.48	0.003082	0.65	1.86	8.96	0.45
OutletA	16	PF 13	1.30	13.10	13.47		13.49	0.003107	0.66	1.96	9.18	0.46
OutletA	16	PF 14	1.40	13.10	13.48		13.51	0.003130	0.68	2.07	9.40	0.46
OutletA	16	PF 15	1.50	13.10	13.49		13.52	0.003160	0.69	2.17	9.61	0.46
OutletA	16	PF 16	1.60	13.10	13.50		13.53	0.003169	0.71	2.27	9.80	0.47
OutletA	16	PF 17	1.70	13.10	13.51		13.54	0.003186	0.72	2.37	10.00	0.47
OutletA	16	PF 18	1.80	13.10	13.52		13.55	0.003201	0.73	2.46	10.18	0.47
OutletA	16	PF 19	1.90	13.10	13.53		13.56	0.003223	0.74	2.56	10.36	0.48
OutletA	16	PF 20	2.00	13.10	13.54		13.57	0.003236	0.75	2.65	10.53	0.48
OutletA	16	PF 21	2.10	13.10	13.55		13.58	0.003248	0.76	2.75	10.70	0.48
OutletA	16	PF 22	2.20	13.10	13.56		13.59	0.003259	0.78	2.84	10.87	0.48
OutletA	16	PF 23	2.30	13.10	13.57		13.60	0.003269	0.79	2.93	11.03	0.49
OutletA	16	PF 24	2.40	13.10	13.58		13.61	0.003278	0.79	3.02	11.18	0.49
OutletA	16	PF 25	2.50	13.10	13.58		13.62	0.003287	0.80	3.11	11.33	0.49
OutletA	16	PF 26	2.60	13.10	13.59		13.63	0.003296	0.81	3.20	11.48	0.49
OutletA	16	PF 27	2.70	13.10	13.60		13.63	0.003303	0.82	3.28	11.63	0.49
OutletA	16	PF 28	2.80	13.10	13.61		13.64	0.003310	0.83	3.37	11.77	0.50
OutletA	16	PF 29	2.90	13.10	13.61		13.65	0.003311	0.84	3.46	11.92	0.50
OutletA	16	PF 30	3.00	13.10	13.62		13.66	0.003318	0.85	3.54	12.05	0.50
OutletA	16	PF 31	3.20	13.10	13.63		13.67	0.003328	0.86	3.71	12.32	0.50
OutletA	16	PF 32	3.40	13.10	13.65		13.69	0.003332	0.88	3.88	12.58	0.50
OutletA	16	PF 33	3.60	13.10	13.66		13.70	0.003346	0.89	4.04	12.83	0.51
OutletA	16	PF 34	3.80	13.10	13.67		13.72	0.003356	0.90	4.20	13.06	0.51
OutletA	16	PF 35	4.00	13.10	13.69		13.73	0.003363	0.92	4.36	13.30	0.51
OutletA	16	PF 36	4.20	13.10	13.70		13.74	0.003376	0.93	4.52	13.52	0.51
OutletA	16	PF 37	4.40	13.10	13.71		13.75	0.003377	0.94	4.68	13.74	0.52
OutletA	16	PF 38	4.60	13.10	13.72		13.77	0.003384	0.95	4.84	13.92	0.52
OutletA	16	PF 39	4.80	13.10	13.73		13.78	0.003388	0.96	5.01	14.14	0.52
OutletA	16	PF 40	5.00	13.10	13.74		13.79	0.003387	0.97	5.20	14.32	0.52
OutletA	8	PF 1	0.10	13.08	13.20		13.21	0.006915	0.44	0.23	3.59	0.56
OutletA	8	PF 2	0.20	13.08	13.24		13.26	0.006727	0.52	0.38	4.54	0.58
OutletA	8	PF 3	0.30	13.08	13.27		13.29	0.006655	0.59	0.51	5.02	0.59
OutletA	8	PF 4	0.40	13.08	13.29		13.31	0.006543	0.64	0.63	5.44	0.60
OutletA	8	PF 5	0.50	13.08	13.31		13.33	0.006924	0.69	0.72	5.74	0.62
OutletA	8	PF 6	0.60	13.08	13.33		13.35	0.006672	0.72	0.83	6.08	0.62
OutletA	8	PF 7	0.70	13.08	13.34		13.37	0.006881	0.76	0.92	6.34	0.64
OutletA	8	PF 8	0.80	13.08	13.36		13.39	0.006828	0.79	1.02	6.61	0.64
OutletA	8	PF 9	0.90	13.08	13.37		13.40	0.006851	0.81	1.10	6.85	0.65
OutletA	8	PF 10	1.00	13.08	13.38		13.42	0.006804	0.84	1.20	7.09	0.65
OutletA	8	PF 11	1.10	13.08	13.39		13.43	0.006901	0.86	1.27	7.29	0.66
OutletA	8	PF 12	1.20	13.08	13.40		13.44	0.006852	0.88	1.36	7.50	0.66
OutletA	8	PF 13	1.30	13.08	13.42		13.46	0.006851	0.90	1.44	7.70	0.66
OutletA	8	PF 14	1.40	13.08	13.43		13.47	0.006849	0.92	1.52	7.89	0.67
OutletA	8	PF 15	1.50	13.08	13.44		13.48	0.006846	0.94	1.60	8.07	0.67
OutletA	8	PF 16	1.60	13.08	13.45		13.49	0.006840	0.95	1.68	8.24	0.67
OutletA	8	PF 17	1.70	13.08	13.45		13.50	0.006828	0.97	1.76	8.41	0.68
OutletA	8	PF 18	1.80	13.08	13.46		13.51	0.006818	0.98	1.83	8.58	0.68
OutletA	8	PF 19	1.90	13.08	13.47		13.52	0.006869	1.00	1.90	8.72	0.68
OutletA	8	PF 20	2.00	13.08	13.48		13.53	0.006851	1.01	1.98	8.88	0.68
OutletA	8	PF 21	2.10	13.08	13.49		13.54	0.006837	1.02	2.05	9.03	0.69
OutletA	8	PF 22	2.20	13.08	13.50		13.55	0.006822	1.04	2.13	9.17	0.69
OutletA	8	PF 23	2.30	13.08	13.50		13.56	0.006807	1.05	2.20	9.32	0.69
OutletA	8	PF 24	2.40	13.08	13.51		13.57	0.006791	1.06	2.27	9.46	0.69
OutletA	8	PF 25	2.50	13.08	13.52		13.58	0.006775	1.07	2.34	9.59	0.69
OutletA	8	PF 26	2.60	13.08	13.53		13.59	0.006759	1.08	2.41	9.73	0.69
OutletA	8	PF 27	2.70	13.08	13.53		13.59	0.006743	1.09	2.48	9.86	0.69
OutletA	8	PF 28	2.80	13.08	13.54		13.60	0.006727	1.10	2.55	9.98	0.69
OutletA	8	PF 29	2.90	13.08	13.55		13.61	0.006674	1.10	2.63	10.12	0.69
OutletA	8	PF 30	3.00	13.08	13.56		13.62	0.006649	1.11	2.70	10.25	0.69
OutletA	8	PF 31	3.20	13.08	13.57		13.63	0.006618	1.13	2.83	10.49	0.69
OutletA	8	PF 32	3.40	13.08	13.58		13.65	0.006603	1.15	2.97	10.71	0.70
OutletA	8	PF 33	3.60	13.08	13.59		13.66	0.006595	1.16	3.09	10.93	0.70
OutletA	8	PF 34	3.80	13.08	13.60		13.68	0.006577	1.18	3.22	11.15	0.70
OutletA	8	PF 35	4.00	13.08	13.62		13.69	0.006543	1.19	3.36	11.36	0.70
OutletA	8	PF 36	4.20	13.08	13.63		13.70	0.006544	1.21	3.48	11.55	0.70
OutletA	8	PF 37	4.40	13.08	13.64		13.71	0.006517	1.22	3.61	11.75	0.70
OutletA	8	PF 38	4.60	13.08	13.65		13.73	0.006490	1.23	3.73	11.95	0.70
OutletA	8	PF 39	4.80	13.08	13.66		13.74	0.006463	1.24	3.86	12.14	0.70
OutletA	8	PF 40	5.00	13.08	13.67		13.75	0.006438	1.26	3.98	12.32	0.70
OutletA	0	PF 1	0.10	12.99	13.10	13.10	13.12	0.020011	0.68	0.15	2.65	0.93

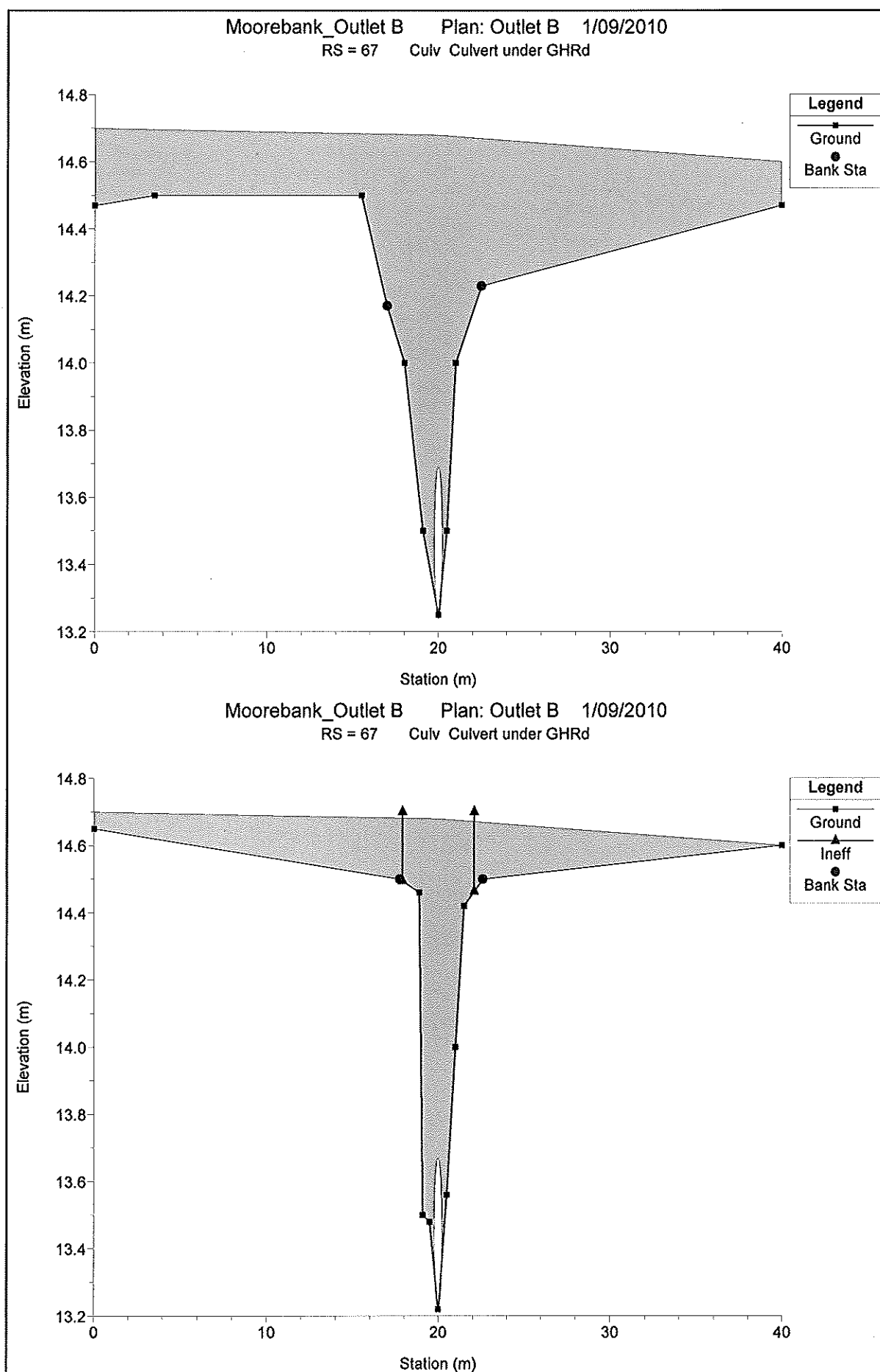
HEC-RAS Plan: Plan 02 River: 1 Reach: OutletA (Continued)

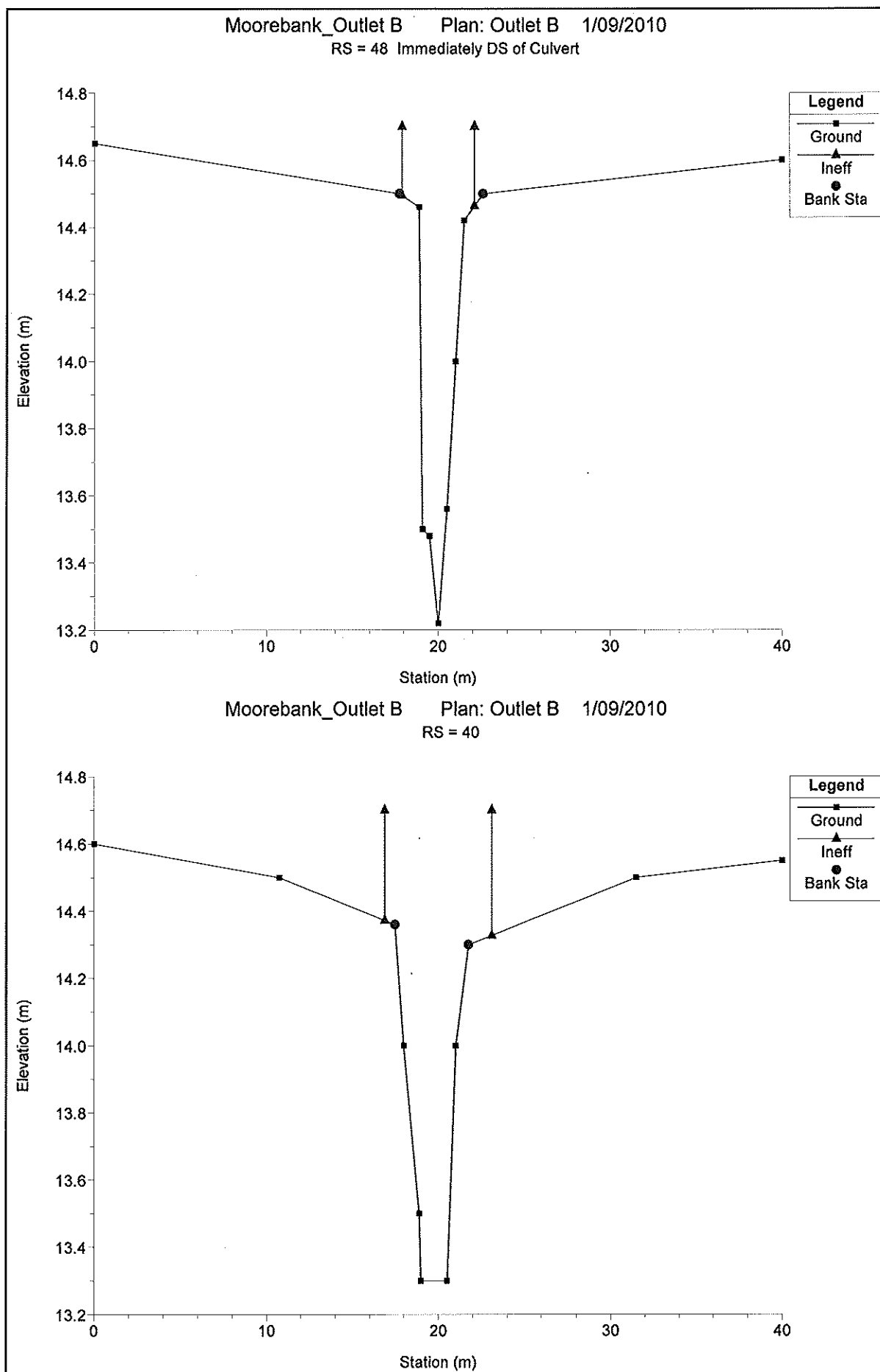
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
OutletA	0	PF 2	0.20	12.99	13.13	13.13	13.17	0.020020	0.61	0.25	3.43	0.97
OutletA	0	PF 3	0.30	12.99	13.16	13.16	13.20	0.020008	0.90	0.33	4.00	0.99
OutletA	0	PF 4	0.40	12.99	13.18	13.18	13.22	0.020013	0.97	0.41	4.45	1.01
OutletA	0	PF 5	0.60	12.99	13.19	13.19	13.25	0.018878	1.01	0.50	4.76	1.00
OutletA	0	PF 6	0.80	12.99	13.21	13.21	13.27	0.018973	1.07	0.66	4.98	1.02
OutletA	0	PF 7	0.70	12.99	13.22	13.22	13.28	0.018213	1.10	0.64	5.21	1.01
OutletA	0	PF 8	0.80	12.99	13.23	13.23	13.30	0.018053	1.14	0.70	5.41	1.01
OutletA	0	PF 9	0.90	12.99	13.25	13.25	13.32	0.017748	1.17	0.77	5.60	1.01
OutletA	0	PF 10	1.00	12.99	13.26	13.26	13.33	0.017354	1.20	0.83	5.79	1.01
OutletA	0	PF 11	1.10	12.99	13.27	13.27	13.35	0.016915	1.22	0.90	5.97	1.01
OutletA	0	PF 12	1.20	12.99	13.28	13.28	13.36	0.016961	1.25	0.96	6.12	1.01
OutletA	0	PF 13	1.30	12.99	13.29	13.29	13.37	0.016755	1.28	1.02	6.28	1.01
OutletA	0	PF 14	1.40	12.99	13.30	13.30	13.38	0.016504	1.30	1.08	6.43	1.01
OutletA	0	PF 15	1.50	12.99	13.31	13.31	13.40	0.016377	1.32	1.14	6.58	1.01
OutletA	0	PF 16	1.60	12.99	13.32	13.32	13.41	0.016217	1.34	1.20	6.72	1.01
OutletA	0	PF 17	1.70	12.99	13.32	13.32	13.42	0.016083	1.36	1.25	6.86	1.01
OutletA	0	PF 18	1.80	12.99	13.33	13.33	13.43	0.015949	1.37	1.31	6.99	1.01
OutletA	0	PF 19	1.90	12.99	13.34	13.34	13.44	0.015506	1.38	1.38	7.14	1.00
OutletA	0	PF 20	2.00	12.99	13.35	13.35	13.45	0.015419	1.40	1.43	7.26	1.00
OutletA	0	PF 21	2.10	12.99	13.36	13.36	13.46	0.015314	1.41	1.49	7.38	1.00
OutletA	0	PF 22	2.20	12.99	13.36	13.36	13.47	0.015215	1.43	1.54	7.50	1.00
OutletA	0	PF 23	2.30	12.99	13.37	13.37	13.48	0.015121	1.44	1.60	7.62	1.00
OutletA	0	PF 24	2.40	12.99	13.38	13.38	13.49	0.015030	1.45	1.65	7.73	1.00
OutletA	0	PF 25	2.50	12.99	13.39	13.39	13.49	0.014948	1.47	1.70	7.84	1.00
OutletA	0	PF 26	2.60	12.99	13.39	13.39	13.50	0.014866	1.48	1.76	7.95	1.01
OutletA	0	PF 27	2.70	12.99	13.40	13.40	13.51	0.014787	1.49	1.81	8.05	1.01
OutletA	0	PF 28	2.80	12.99	13.41	13.41	13.52	0.014715	1.50	1.86	8.16	1.01
OutletA	0	PF 29	2.90	12.99	13.41	13.41	13.53	0.014624	1.52	1.90	8.24	1.01
OutletA	0	PF 30	3.00	12.99	13.42	13.42	13.54	0.014796	1.54	1.95	8.34	1.01
OutletA	0	PF 31	3.20	12.99	13.43	13.43	13.55	0.014658	1.56	2.06	8.53	1.01
OutletA	0	PF 32	3.40	12.99	13.44	13.44	13.57	0.014450	1.57	2.16	8.73	1.01
OutletA	0	PF 33	3.60	12.99	13.45	13.45	13.58	0.014214	1.59	2.27	8.92	1.01
OutletA	0	PF 34	3.80	12.99	13.46	13.46	13.59	0.014042	1.60	2.37	9.10	1.00
OutletA	0	PF 35	4.00	12.99	13.47	13.47	13.61	0.013951	1.62	2.47	9.27	1.00
OutletA	0	PF 36	4.20	12.99	13.48	13.48	13.62	0.013661	1.64	2.56	9.44	1.00
OutletA	0	PF 37	4.40	12.99	13.49	13.49	13.63	0.013774	1.66	2.66	9.60	1.00
OutletA	0	PF 38	4.60	12.99	13.50	13.50	13.65	0.013693	1.67	2.75	9.75	1.00
OutletA	0	PF 39	4.80	12.99	13.51	13.51	13.66	0.013614	1.69	2.85	9.91	1.00
OutletA	0	PF 40	5.00	12.99	13.52	13.52	13.67	0.013540	1.70	2.94	10.06	1.00

OUTLET B EXISTING – HEC-RAS MODEL FILES

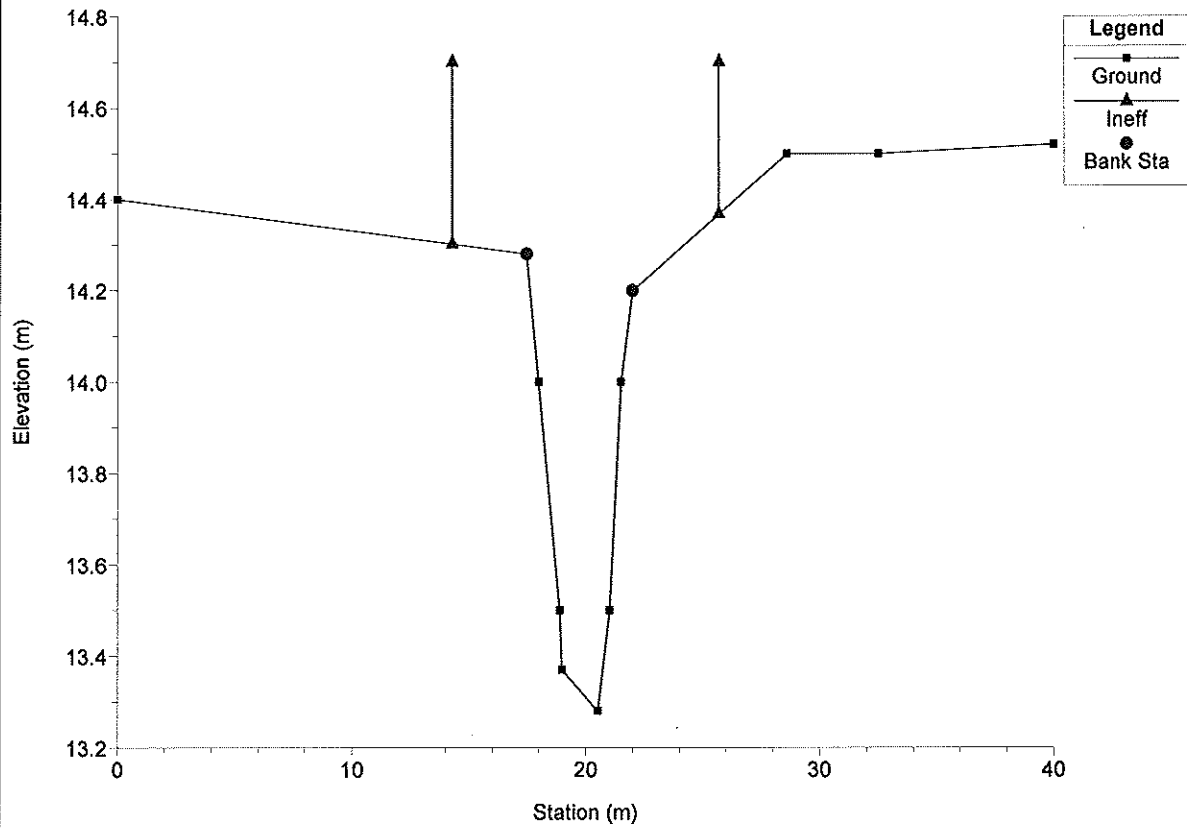




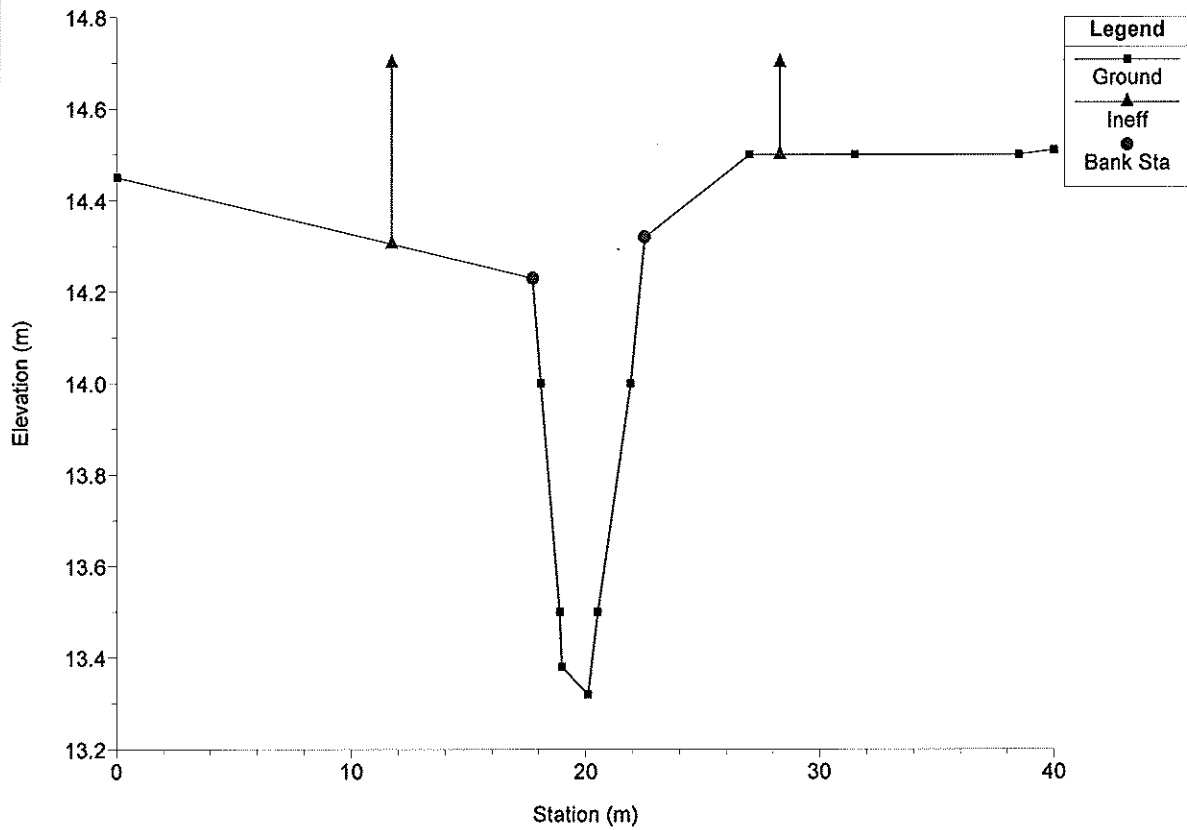


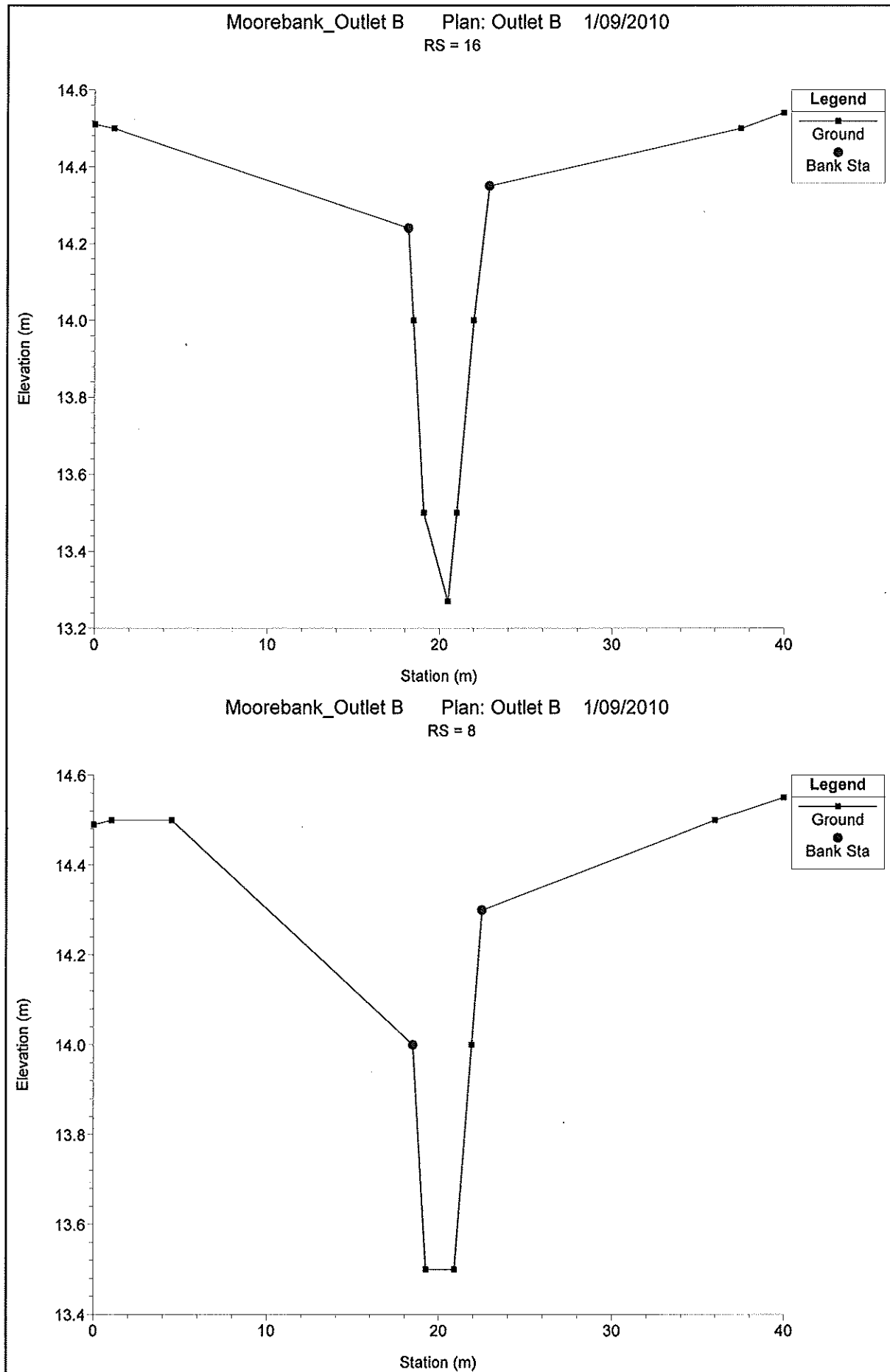


Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 32

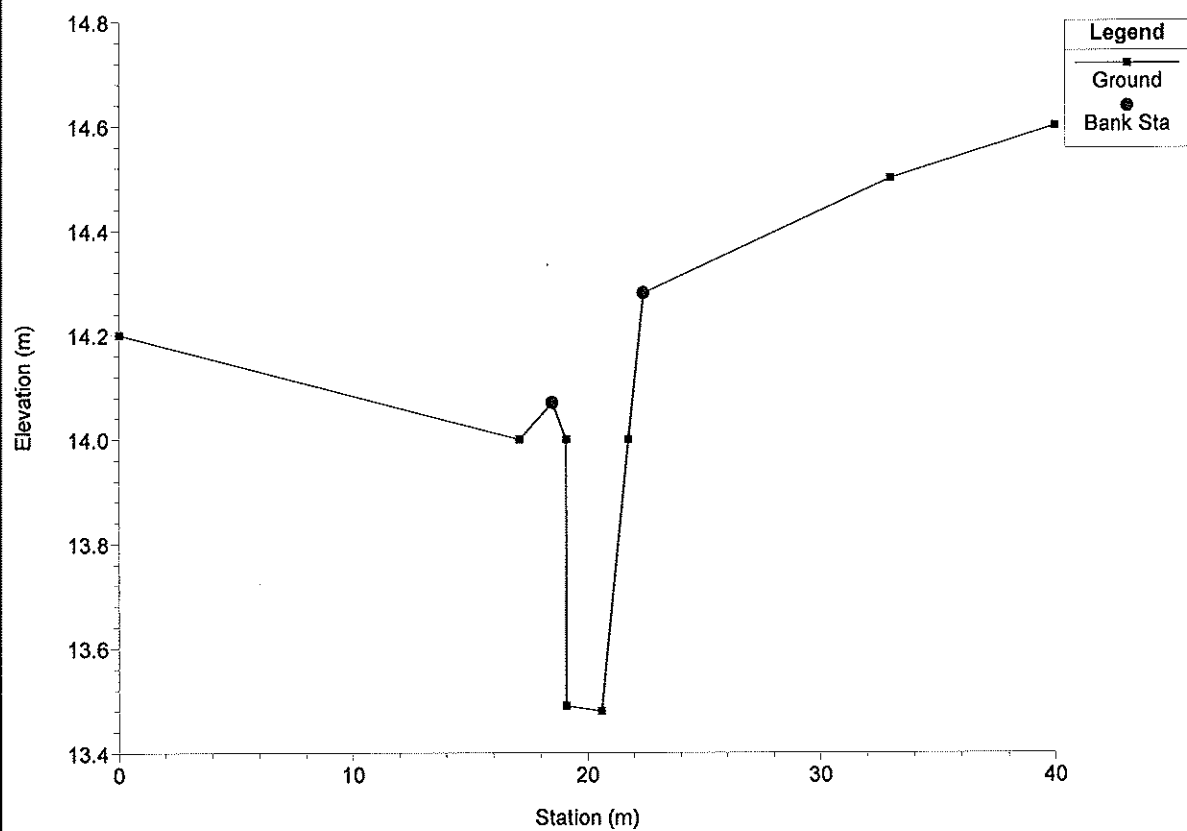


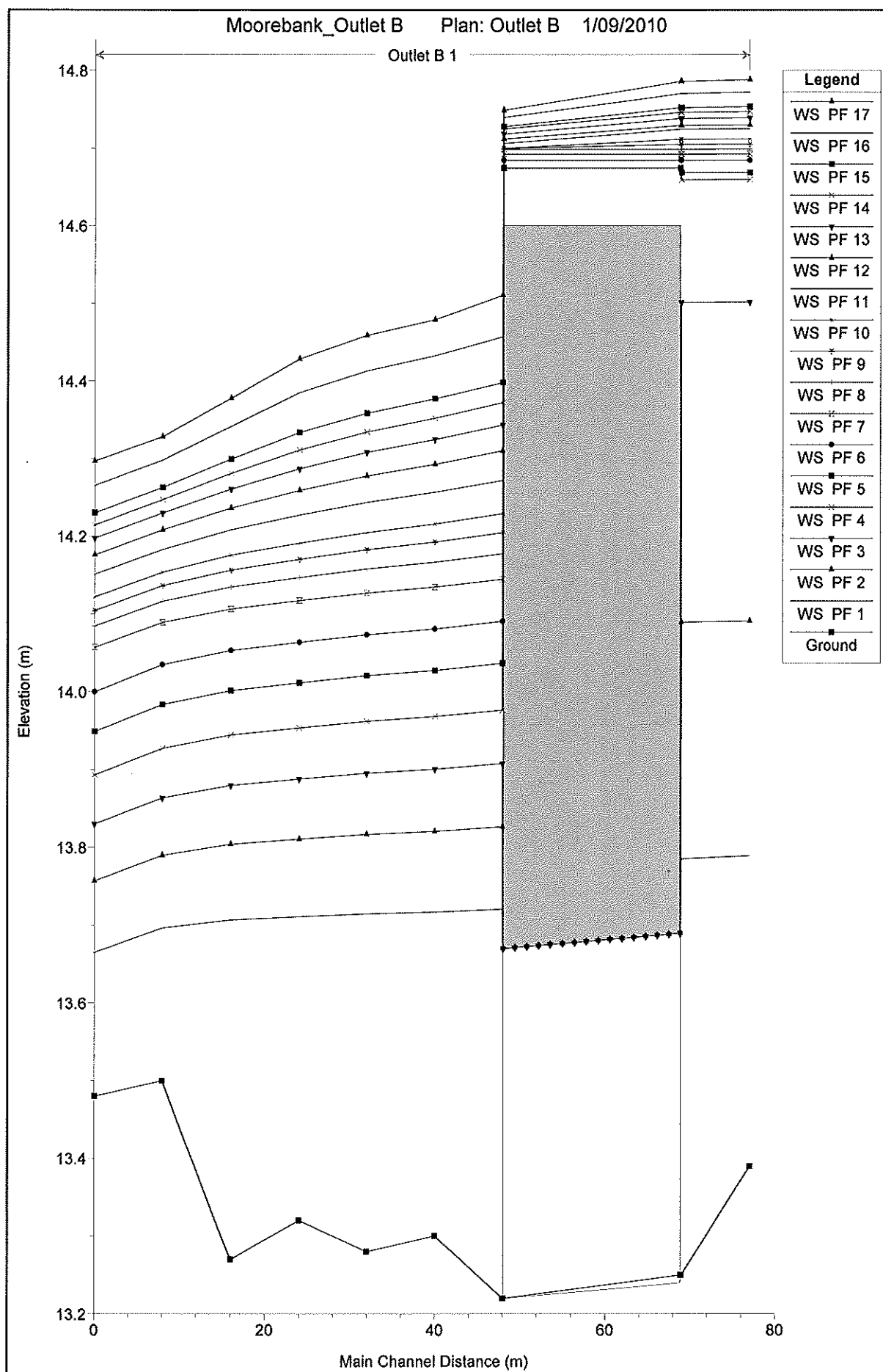
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 24





Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 0





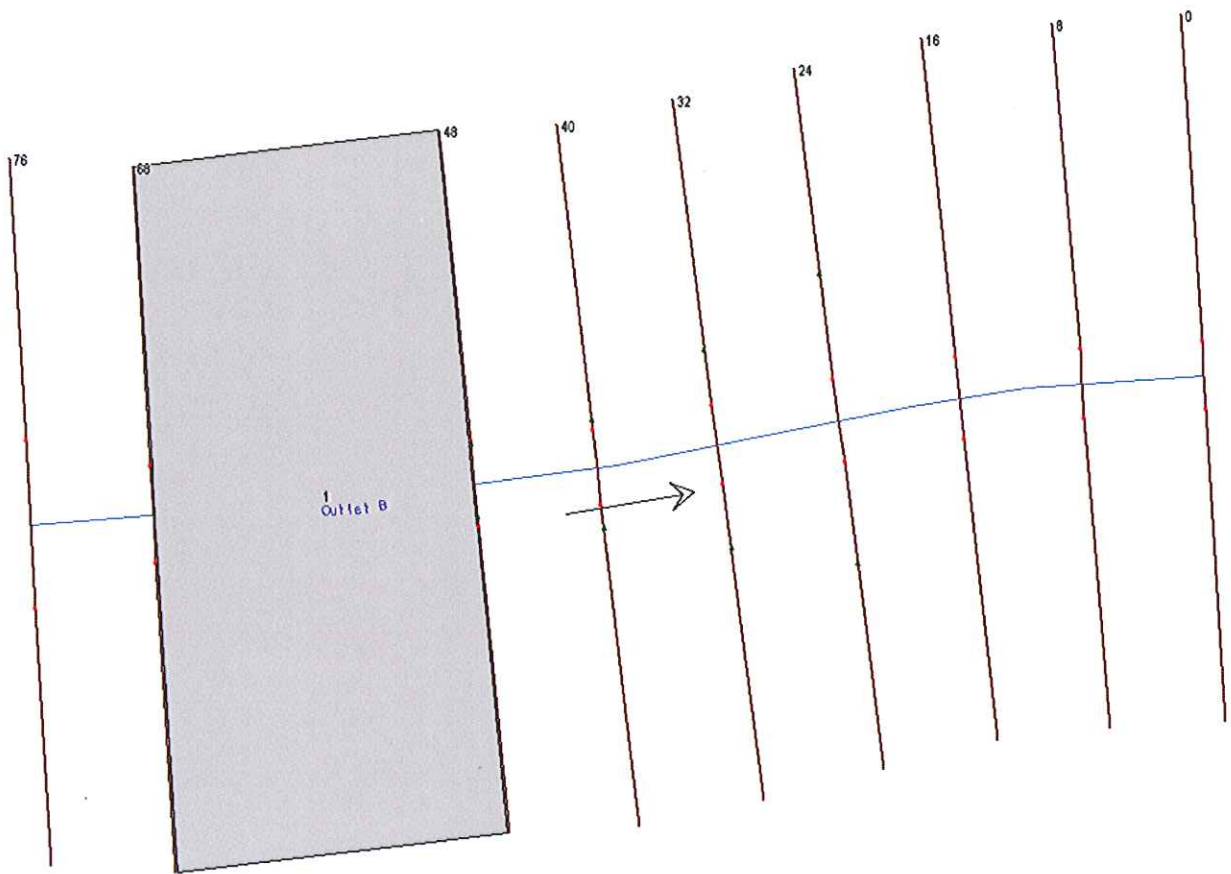
HEC-RAS Plan: B River: Outlet B Reach: 1

Reach	River Sta	Profile	Q Total (m3/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 (m2)	Top Width (m)	Froude # Chl
1	76	PF 1	0.10	13.39	13.79		13.79	0.000521	0.13	0.80	4.12	0.09
1	76	PF 2	0.20	13.39	14.09		14.09	0.000087	0.06	3.31	15.40	0.04
1	76	PF 3	0.30	13.39	14.50		14.50	0.000004	0.03	15.43	40.00	0.01
1	76	PF 4	0.40	13.39	14.68		14.68	0.000002	0.02	21.78	40.00	0.01
1	76	PF 5	0.50	13.39	14.67		14.67	0.000004	0.03	22.11	40.00	0.01
1	76	PF 6	0.60	13.39	14.68		14.68	0.000005	0.03	22.75	40.00	0.01
1	76	PF 7	0.70	13.39	14.69		14.69	0.000006	0.04	23.08	40.00	0.01
1	76	PF 8	0.80	13.39	14.70		14.70	0.000008	0.04	23.33	40.00	0.01
1	76	PF 9	0.90	13.39	14.71		14.71	0.000010	0.05	23.58	40.00	0.02
1	76	PF 10	1.00	13.39	14.71		14.71	0.000011	0.05	23.85	40.00	0.02
1	76	PF 11	1.20	13.39	14.73		14.73	0.000015	0.06	24.38	40.00	0.02
1	76	PF 12	1.40	13.39	14.73		14.73	0.000021	0.07	24.57	40.00	0.02
1	76	PF 13	1.60	13.39	14.74		14.74	0.000026	0.08	24.94	40.00	0.03
1	76	PF 14	1.80	13.39	14.75		14.75	0.000031	0.09	25.27	40.00	0.03
1	76	PF 15	2.00	13.39	14.75		14.75	0.000037	0.10	25.51	40.00	0.03
1	76	PF 16	2.50	13.39	14.77		14.77	0.000053	0.12	26.26	40.00	0.04
1	76	PF 17	3.00	13.39	14.79		14.79	0.000071	0.14	26.90	40.00	0.04
1	68	PF 1	0.10	13.25	13.79	13.44	13.79	0.000410	0.14	0.70	2.31	0.08
1	68	PF 2	0.20	13.25	14.09	13.50	14.09	0.000229	0.13	1.59	4.11	0.06
1	68	PF 3	0.30	13.25	14.50	13.54	14.50	0.000026	0.08	6.75	40.00	0.02
1	68	PF 4	0.40	13.25	14.68	13.88	14.68	0.000011	0.05	13.08	40.00	0.02
1	68	PF 5	0.50	13.25	14.67	13.81	14.67	0.000016	0.06	13.43	40.00	0.02
1	68	PF 6	0.60	13.25	14.68	13.84	14.68	0.000020	0.06	14.07	40.00	0.02
1	68	PF 7	0.70	13.25	14.69	13.87	14.69	0.000025	0.07	14.39	40.00	0.02
1	68	PF 8	0.80	13.25	14.70	13.69	14.70	0.000031	0.08	14.64	40.00	0.03
1	68	PF 9	0.90	13.25	14.70	13.72	14.71	0.000038	0.09	14.89	40.00	0.03
1	68	PF 10	1.00	13.25	14.71	13.74	14.71	0.000045	0.10	15.16	40.00	0.03
1	68	PF 11	1.20	13.25	14.72	13.78	14.73	0.000058	0.11	15.68	40.00	0.04
1	68	PF 12	1.40	13.25	14.73	13.82	14.73	0.000077	0.13	15.87	40.00	0.04
1	68	PF 13	1.60	13.25	14.74	13.85	14.74	0.000094	0.15	16.23	40.00	0.05
1	68	PF 14	1.80	13.25	14.75	13.88	14.75	0.000113	0.16	16.55	40.00	0.05
1	68	PF 15	2.00	13.25	14.75	13.91	14.75	0.000134	0.18	16.78	40.00	0.06
1	68	PF 16	2.50	13.25	14.77	13.99	14.77	0.000185	0.21	17.52	40.00	0.07
1	68	PF 17	3.00	13.25	14.79	14.07	14.79	0.000240	0.24	18.13	40.00	0.08
1	67		Culvert									
1	48	PF 1	0.10	13.22	13.72	13.45	13.72	0.001217	0.22	0.48	1.63	0.13
1	48	PF 2	0.20	13.22	13.83	13.53	13.83	0.001916	0.31	0.64	1.77	0.16
1	48	PF 3	0.30	13.22	13.91	13.57	13.92	0.002415	0.38	0.78	1.88	0.19
1	48	PF 4	0.40	13.22	13.98	13.61	13.99	0.002804	0.43	0.92	1.97	0.20
1	48	PF 5	0.50	13.22	14.04	13.64	14.05	0.003129	0.48	1.04	2.06	0.21
1	48	PF 6	0.60	13.22	14.09	13.67	14.10	0.003412	0.52	1.16	2.13	0.22
1	48	PF 7	0.70	13.22	14.14	13.70	14.16	0.003577	0.55	1.27	2.21	0.23
1	48	PF 8	0.80	13.22	14.18	13.73	14.20	0.004019	0.59	1.35	2.25	0.24
1	48	PF 9	0.90	13.22	14.20	13.75	14.23	0.004513	0.64	1.41	2.29	0.26
1	48	PF 10	1.00	13.22	14.23	13.78	14.25	0.005017	0.68	1.47	2.32	0.27
1	48	PF 11	1.20	13.22	14.27	13.82	14.30	0.006038	0.77	1.57	2.38	0.30
1	48	PF 12	1.40	13.22	14.31	13.87	14.35	0.007056	0.84	1.68	2.44	0.33
1	48	PF 13	1.60	13.22	14.34	13.91	14.39	0.008104	0.92	1.74	2.48	0.35
1	48	PF 14	1.80	13.22	14.37	13.94	14.42	0.009203	0.99	1.81	2.52	0.37
1	48	PF 15	2.00	13.22	14.40	13.98	14.46	0.010336	1.06	1.88	2.56	0.40
1	48	PF 16	2.50	13.22	14.46	14.06	14.53	0.014940	1.23	2.04	3.11	0.48
1	48	PF 17	3.00	13.22	14.51	14.14	14.60	0.021073	1.34	2.25	7.99	0.58
1	40	PF 1	0.10	13.30	13.72	13.37	13.72	0.000333	0.13	0.76	2.29	0.07
1	40	PF 2	0.20	13.30	13.82	13.42	13.82	0.000604	0.20	1.01	2.55	0.10
1	40	PF 3	0.30	13.30	13.90	13.48	13.90	0.000806	0.25	1.22	2.75	0.12
1	40	PF 4	0.40	13.30	13.97	13.49	13.97	0.000963	0.28	1.42	2.92	0.13
1	40	PF 5	0.50	13.30	14.03	13.52	14.03	0.001102	0.31	1.59	3.11	0.14
1	40	PF 6	0.60	13.30	14.08	13.55	14.09	0.001225	0.34	1.77	3.31	0.15
1	40	PF 7	0.70	13.30	14.13	13.57	14.14	0.001293	0.36	1.95	3.52	0.16
1	40	PF 8	0.80	13.30	14.17	13.60	14.17	0.001460	0.39	2.06	3.65	0.16
1	40	PF 9	0.90	13.30	14.19	13.62	14.20	0.001644	0.42	2.16	3.75	0.18
1	40	PF 10	1.00	13.30	14.22	13.64	14.23	0.001831	0.44	2.25	3.84	0.19
1	40	PF 11	1.20	13.30	14.26	13.68	14.27	0.002207	0.50	2.41	4.00	0.20
1	40	PF 12	1.40	13.30	14.29	13.72	14.31	0.002577	0.55	2.56	4.14	0.22
1	40	PF 13	1.60	13.30	14.32	13.76	14.34	0.002898	0.60	2.70	5.40	0.24
1	40	PF 14	1.80	13.30	14.35	13.79	14.37	0.003207	0.64	2.86	6.78	0.25
1	40	PF 15	2.00	13.30	14.38	13.82	14.40	0.003484	0.68	3.00	8.84	0.26
1	40	PF 16	2.50	13.30	14.43	13.89	14.46	0.004096	0.78	3.35	14.21	0.29
1	40	PF 17	3.00	13.30	14.48	13.96	14.52	0.004695	0.87	3.63	18.72	0.31
1	32	PF 1	0.10	13.28	13.71	13.40	13.72	0.000274	0.12	0.84	2.70	0.07
1	32	PF 2	0.20	13.28	13.82	13.44	13.82	0.000474	0.18	1.13	2.99	0.09
1	32	PF 3	0.30	13.28	13.90	13.47	13.90	0.000618	0.22	1.37	3.21	0.11
1	32	PF 4	0.40	13.28	13.96	13.50	13.97	0.000727	0.25	1.59	3.39	0.12
1	32	PF 5	0.50	13.28	14.02	13.53	14.02	0.000822	0.28	1.80	3.59	0.13
1	32	PF 6	0.60	13.28	14.07	13.55	14.08	0.000910	0.30	1.99	3.81	0.13
1	32	PF 7	0.70	13.28	14.13	13.57	14.13	0.000957	0.32	2.20	4.04	0.14
1	32	PF 8	0.80	13.28	14.16	13.60	14.16	0.001081	0.34	2.33	4.18	0.15
1	32	PF 9	0.90	13.28	14.18	13.62	14.19	0.001222	0.37	2.43	4.28	0.16

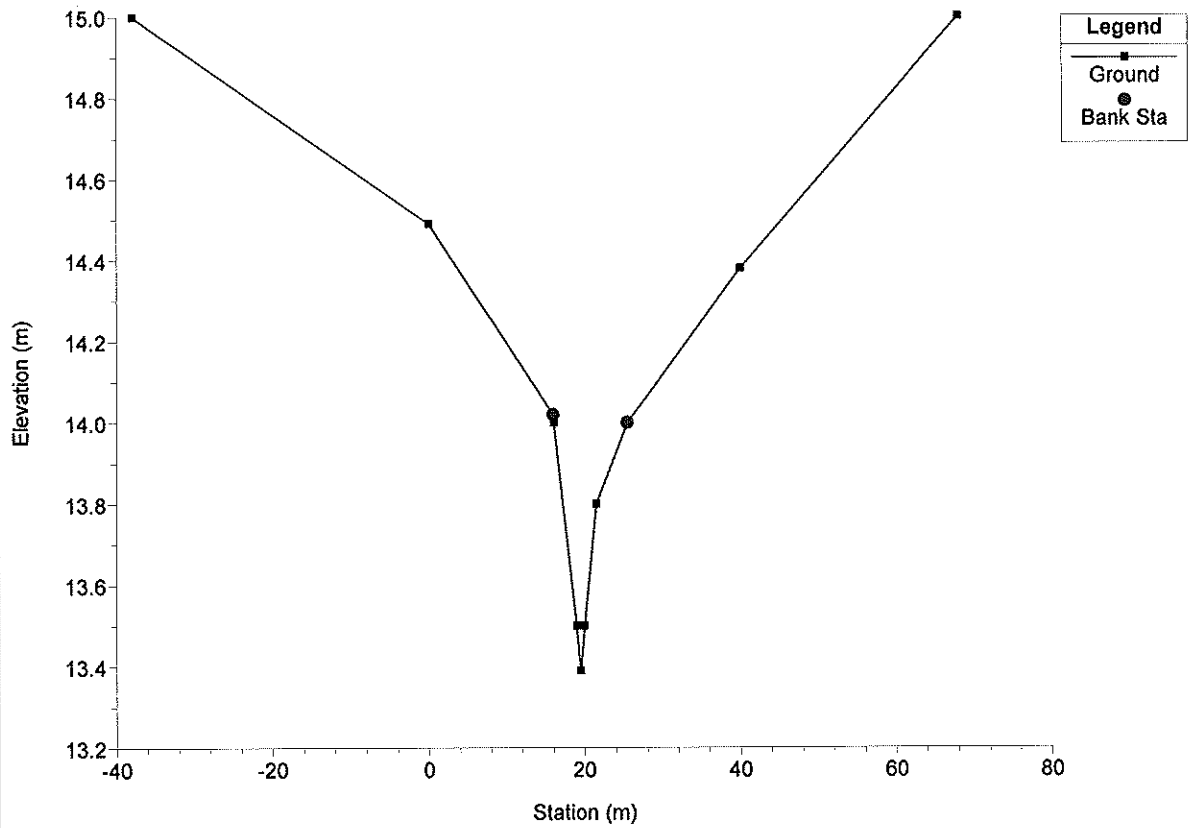
HEC-RAS Plan: B River: Outlet B Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (m3/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 (m2)	Top Width (m)	Froude # Chl
1	32	PF 10	1.00	13.28	14.20	13.63	14.21	0.001360	0.40	2.53	4.47	0.17
1	32	PF 11	1.20	13.28	14.24	13.67	14.25	0.001606	0.44	2.72	5.39	0.18
1	32	PF 12	1.40	13.28	14.28	13.70	14.29	0.001844	0.49	2.92	6.21	0.20
1	32	PF 13	1.60	13.28	14.31	13.73	14.32	0.002037	0.53	3.17	10.97	0.21
1	32	PF 14	1.80	13.28	14.33	13.77	14.35	0.002212	0.57	3.45	15.40	0.22
1	32	PF 15	2.00	13.28	14.36	13.79	14.38	0.002370	0.60	3.71	19.44	0.23
1	32	PF 16	2.50	13.28	14.41	13.86	14.43	0.002667	0.67	4.33	26.68	0.24
1	32	PF 17	3.00	13.28	14.46	13.92	14.48	0.002929	0.73	4.85	27.69	0.26
1	24	PF 1	0.10	13.32	13.71	13.44	13.71	0.000598	0.16	0.64	2.53	0.10
1	24	PF 2	0.20	13.32	13.81	13.49	13.81	0.000911	0.22	0.92	2.97	0.13
1	24	PF 3	0.30	13.32	13.89	13.53	13.89	0.001087	0.26	1.16	3.31	0.14
1	24	PF 4	0.40	13.32	13.95	13.58	13.96	0.001193	0.29	1.39	3.60	0.15
1	24	PF 5	0.50	13.32	14.01	13.59	14.02	0.001259	0.31	1.60	3.84	0.15
1	24	PF 6	0.60	13.32	14.06	13.62	14.07	0.001295	0.33	1.81	4.02	0.16
1	24	PF 7	0.70	13.32	14.12	13.64	14.12	0.001280	0.35	2.03	4.20	0.16
1	24	PF 8	0.80	13.32	14.15	13.67	14.15	0.001413	0.37	2.15	4.30	0.17
1	24	PF 9	0.90	13.32	14.17	13.69	14.18	0.001574	0.40	2.25	4.38	0.18
1	24	PF 10	1.00	13.32	14.19	13.71	14.20	0.001740	0.43	2.34	4.45	0.19
1	24	PF 11	1.20	13.32	14.23	13.75	14.24	0.002081	0.48	2.51	4.57	0.21
1	24	PF 12	1.40	13.32	14.26	13.78	14.27	0.002386	0.53	2.69	6.97	0.22
1	24	PF 13	1.60	13.32	14.29	13.81	14.30	0.002668	0.57	2.91	9.28	0.24
1	24	PF 14	1.80	13.32	14.31	13.84	14.33	0.002933	0.61	3.16	11.28	0.25
1	24	PF 15	2.00	13.32	14.33	13.87	14.35	0.003132	0.65	3.41	13.45	0.26
1	24	PF 16	2.50	13.32	14.38	13.93	14.41	0.003481	0.72	4.01	18.87	0.28
1	24	PF 17	3.00	13.32	14.43	13.99	14.46	0.003769	0.78	4.58	23.47	0.29
1	16	PF 1	0.10	13.27	13.71		13.71	0.000504	0.15	0.68	2.58	0.09
1	16	PF 2	0.20	13.27	13.80		13.81	0.000797	0.21	0.94	2.87	0.12
1	16	PF 3	0.30	13.27	13.88		13.88	0.000984	0.26	1.17	3.11	0.13
1	16	PF 4	0.40	13.27	13.94		13.95	0.001112	0.29	1.38	3.32	0.14
1	16	PF 5	0.50	13.27	14.00		14.01	0.001208	0.32	1.57	3.51	0.15
1	16	PF 6	0.60	13.27	14.05		14.06	0.001294	0.34	1.76	3.70	0.16
1	16	PF 7	0.70	13.27	14.11		14.11	0.001317	0.36	1.96	3.91	0.16
1	16	PF 8	0.80	13.27	14.13		14.14	0.001483	0.39	2.07	4.01	0.17
1	16	PF 9	0.90	13.27	14.16		14.17	0.001680	0.42	2.16	4.10	0.18
1	16	PF 10	1.00	13.27	14.18		14.19	0.001886	0.45	2.24	4.17	0.19
1	16	PF 11	1.20	13.27	14.21		14.22	0.002316	0.50	2.38	4.30	0.22
1	16	PF 12	1.40	13.27	14.24		14.25	0.002760	0.56	2.50	4.40	0.24
1	16	PF 13	1.60	13.27	14.26		14.28	0.003191	0.61	2.62	5.83	0.26
1	16	PF 14	1.80	13.27	14.28		14.30	0.003643	0.66	2.76	7.21	0.27
1	16	PF 15	2.00	13.27	14.30		14.33	0.004085	0.71	2.80	8.48	0.29
1	16	PF 16	2.50	13.27	14.34		14.38	0.005081	0.82	3.32	11.36	0.33
1	16	PF 17	3.00	13.27	14.38		14.42	0.005828	0.91	3.81	16.47	0.35
1	8	PF 1	0.10	13.50	13.70		13.70	0.002695	0.26	0.39	2.34	0.20
1	8	PF 2	0.20	13.50	13.79		13.80	0.002738	0.32	0.63	2.66	0.21
1	8	PF 3	0.30	13.50	13.88		13.87	0.002724	0.36	0.83	2.92	0.22
1	8	PF 4	0.40	13.50	13.93		13.94	0.002685	0.39	1.03	3.15	0.22
1	8	PF 5	0.50	13.50	13.98		13.99	0.002648	0.41	1.21	3.34	0.22
1	8	PF 6	0.60	13.50	14.03		14.04	0.002555	0.43	1.40	4.44	0.22
1	8	PF 7	0.70	13.50	14.09		14.10	0.002286	0.44	1.69	6.08	0.21
1	8	PF 8	0.80	13.50	14.12		14.13	0.002429	0.46	1.86	6.89	0.22
1	8	PF 9	0.90	13.50	14.14		14.15	0.002637	0.49	2.01	7.49	0.23
1	8	PF 10	1.00	13.50	14.15		14.17	0.002852	0.52	2.14	8.01	0.24
1	8	PF 11	1.20	13.50	14.18		14.20	0.003288	0.58	2.39	8.89	0.26
1	8	PF 12	1.40	13.50	14.21		14.23	0.003701	0.63	2.62	9.85	0.28
1	8	PF 13	1.60	13.50	14.23		14.25	0.004105	0.67	2.84	10.30	0.29
1	8	PF 14	1.80	13.50	14.25		14.27	0.004567	0.72	3.02	10.82	0.31
1	8	PF 15	2.00	13.50	14.26		14.29	0.005021	0.77	3.19	11.28	0.32
1	8	PF 16	2.50	13.50	14.30		14.33	0.006056	0.87	3.61	12.34	0.36
1	8	PF 17	3.00	13.50	14.33		14.37	0.006891	0.95	4.02	15.11	0.39
1	0	PF 1	0.10	13.48	13.66	13.56	13.67	0.005001	0.33	0.31	1.91	0.26
1	0	PF 2	0.20	13.48	13.76	13.60	13.77	0.005003	0.41	0.49	2.11	0.27
1	0	PF 3	0.30	13.48	13.83	13.64	13.84	0.005002	0.46	0.65	2.27	0.27
1	0	PF 4	0.40	13.48	13.89	13.67	13.91	0.005001	0.50	0.80	2.41	0.28
1	0	PF 5	0.50	13.48	13.95	13.70	13.96	0.005007	0.53	0.94	2.54	0.28
1	0	PF 6	0.60	13.48	14.00	13.72	14.02	0.005007	0.56	1.07	2.65	0.28
1	0	PF 7	0.70	13.48	14.06	13.75	14.07	0.005007	0.55	1.41	9.33	0.28
1	0	PF 8	0.80	13.48	14.08	13.77	14.10	0.005005	0.56	1.71	12.08	0.29
1	0	PF 9	0.90	13.48	14.10	13.79	14.12	0.005006	0.57	1.97	13.84	0.29
1	0	PF 10	1.00	13.48	14.12	13.81	14.14	0.005003	0.59	2.22	15.36	0.29
1	0	PF 11	1.20	13.48	14.15	13.85	14.17	0.005008	0.61	2.71	17.94	0.29
1	0	PF 12	1.40	13.48	14.18	13.88	14.19	0.005006	0.62	3.18	20.11	0.30
1	0	PF 13	1.60	13.48	14.20	13.92	14.21	0.005003	0.64	3.63	22.00	0.30
1	0	PF 14	1.80	13.48	14.21	13.95	14.23	0.005001	0.65	4.01	22.25	0.30
1	0	PF 15	2.00	13.48	14.23	14.08	14.25	0.005008	0.66	4.36	22.28	0.30
1	0	PF 16	2.50	13.48	14.27	14.14	14.28	0.005004	0.68	5.15	22.37	0.30
1	0	PF 17	3.00	13.48	14.30	14.16	14.31	0.005003	0.70	5.86	23.22	0.31

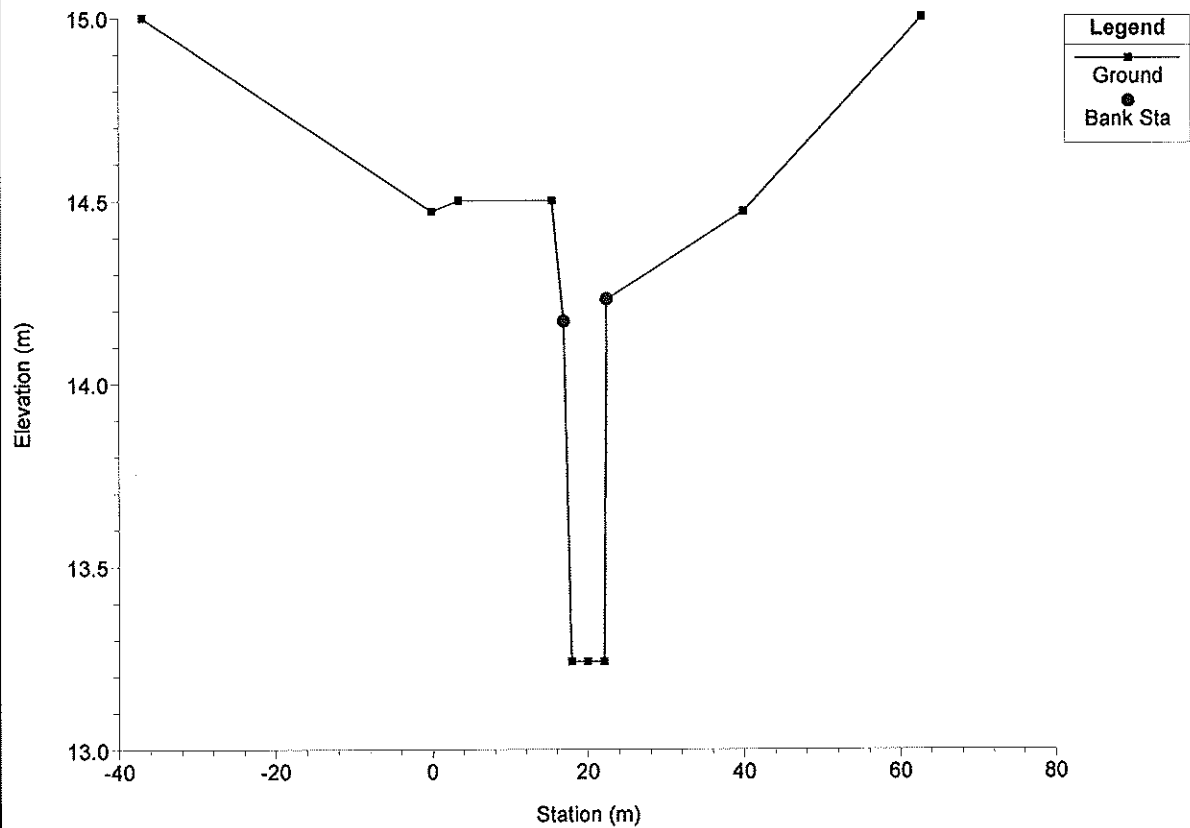
OUTLET B PROPOSED – HEC-RAS MODEL FILES



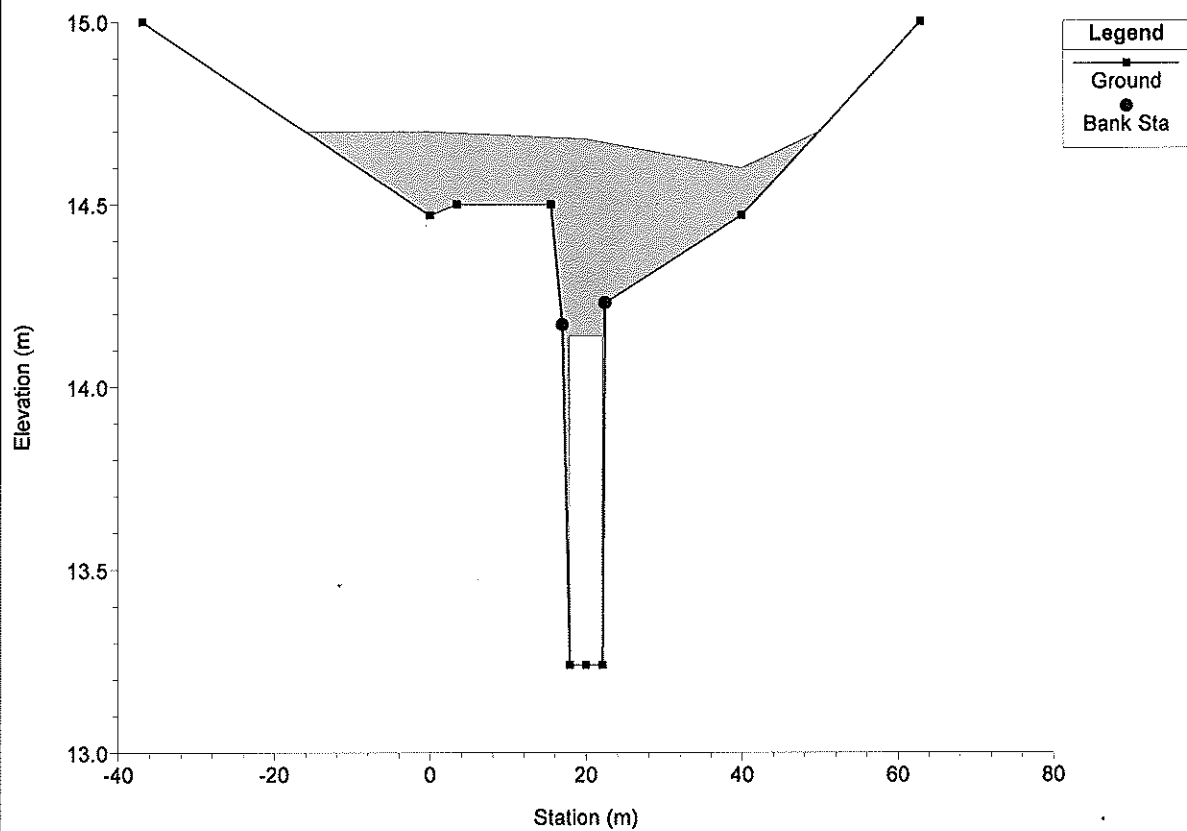
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 76



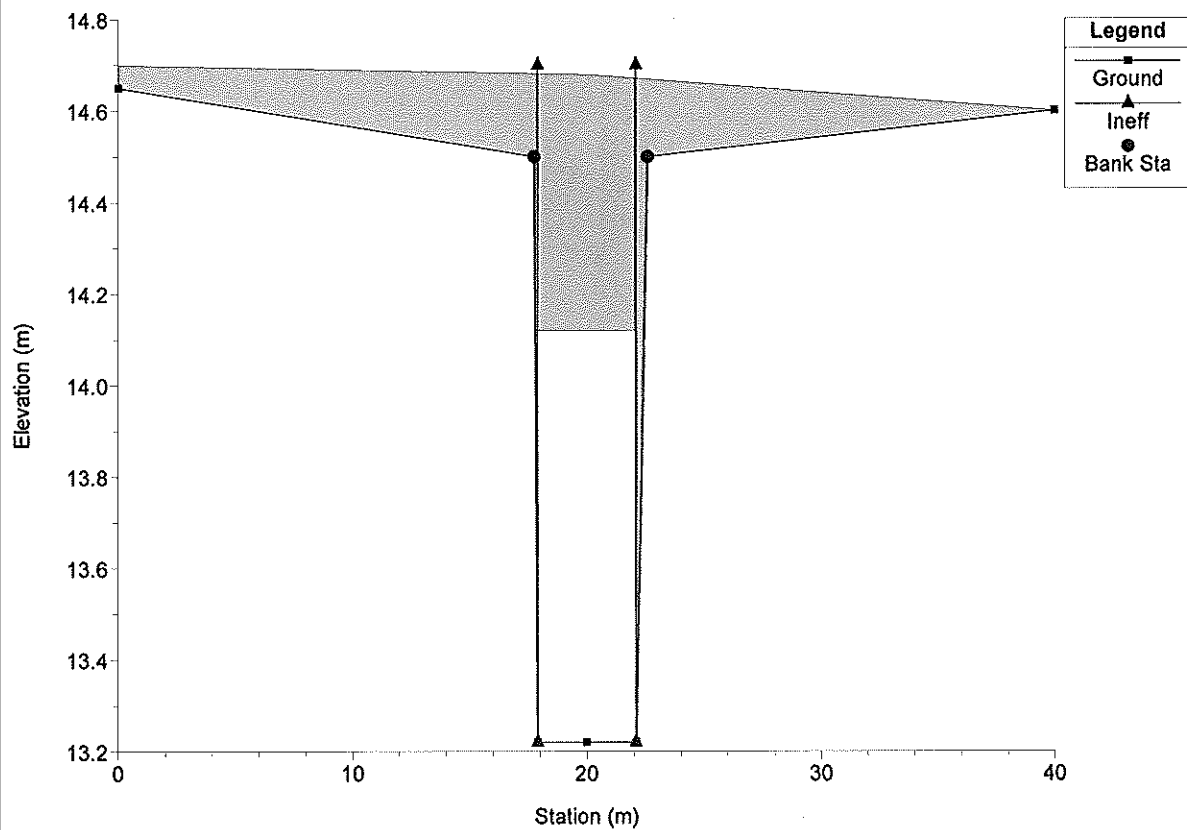
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 68



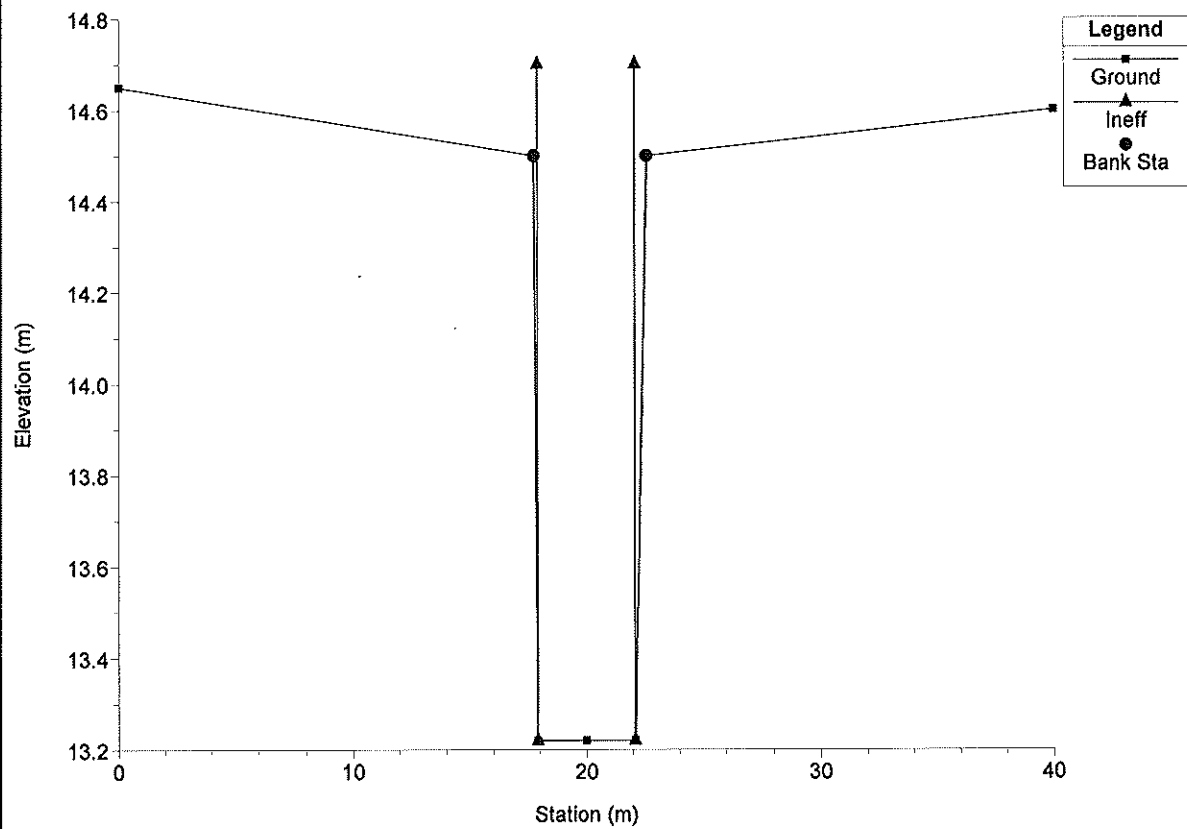
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 67 Culv Culvert under GHRd



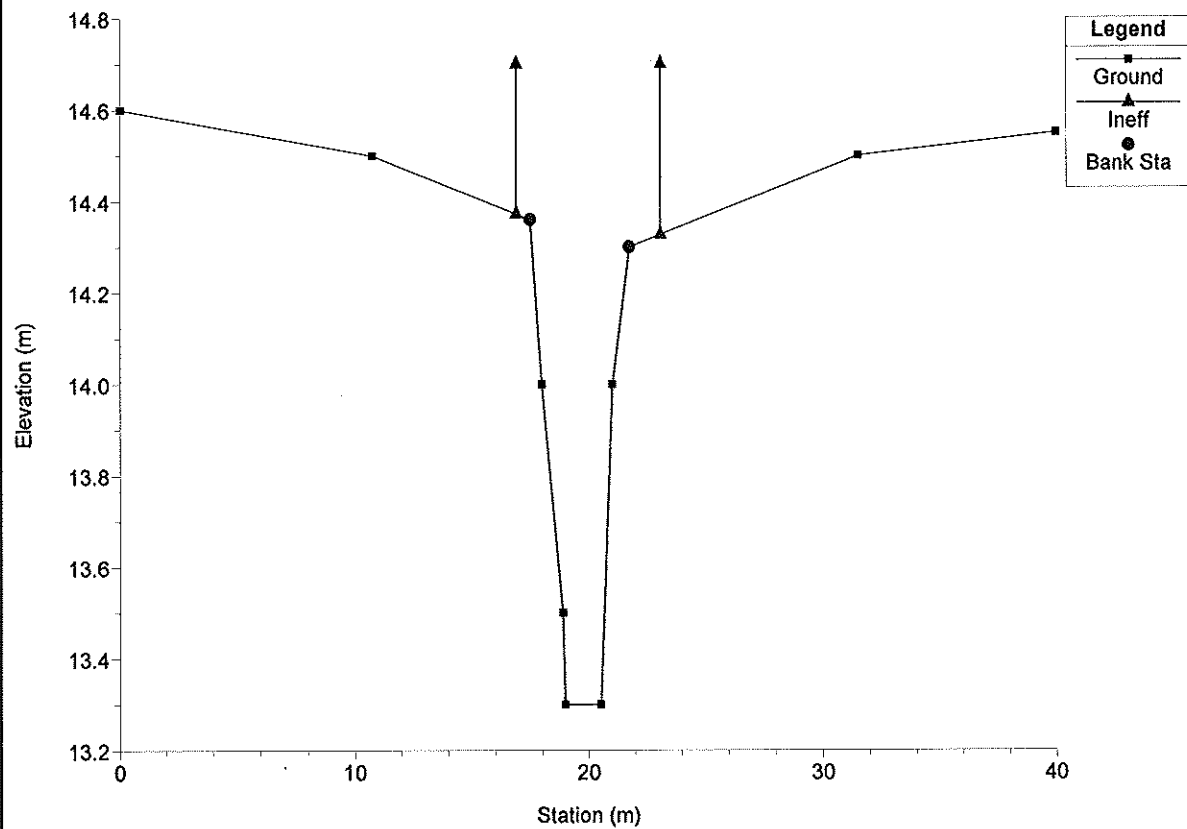
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 67 Culv Culvert under GHRd



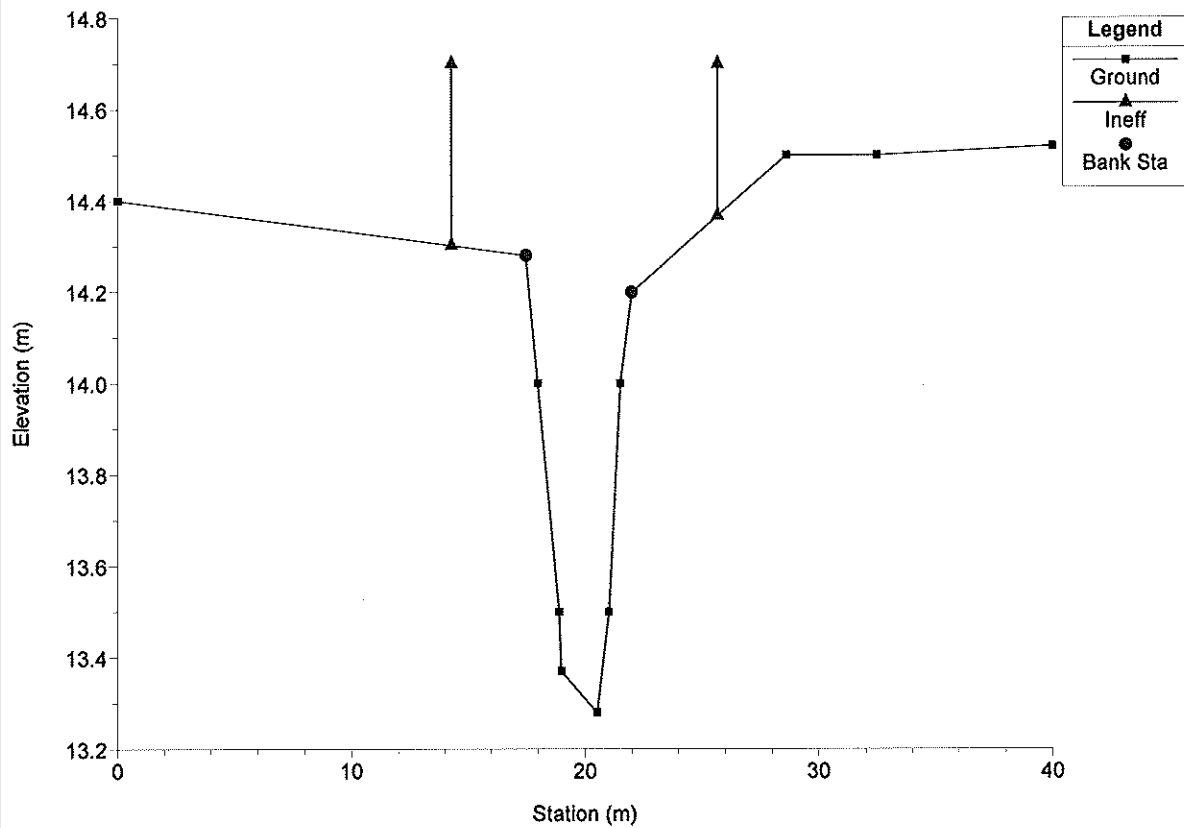
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 48 Immediately DS of Culvert



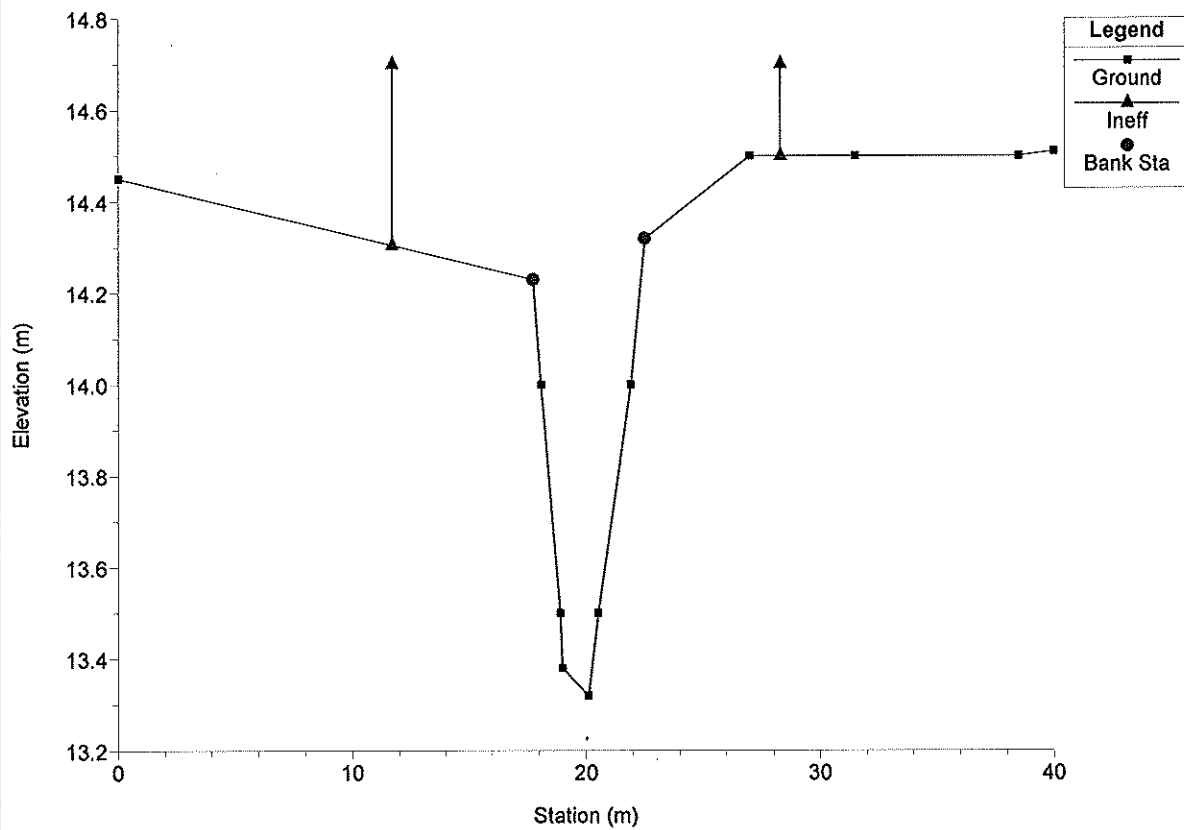
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 40



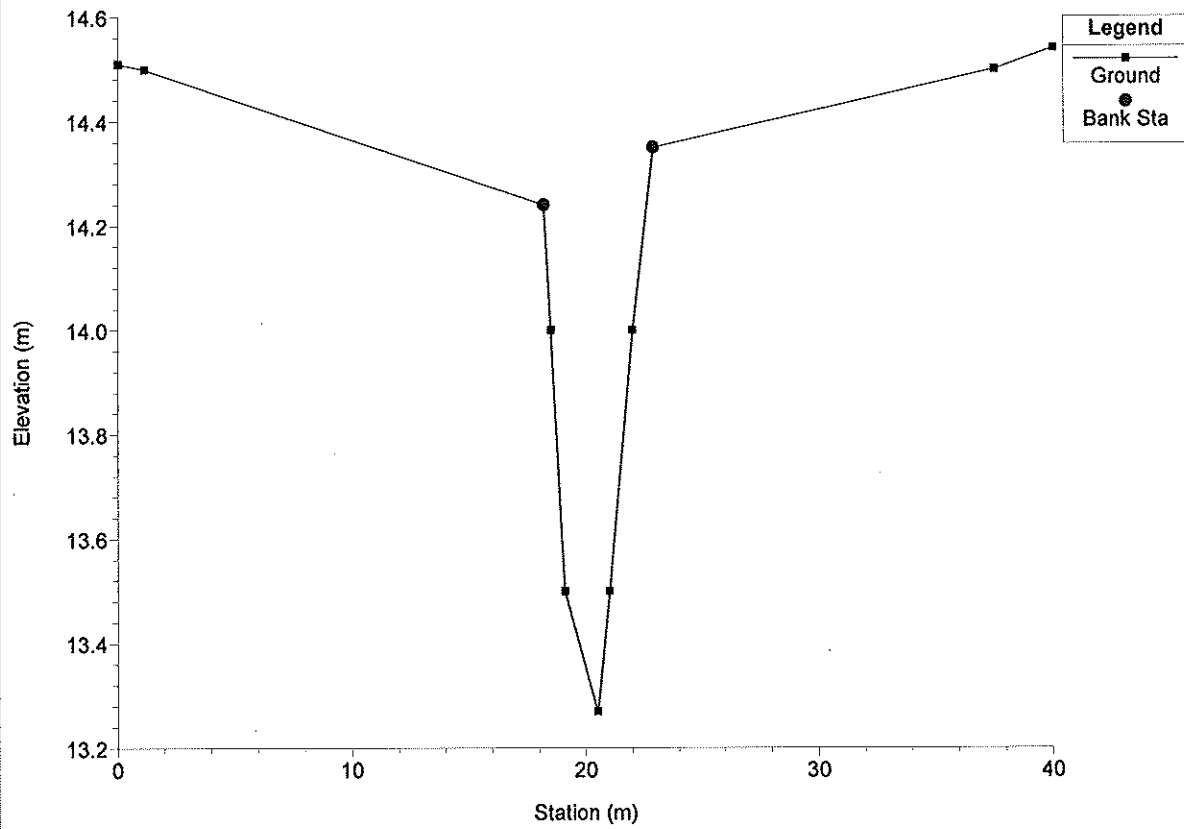
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 32



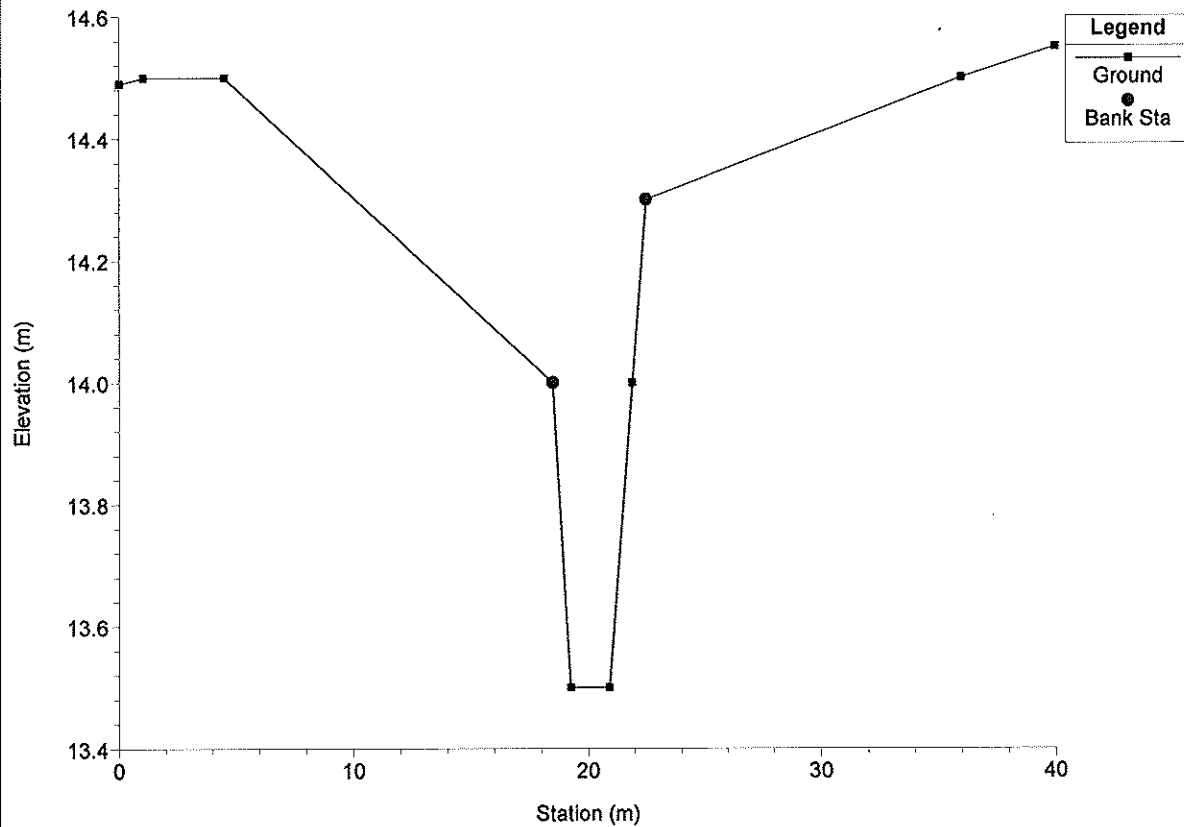
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 24



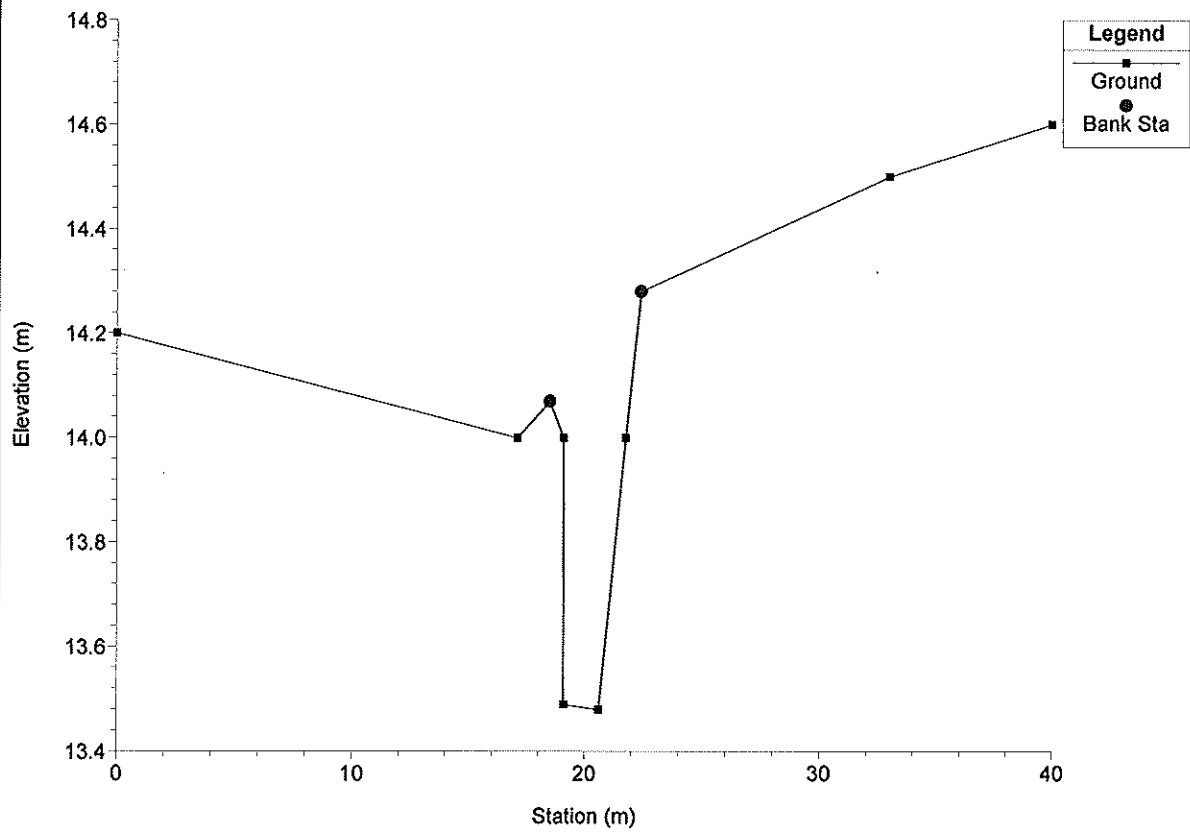
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 16



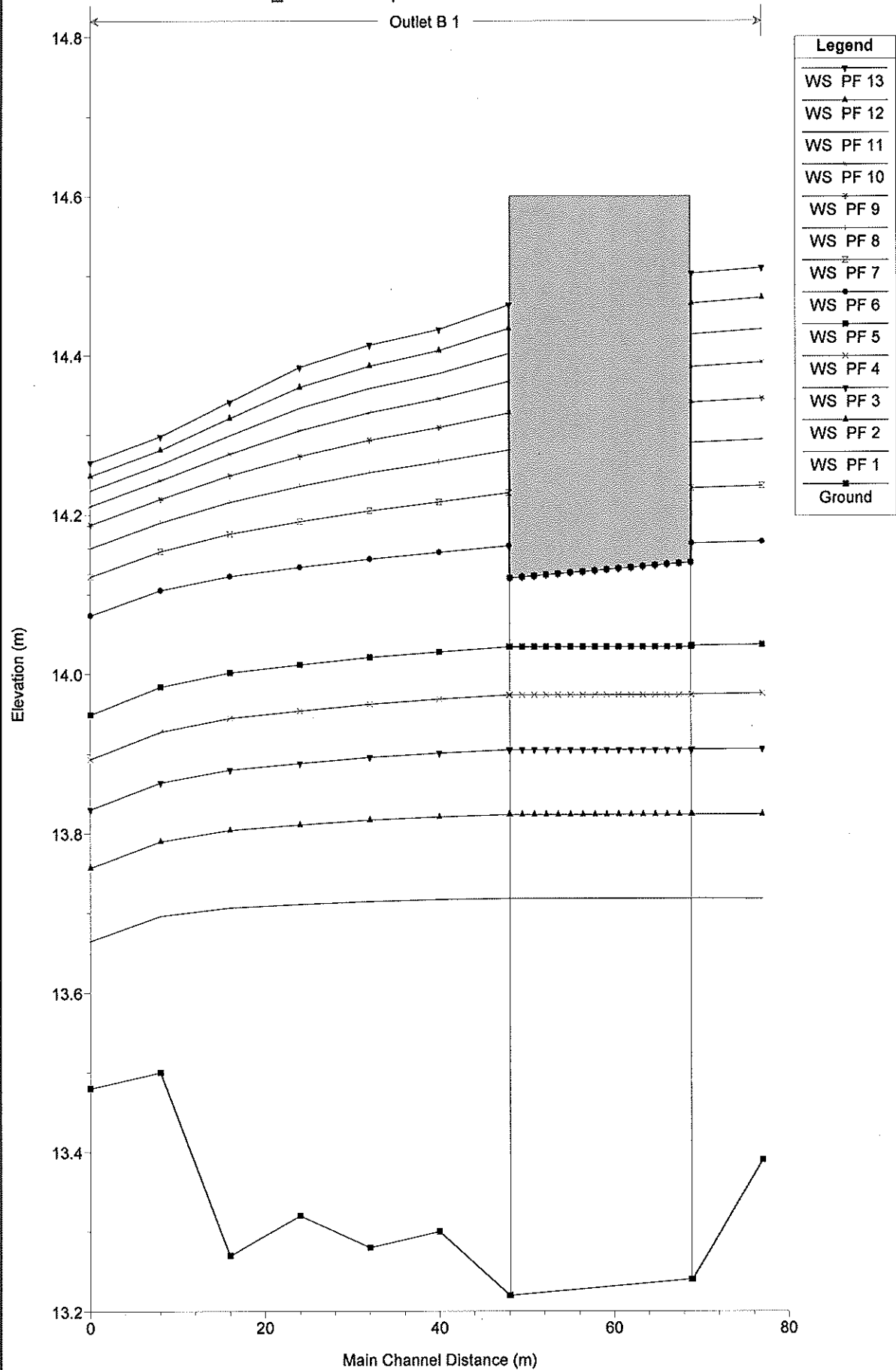
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 8



Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 0



Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010



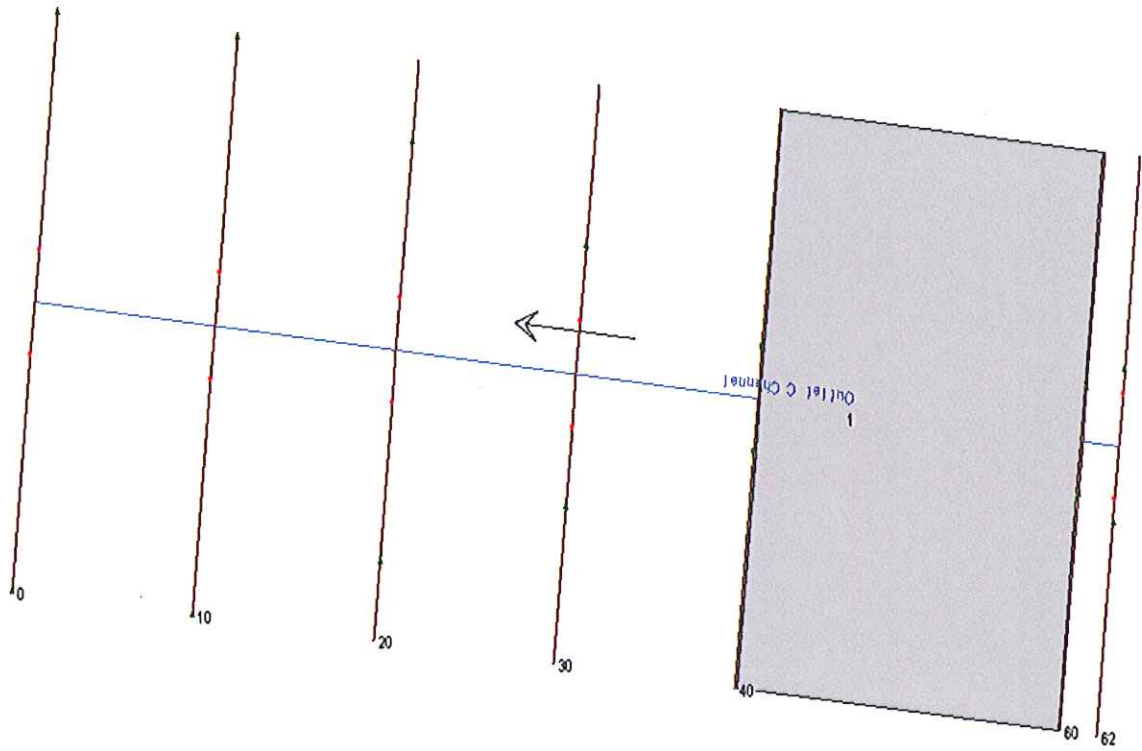
HEC-RAS Plan: B River: Outlet B Reach: 1

Reach	River Sta	Profile	Q Total (m3/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 (m2)	Top Width (m)	Froude # Chl
1	76	PF 1	0.10	13.39	13.72	13.55	13.72	0.001545	0.19	0.53	3.35	0.15
1	76	PF 2	0.20	13.39	13.82	13.60	13.83	0.001441	0.21	0.95	4.85	0.15
1	76	PF 3	0.30	13.39	13.91	13.63	13.91	0.001320	0.21	1.43	6.97	0.15
1	76	PF 4	0.40	13.39	13.98	13.66	13.98	0.001081	0.20	1.98	8.76	0.14
1	76	PF 5	0.50	13.39	14.04	13.68	14.04	0.000807	0.20	2.58	11.48	0.12
1	76	PF 6	0.75	13.39	14.17	13.73	14.17	0.000422	0.18	4.66	20.79	0.09
1	76	PF 7	1.00	13.39	14.24	13.78	14.24	0.000376	0.19	6.30	25.85	0.09
1	76	PF 8	1.25	13.39	14.29	13.81	14.30	0.000347	0.20	7.92	30.04	0.09
1	76	PF 9	1.50	13.39	14.35	13.85	14.35	0.000322	0.21	9.58	33.76	0.09
1	76	PF 10	1.75	13.39	14.39	13.88	14.39	0.000304	0.21	11.18	37.13	0.09
1	76	PF 11	2.00	13.39	14.43	13.90	14.43	0.000289	0.21	12.79	40.43	0.08
1	76	PF 12	2.25	13.39	14.47	13.92	14.47	0.000275	0.22	14.45	43.55	0.08
1	76	PF 13	2.50	13.39	14.51	13.94	14.51	0.000262	0.22	16.16	47.35	0.08
1	68	PF 1	0.10	13.24	13.72	13.28	13.72	0.000026	0.05	2.17	4.86	0.02
1	68	PF 2	0.20	13.24	13.82	13.30	13.82	0.000054	0.07	2.69	5.00	0.03
1	68	PF 3	0.30	13.24	13.91	13.32	13.91	0.000079	0.10	3.10	5.11	0.04
1	68	PF 4	0.40	13.24	13.97	13.34	13.98	0.000101	0.12	3.46	5.21	0.05
1	68	PF 5	0.50	13.24	14.04	13.35	14.04	0.000121	0.13	3.77	5.29	0.05
1	68	PF 6	0.75	13.24	14.16	13.39	14.17	0.000187	0.17	4.47	5.47	0.06
1	68	PF 7	1.00	13.24	14.23	13.42	14.24	0.000230	0.21	4.85	6.00	0.07
1	68	PF 8	1.25	13.24	14.29	13.45	14.29	0.000289	0.24	5.32	10.42	0.08
1	68	PF 9	1.50	13.24	14.34	13.47	14.34	0.000341	0.27	5.85	14.33	0.09
1	68	PF 10	1.75	13.24	14.39	13.50	14.39	0.000386	0.30	6.67	17.81	0.09
1	68	PF 11	2.00	13.24	14.43	13.52	14.43	0.000421	0.32	7.46	20.98	0.10
1	68	PF 12	2.25	13.24	14.47	13.54	14.47	0.000447	0.34	8.34	23.99	0.10
1	68	PF 13	2.50	13.24	14.50	13.56	14.51	0.000467	0.35	9.41	43.70	0.10
1	67		Culvert									
1	48	PF 1	0.10	13.22	13.72	13.26	13.72	0.000021	0.05	2.09	4.45	0.02
1	48	PF 2	0.20	13.22	13.82	13.28	13.82	0.000044	0.08	2.53	4.51	0.03
1	48	PF 3	0.30	13.22	13.90	13.30	13.91	0.000065	0.10	2.88	4.55	0.04
1	48	PF 4	0.40	13.22	13.97	13.32	13.97	0.000084	0.13	3.16	4.58	0.05
1	48	PF 5	0.50	13.22	14.03	13.33	14.03	0.000101	0.15	3.42	4.61	0.05
1	48	PF 6	0.75	13.22	14.16	13.37	14.16	0.000141	0.19	3.95	4.68	0.06
1	48	PF 7	1.00	13.22	14.23	13.40	14.23	0.000199	0.24	4.23	4.71	0.08
1	48	PF 8	1.25	13.22	14.28	13.43	14.29	0.000262	0.28	4.46	4.74	0.09
1	48	PF 9	1.50	13.22	14.33	13.46	14.33	0.000327	0.32	4.65	4.76	0.10
1	48	PF 10	1.75	13.22	14.37	13.48	14.37	0.000396	0.36	4.82	4.78	0.11
1	48	PF 11	2.00	13.22	14.40	13.50	14.41	0.000468	0.40	4.96	4.80	0.12
1	48	PF 12	2.25	13.22	14.43	13.53	14.44	0.000542	0.44	5.10	4.82	0.13
1	48	PF 13	2.50	13.22	14.46	13.55	14.48	0.000617	0.48	5.22	4.83	0.14
1	40	PF 1	0.10	13.30	13.72	13.37	13.72	0.000333	0.13	0.76	2.29	0.07
1	40	PF 2	0.20	13.30	13.82	13.42	13.82	0.000604	0.20	1.01	2.55	0.10
1	40	PF 3	0.30	13.30	13.90	13.46	13.90	0.000806	0.25	1.22	2.75	0.12
1	40	PF 4	0.40	13.30	13.97	13.49	13.97	0.000963	0.28	1.42	2.92	0.13
1	40	PF 5	0.50	13.30	14.03	13.52	14.03	0.001102	0.31	1.59	3.11	0.14
1	40	PF 6	0.75	13.30	14.15	13.58	14.16	0.001369	0.37	2.01	3.59	0.16
1	40	PF 7	1.00	13.30	14.22	13.64	14.23	0.001831	0.44	2.25	3.84	0.19
1	40	PF 8	1.25	13.30	14.27	13.69	14.28	0.002300	0.51	2.45	4.03	0.21
1	40	PF 9	1.50	13.30	14.31	13.74	14.33	0.002745	0.57	2.63	4.63	0.23
1	40	PF 10	1.75	13.30	14.35	13.78	14.37	0.003131	0.63	2.82	6.45	0.25
1	40	PF 11	2.00	13.30	14.38	13.82	14.40	0.003484	0.68	3.00	8.84	0.26
1	40	PF 12	2.25	13.30	14.41	13.86	14.43	0.003798	0.73	3.18	11.63	0.28
1	40	PF 13	2.50	13.30	14.43	13.89	14.46	0.004096	0.78	3.35	14.21	0.29
1	32	PF 1	0.10	13.28	13.71	13.40	13.72	0.000274	0.12	0.84	2.70	0.07
1	32	PF 2	0.20	13.28	13.82	13.44	13.82	0.000474	0.18	1.13	2.99	0.09
1	32	PF 3	0.30	13.28	13.90	13.47	13.90	0.000618	0.22	1.37	3.21	0.11
1	32	PF 4	0.40	13.28	13.96	13.50	13.97	0.000727	0.25	1.59	3.39	0.12
1	32	PF 5	0.50	13.28	14.02	13.53	14.02	0.000822	0.28	1.80	3.59	0.13
1	32	PF 6	0.75	13.28	14.14	13.59	14.15	0.001013	0.33	2.27	4.12	0.14
1	32	PF 7	1.00	13.28	14.20	13.63	14.21	0.001360	0.40	2.53	4.47	0.17
1	32	PF 8	1.25	13.28	14.25	13.68	14.26	0.001666	0.46	2.77	5.61	0.19
1	32	PF 9	1.50	13.28	14.29	13.72	14.31	0.001945	0.51	3.03	8.50	0.20
1	32	PF 10	1.75	13.28	14.33	13.76	14.34	0.002170	0.56	3.38	14.33	0.22
1	32	PF 11	2.00	13.28	14.38	13.79	14.38	0.002369	0.60	3.71	18.44	0.23
1	32	PF 12	2.25	13.28	14.39	13.83	14.41	0.002531	0.64	4.03	24.15	0.24
1	32	PF 13	2.50	13.28	14.41	13.86	14.43	0.002667	0.67	4.33	26.68	0.24
1	24	PF 1	0.10	13.32	13.71	13.44	13.71	0.000598	0.16	0.64	2.53	0.10
1	24	PF 2	0.20	13.32	13.81	13.49	13.81	0.000911	0.22	0.92	2.97	0.13
1	24	PF 3	0.30	13.32	13.89	13.53	13.89	0.001087	0.26	1.16	3.31	0.14
1	24	PF 4	0.40	13.32	13.95	13.56	13.96	0.001193	0.29	1.39	3.60	0.15
1	24	PF 5	0.50	13.32	14.01	13.59	14.02	0.001259	0.31	1.60	3.84	0.15
1	24	PF 6	0.75	13.32	14.13	13.65	14.14	0.001338	0.36	2.10	4.25	0.16
1	24	PF 7	1.00	13.32	14.19	13.71	14.20	0.001740	0.43	2.34	4.45	0.19
1	24	PF 8	1.25	13.32	14.24	13.75	14.25	0.002160	0.49	2.55	5.04	0.21
1	24	PF 9	1.50	13.32	14.27	13.80	14.29	0.002531	0.55	2.80	8.15	0.23
1	24	PF 10	1.75	13.32	14.31	13.83	14.32	0.002873	0.60	3.10	10.60	0.25
1	24	PF 11	2.00	13.32	14.33	13.87	14.35	0.003132	0.65	3.41	13.45	0.26

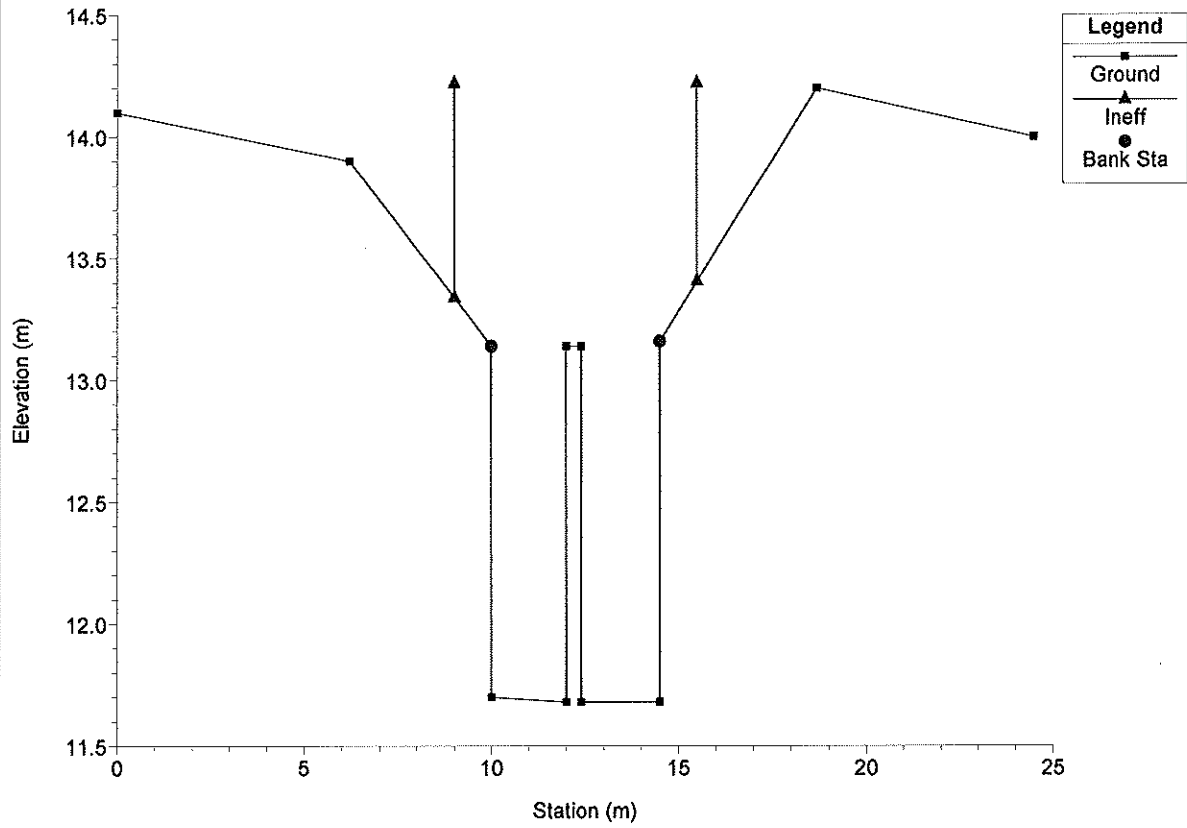
HEC-RAS Plan: B River: Outlet B Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (m3/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 (m2)	Top Width (m)	Froude # Chi
1	24	PF 12	2.25	13.32	14.38	13.90	14.38	0.003325	0.68	3.71	18.24	0.27
1	24	PF 13	2.50	13.32	14.38	13.93	14.41	0.003481	0.72	4.01	18.87	0.28
1	16	PF 1	0.10	13.27	13.71		13.71	0.000504	0.15	0.68	2.56	0.09
1	16	PF 2	0.20	13.27	13.80		13.81	0.000797	0.21	0.94	2.87	0.12
1	16	PF 3	0.30	13.27	13.88		13.88	0.000984	0.26	1.17	3.11	0.13
1	16	PF 4	0.40	13.27	13.94		13.95	0.001112	0.29	1.38	3.32	0.14
1	16	PF 5	0.50	13.27	14.00		14.01	0.001208	0.32	1.57	3.51	0.15
1	16	PF 6	0.75	13.27	14.12		14.13	0.001389	0.37	2.03	3.97	0.17
1	16	PF 7	1.00	13.27	14.18		14.19	0.001686	0.45	2.24	4.17	0.19
1	16	PF 8	1.25	13.27	14.22		14.23	0.002426	0.52	2.41	4.32	0.22
1	16	PF 9	1.50	13.27	14.25		14.27	0.002977	0.59	2.56	5.03	0.25
1	16	PF 10	1.75	13.27	14.28		14.30	0.003530	0.65	2.72	6.88	0.27
1	16	PF 11	2.00	13.27	14.30		14.33	0.004085	0.71	2.90	8.48	0.29
1	16	PF 12	2.25	13.27	14.32		14.35	0.004607	0.77	3.10	9.96	0.31
1	16	PF 13	2.50	13.27	14.34		14.38	0.005081	0.82	3.32	11.36	0.33
1	8	PF 1	0.10	13.50	13.70		13.70	0.002695	0.26	0.39	2.34	0.20
1	8	PF 2	0.20	13.50	13.79		13.80	0.002738	0.32	0.63	2.66	0.21
1	8	PF 3	0.30	13.50	13.86		13.87	0.002724	0.36	0.83	2.92	0.22
1	8	PF 4	0.40	13.50	13.93		13.94	0.002685	0.39	1.03	3.15	0.22
1	8	PF 5	0.50	13.50	13.98		13.99	0.002648	0.41	1.21	3.34	0.22
1	8	PF 6	0.75	13.50	14.10		14.11	0.002330	0.45	1.78	6.54	0.21
1	8	PF 7	1.00	13.50	14.15		14.17	0.002852	0.52	2.14	8.01	0.24
1	8	PF 8	1.25	13.50	14.19		14.21	0.003392	0.59	2.45	9.09	0.26
1	8	PF 9	1.50	13.50	14.22		14.24	0.003904	0.65	2.73	9.98	0.28
1	8	PF 10	1.75	13.50	14.24		14.27	0.004451	0.71	2.98	10.69	0.30
1	8	PF 11	2.00	13.50	14.26		14.29	0.005020	0.77	3.19	11.28	0.32
1	8	PF 12	2.25	13.50	14.28		14.31	0.005555	0.82	3.40	11.83	0.34
1	8	PF 13	2.50	13.50	14.30		14.33	0.006057	0.87	3.61	12.34	0.36
1	0	PF 1	0.10	13.48	13.66	13.56	13.67	0.005001	0.33	0.31	1.91	0.26
1	0	PF 2	0.20	13.48	13.76	13.60	13.77	0.005003	0.41	0.49	2.11	0.27
1	0	PF 3	0.30	13.48	13.83	13.64	13.84	0.005002	0.46	0.65	2.27	0.27
1	0	PF 4	0.40	13.48	13.89	13.67	13.91	0.005001	0.50	0.80	2.41	0.28
1	0	PF 5	0.50	13.48	13.95	13.70	13.96	0.005007	0.53	0.94	2.54	0.28
1	0	PF 6	0.75	13.48	14.07	13.76	14.09	0.005006	0.55	1.58	11.09	0.29
1	0	PF 7	1.00	13.48	14.12	13.81	14.14	0.005003	0.59	2.22	15.36	0.29
1	0	PF 8	1.25	13.48	14.16	13.86	14.17	0.005007	0.61	2.83	18.52	0.29
1	0	PF 9	1.50	13.48	14.19	13.90	14.20	0.005005	0.63	3.41	21.09	0.30
1	0	PF 10	1.75	13.48	14.21	13.94	14.23	0.005002	0.65	3.92	22.24	0.30
1	0	PF 11	2.00	13.48	14.23	13.98	14.25	0.005007	0.66	4.38	22.28	0.30
1	0	PF 12	2.25	13.48	14.25	14.11	14.26	0.005005	0.67	4.77	22.33	0.30
1	0	PF 13	2.50	13.48	14.27	14.13	14.28	0.005005	0.68	5.15	22.37	0.30

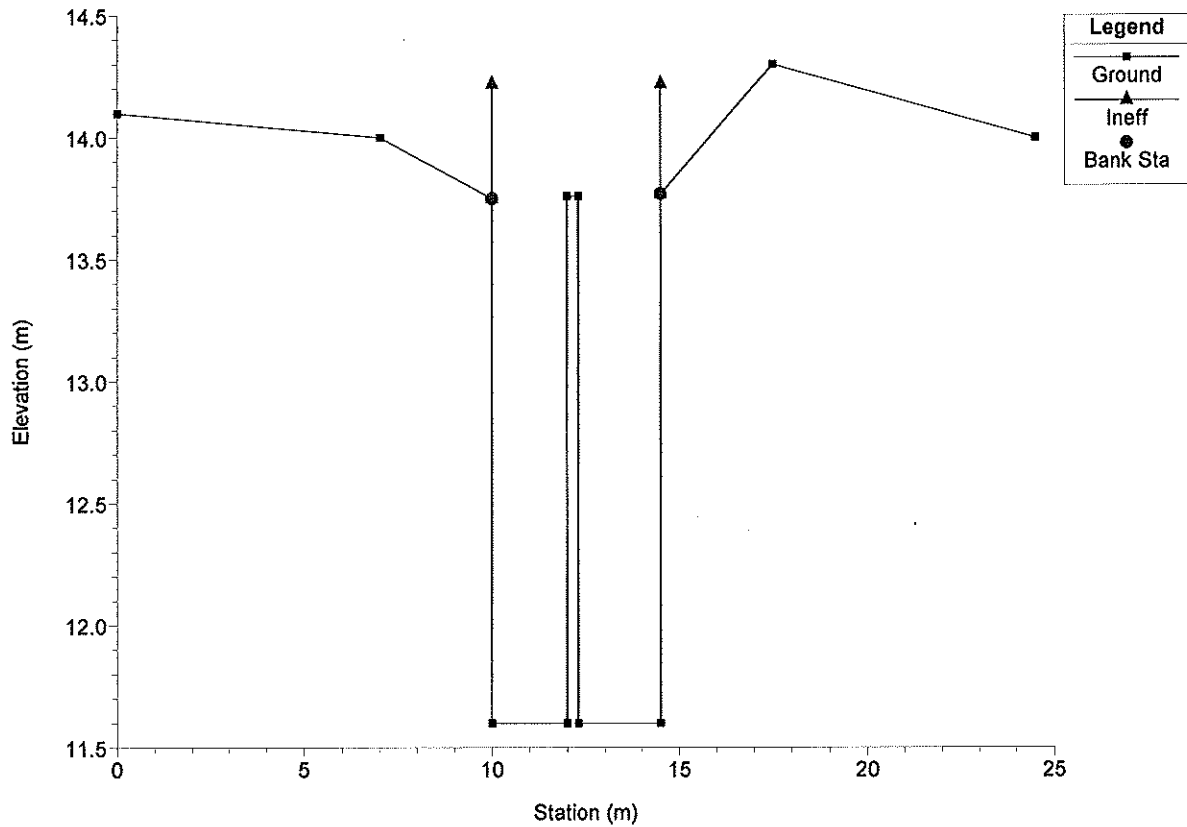
OUTLET C – HEC-RAS MODEL FILES



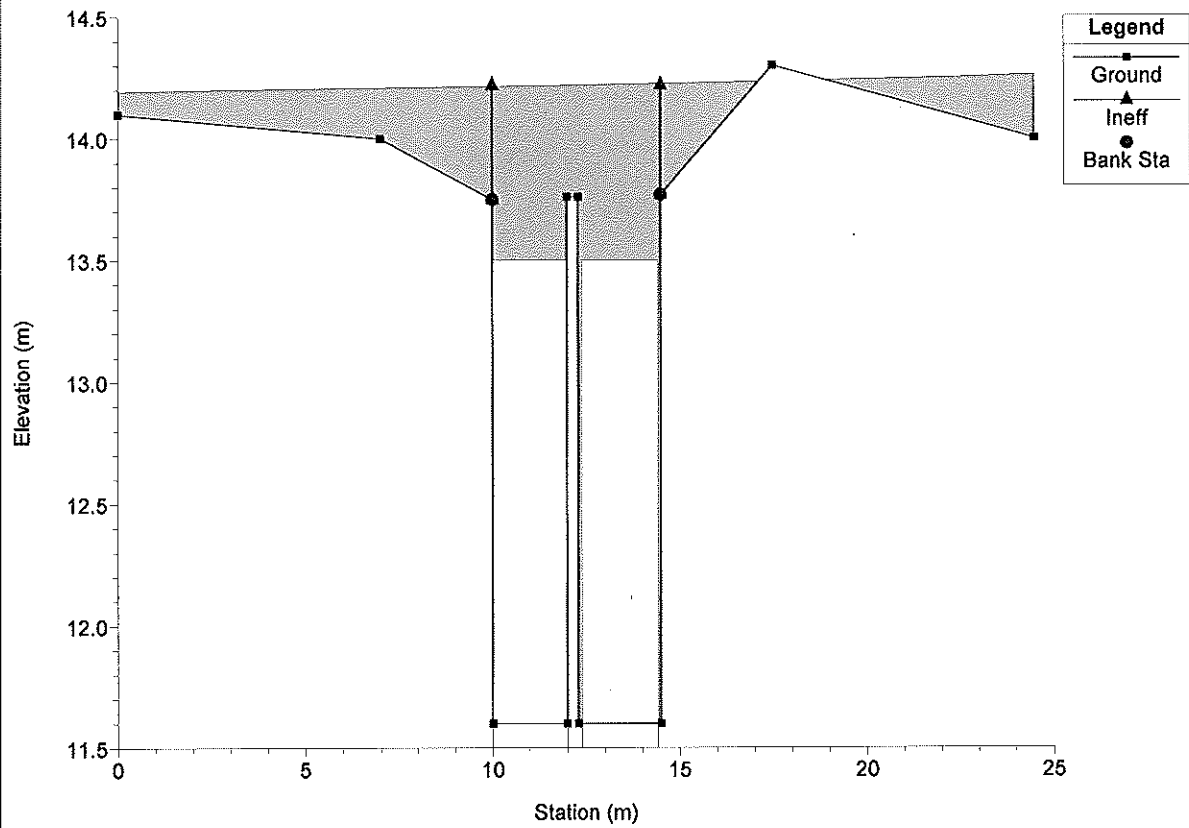
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 62



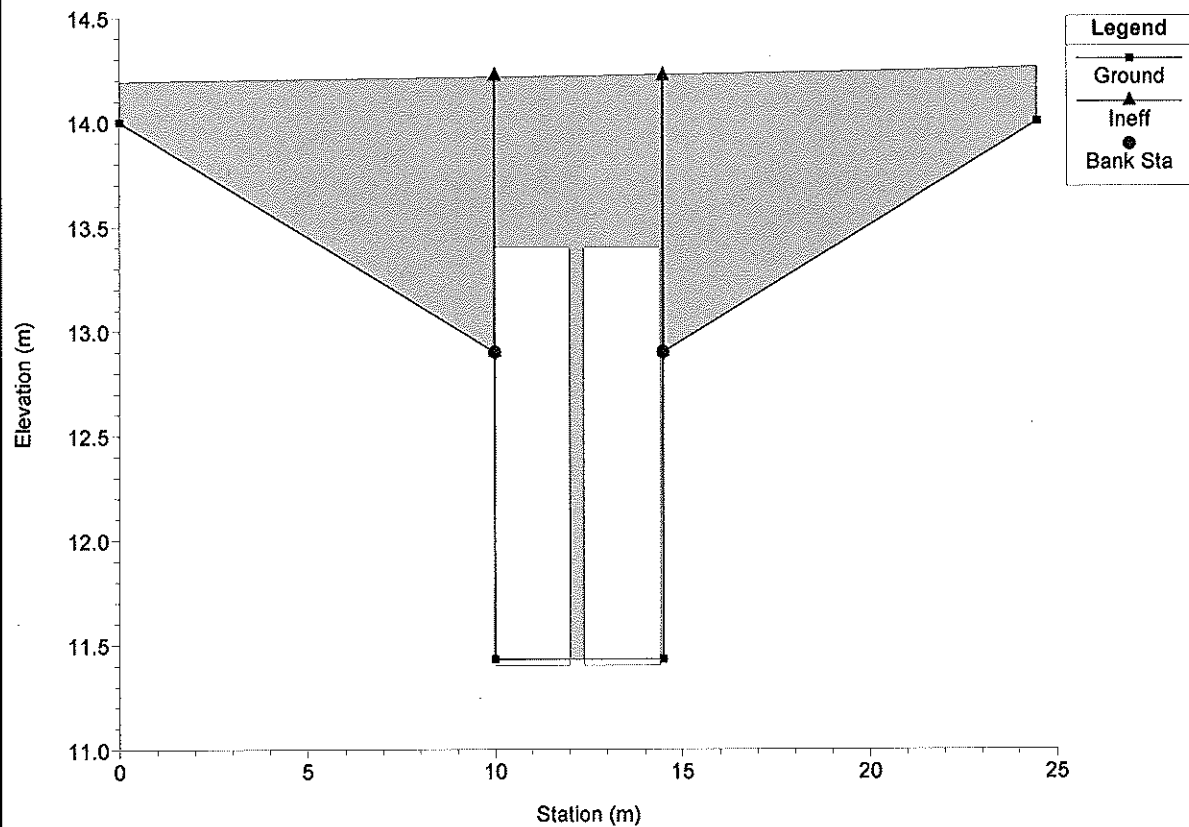
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 60



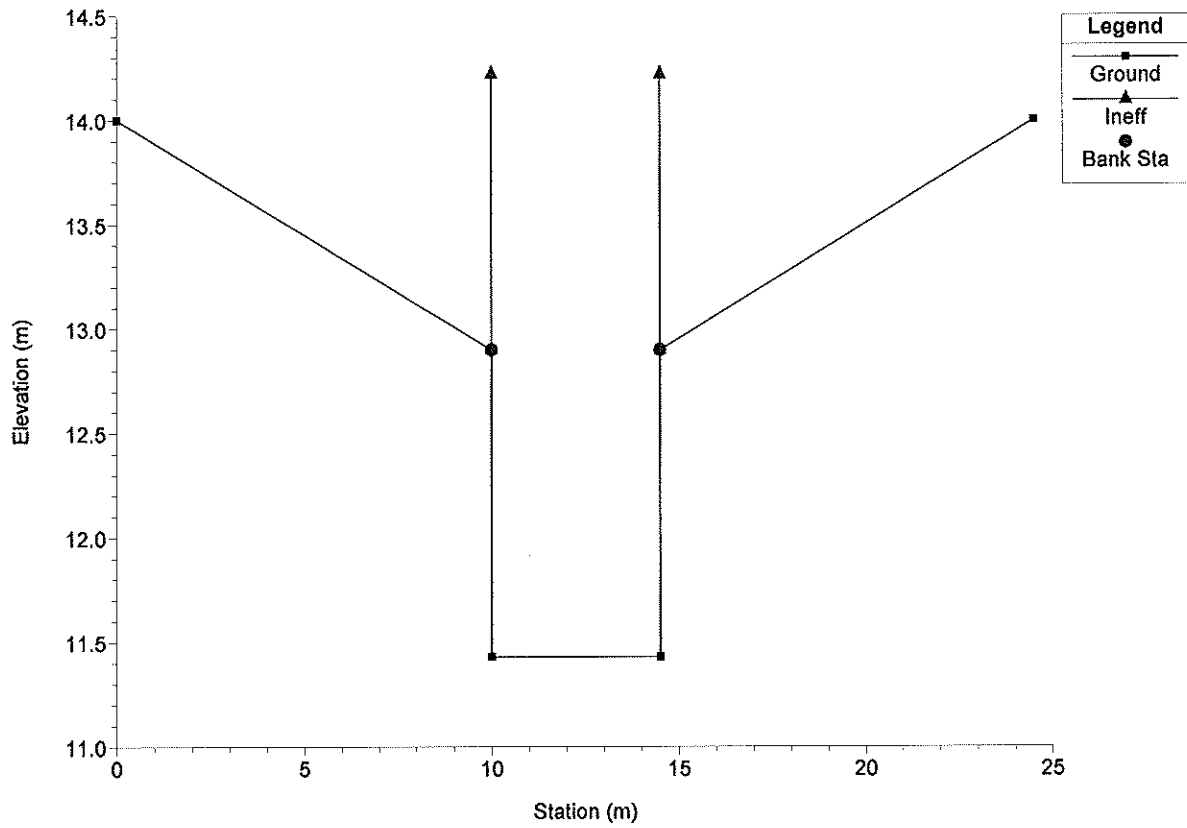
Moorebank Outlet C Plan: Plan 02 20/08/2010
 RS = 50 Culv Moorebank Ave Culvert - NW corner of site



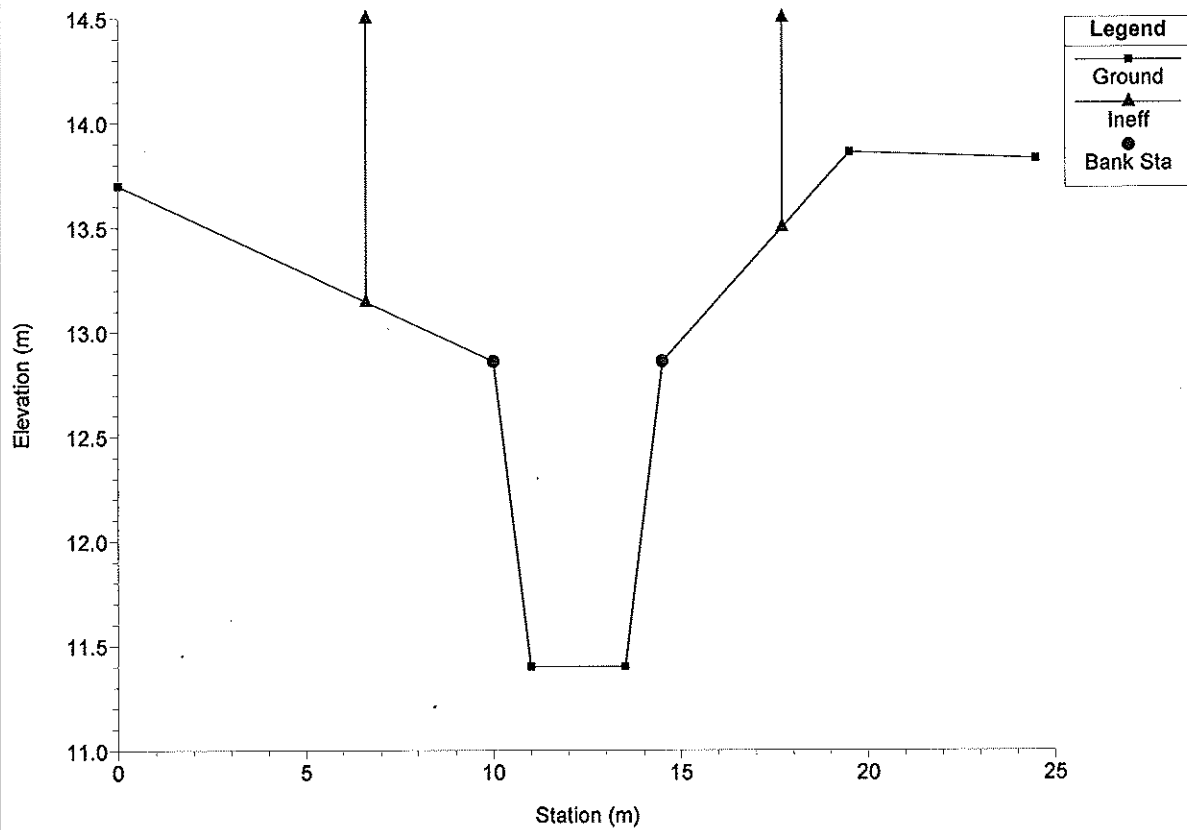
Moorebank Outlet C Plan: Plan 02 20/08/2010
 RS = 50 Culv Moorebank Ave Culvert - NW corner of site



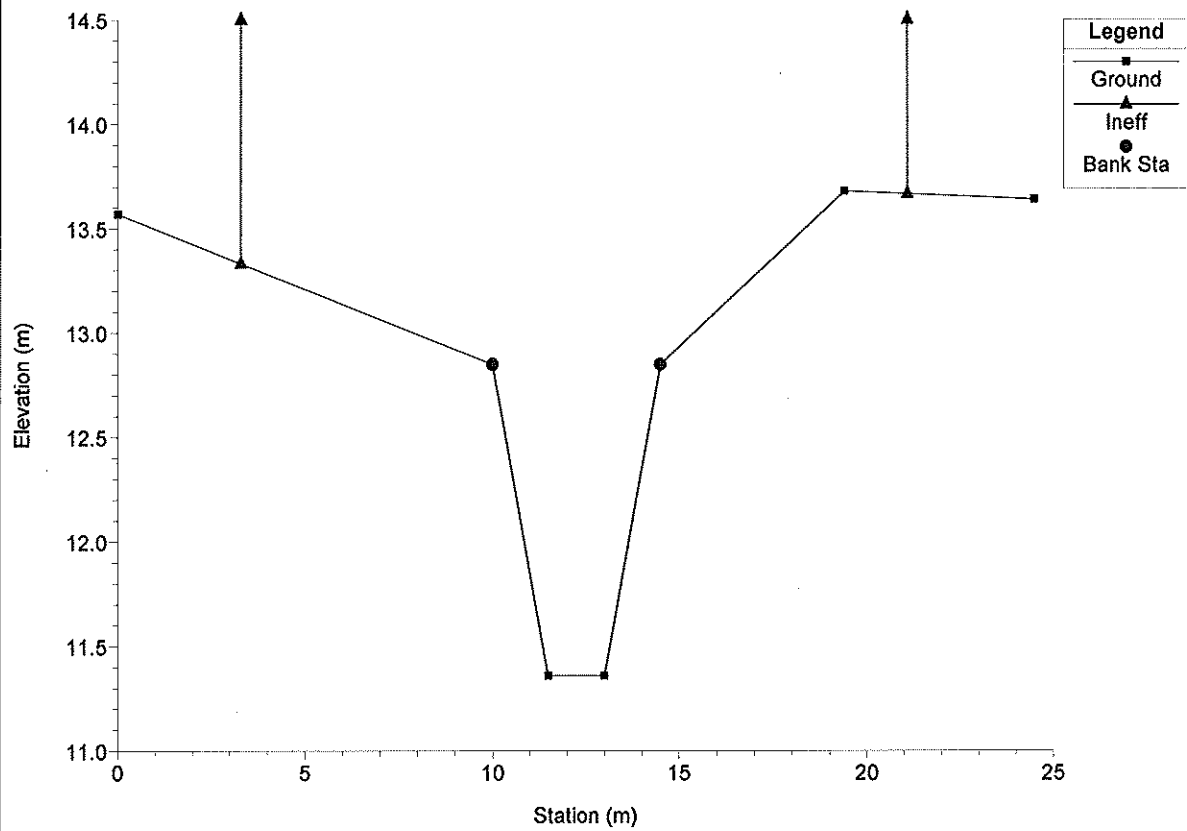
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 40



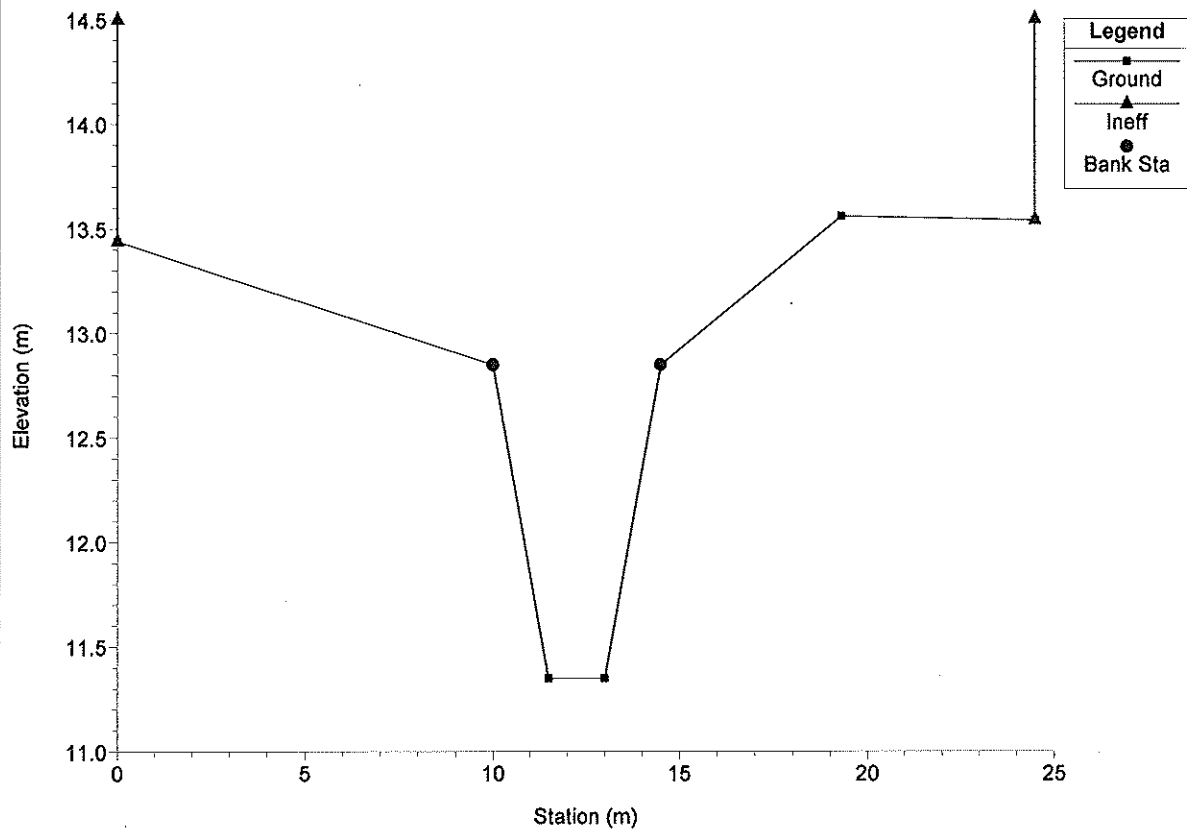
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 30



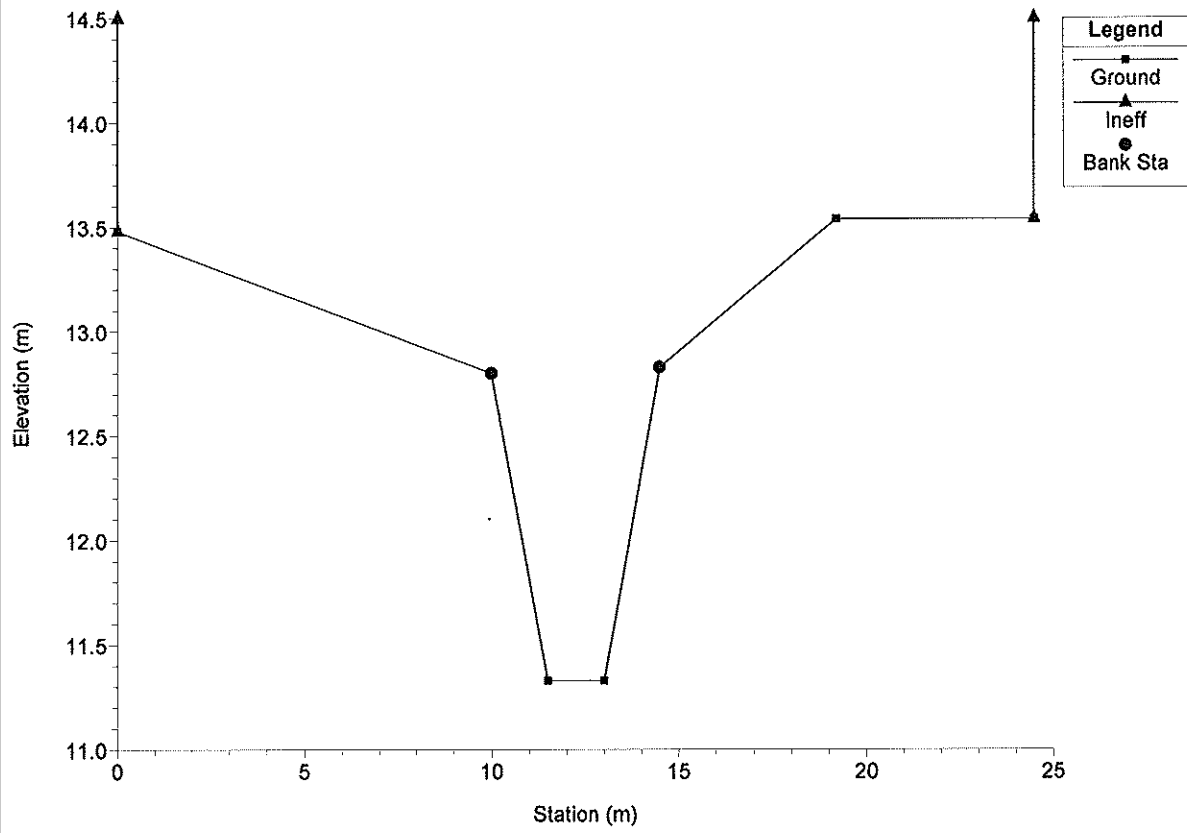
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 20



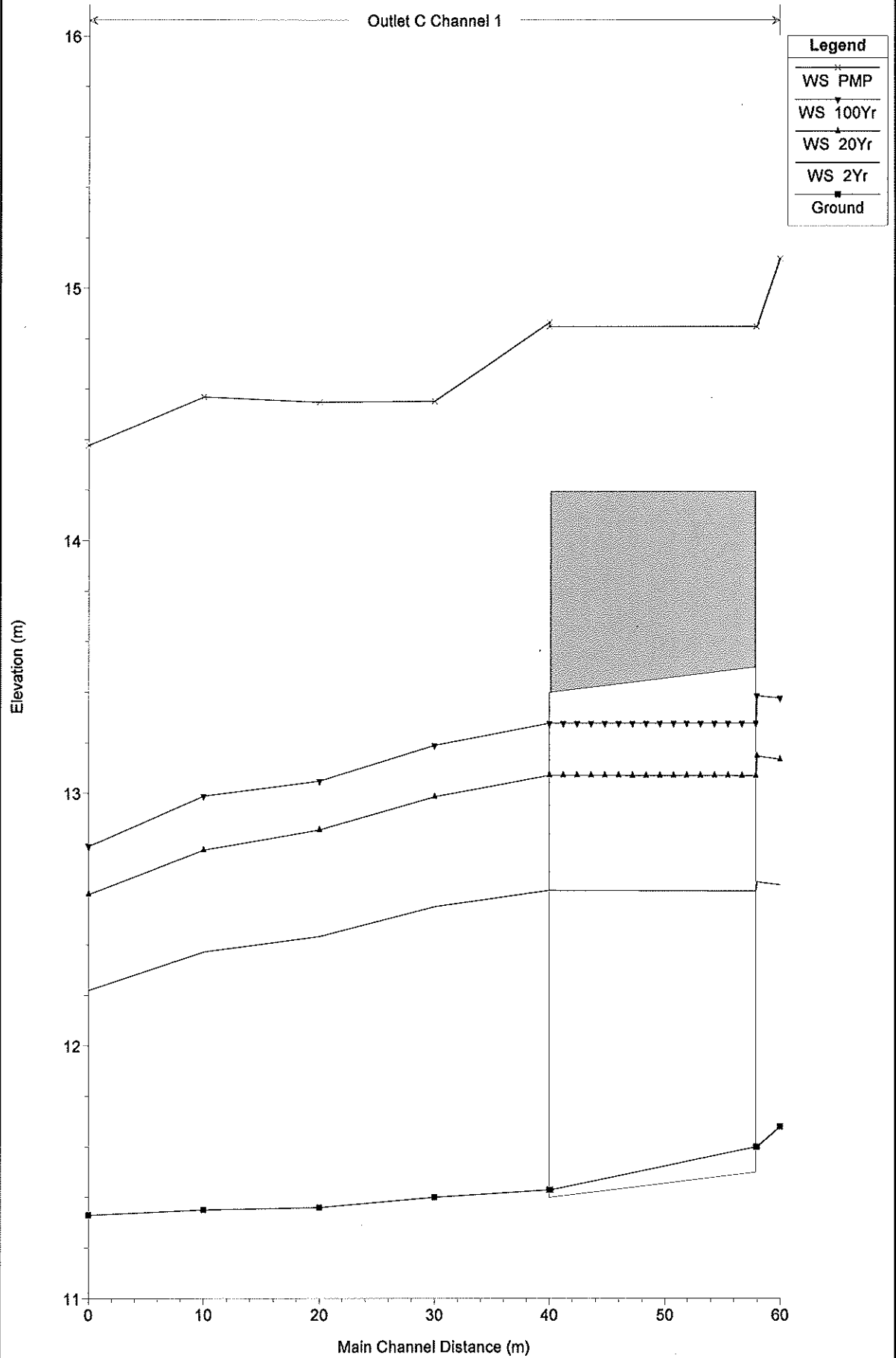
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 10



Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 0



Moorebank Outlet C Plan: Plan 02 20/08/2010



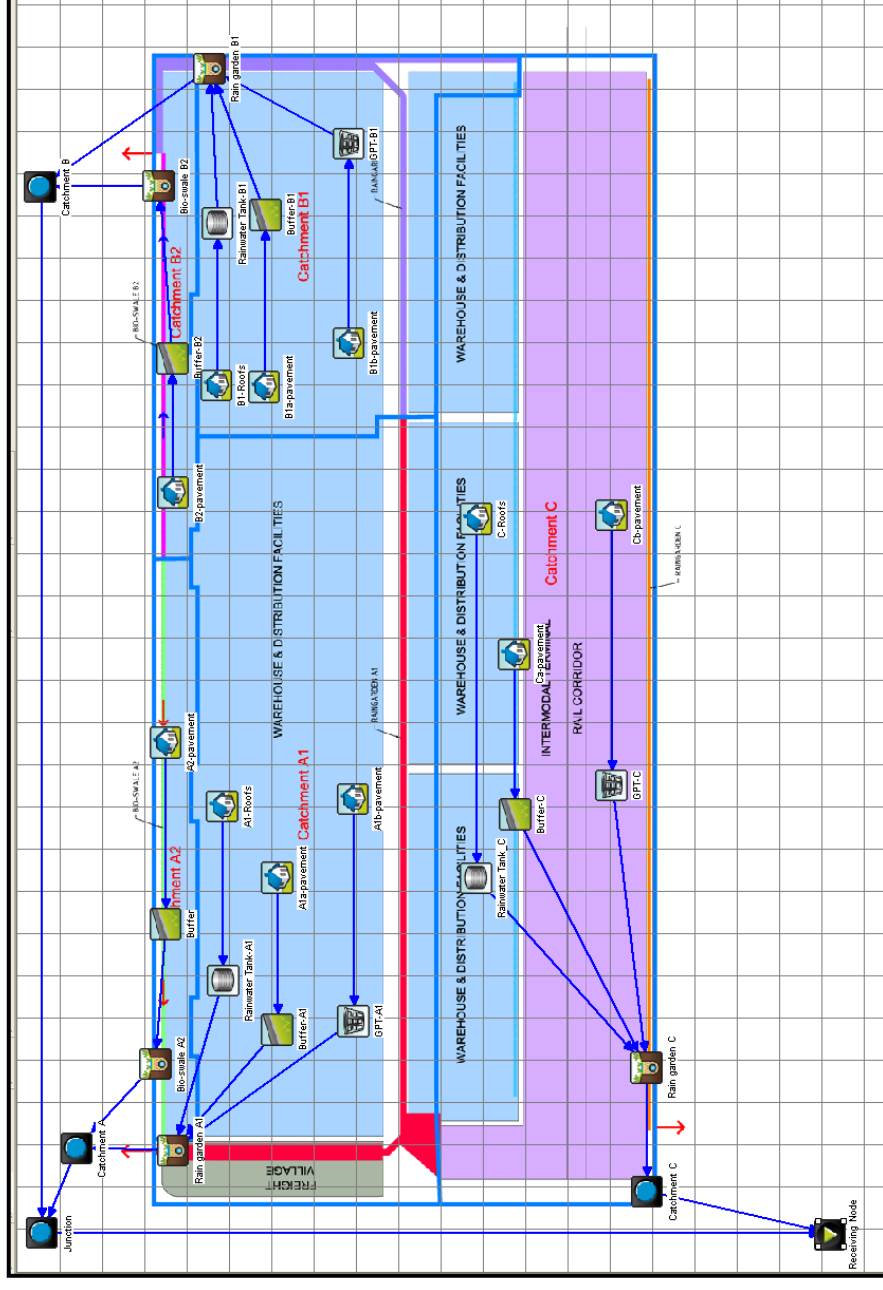
HEC-RAS Plan: T1 River: Outlet C Channel Reach: 1

Reach	River Sta	Profile	Q Total (m3/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 (m2)	Top Width (m)	Froude # Chl
1	62	2Yr	5.40	11.68	12.64	12.25	12.74	0.001956	1.38	3.91	4.10	0.45
1	62	20Yr	10.30	11.68	13.13	12.55	13.29	0.002372	1.73	5.94	4.10	0.46
1	62	100Yr	13.40	11.68	13.38	12.71	13.56	0.002413	1.90	7.26	6.56	0.49
1	62	PMP	71.00	11.68	15.12	14.76	15.49	0.002595	3.24	39.78	24.50	0.57
1	60	2Yr	5.40	11.60	12.65	12.15	12.73	0.001419	1.23	4.41	4.20	0.38
1	60	20Yr	10.30	11.60	13.15	12.44	13.28	0.001878	1.58	6.50	4.20	0.41
1	60	100Yr	13.40	11.60	13.39	12.61	13.55	0.002215	1.79	7.50	4.20	0.43
1	60	PMP	71.00	11.60	14.85	14.85	15.47	0.005678	3.92	29.80	24.50	0.71
1	50	Culvert										
1	40	2Yr	5.40	11.43	12.62	11.95	12.67	0.000573	1.01	5.34	4.50	0.30
1	40	20Yr	10.30	11.43	13.07	12.24	13.17	0.000785	1.39	7.39	7.62	0.35
1	40	100Yr	13.40	11.43	13.28	12.40	13.41	0.000895	1.61	8.32	11.37	0.38
1	40	PMP	71.00	11.43	14.87	14.37	15.23	0.001523	3.18	43.76	24.50	0.55
1	30	2Yr	5.40	11.40	12.55	12.13	12.65	0.001272	1.43	3.79	4.08	0.47
1	30	20Yr	10.30	11.40	12.99	12.48	13.15	0.001425	1.81	5.81	6.63	0.51
1	30	100Yr	13.40	11.40	13.19	12.67	13.39	0.001428	2.00	7.51	10.08	0.53
1	30	PMP	71.00	11.40	14.55	14.50	15.19	0.002478	4.09	34.95	24.50	0.78
1	20	2Yr	5.40	11.36	12.43	12.25	12.63	0.002938	1.95	2.77	3.66	0.71
1	20	20Yr	10.30	11.36	12.86	12.63	13.12	0.002896	2.29	4.50	4.62	0.73
1	20	100Yr	13.40	11.36	13.05	12.82	13.36	0.002690	2.48	5.76	8.43	0.73
1	20	PMP	71.00	11.36	14.55	14.50	15.15	0.002464	4.09	36.31	24.50	0.80
1	10	2Yr	5.40	11.35	12.37	12.24	12.60	0.003568	2.09	2.58	3.54	0.78
1	10	20Yr	10.30	11.35	12.78	12.62	13.09	0.003553	2.47	4.17	4.35	0.80
1	10	100Yr	13.40	11.35	12.99	12.81	13.33	0.003158	2.61	5.36	7.81	0.78
1	10	PMP	71.00	11.35	14.57	14.39	15.11	0.002244	3.92	38.32	24.50	0.76
1	0	2Yr	5.40	11.33	12.22	12.22	12.55	0.005941	2.62	2.14	3.30	1.00
1	0	20Yr	10.30	11.33	12.60	12.60	13.03	0.005548	2.91	3.54	4.07	1.00
1	0	100Yr	13.40	11.33	12.79	12.79	13.27	0.005391	3.08	4.35	4.45	1.00
1	0	PMP	71.00	11.33	14.38	14.38	15.07	0.002995	4.36	33.92	24.50	0.87

APPENDIX C

MUSIC MODEL LAYOUT AND PARAMETERS

Figure C1: MUSIC model layout



Rainfall

6 minute interval pluviograph data were used from the nearest BoM stations to the site. Pluviograph record from Liverpool (Whitlam Centre Station no. 067035) from 1st January 1967 through until 31 December 1976 was selected for the MUSIC modelling because this period had an average annual rainfall of 857mm, which is closest to the average annual rainfall for the Wahroonga Estate.

Potential Evapotranspiration

Average potential evapotranspiration data for Sydney is used as shown below.

Table C1 - MUSIC Model Potential Evapotranspiration (PET) Data

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PET (mm)	181	137	135	90	60	45	46	61	90	131	153	165

Input parameters

The following input parameters were used based on DRAFT NSW Music Modelling Guidelines (Aug 2010):

Table C2 - MUSIC Model MUSIC Model Pollutant Load Parameters

	Storm Flow						Base Flow					
	Total Suspended Solids		Total Phosphorus		Total Nitrogen		Total Suspended Solids		Total Phosphorus		Total Nitrogen	
Land Use	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
(all values expressed as log ₁₀ mg/l)												
General Urban / Residential	2.15	0.32	-0.60	0.25	0.30	0.19	1.2	0.17	-0.85	0.19	0.11	0.12
Road	2.430	0.32	-0.30	0.25	0.34	0.19	1.2	0.17	-0.85	0.19	0.11	0.12
Roofs	1.30	0.32	-0.89	0.25	0.30	0.19	n/a	n/a	n/a	n/a	n/a	n/a

Note: SD = Standard Deviation

Table C3 - MUSIC Model Stormwater Treatment Parameters

WSUD measure	Key parameter values
Gross Pollutant Traps (GPT)	GPTs are assumed to be non-vortex-type GPT TSS – 0% reduction TN – 0% reduction TP – 0% reduction
Bio-retention systems	Extended detention depth = variable (0.2-0.3 m). Filter depth = 0.4 m. Saturated hydraulic conductivity = variable depending on available gradient. (32-180 mm/hr) TN content of filter media = 700 mg/kg Proportion of organic material in filter > 5% Orthophosphate content of filter media < 55 mg/kg Vegetation with effective nutrient removal plants. Submerged zone = 250 mm

Table C4 - MUSIC Model Rainfall-Runoff Parameters

	Units	Urban	Road	Roofs
Impervious Area Parameters				
Rainfall Threshold	mm/day	1.0	1.0	1.0
Previous Area Parameters				
Soil Storage Capacity	mm	80	80	80
Initial Storage	% of capacity	30	30	30
Field Capacity	mm	50	50	50
Infiltration Capacity Coefficient - a		200	200	200
Infiltration Capacity Coefficient – b		1.0	1.0	1.0
Groundwater Properties				
Initial Depth	mm	10	10	10
Daily Recharge Rate	%	25	25	25
Daily Baseflow Rate	%	5.0	5.0	5.0
Daily Deep Seepage Rate		0.0	0.0	0.0

APPENDIX D

ANZAC CREEK RAFTS MODEL INPUTS AND OUTPUTS – EXISTING AND PROPOSED CONDITIONS



LEGEND

- Project Site Boundary
- Council Original RAFTS Catchment
- Hyder Adjusted RAFTS Catchment

Notes

Aerial Imagery by NearMap 2011 ©

Client
SYDNEY INTERMODAL
TERMINAL ALLIANCE

Scale: 1 : 7,000 @ A3

TUFLOW Grid Size: 5m

Datum: GDA94

Projection: MGA56

Project
MOOREBANK INTERMODAL
TERMINAL FACILITY

Title
HYDER ADJUSTED
RAFTS CATCHMENT



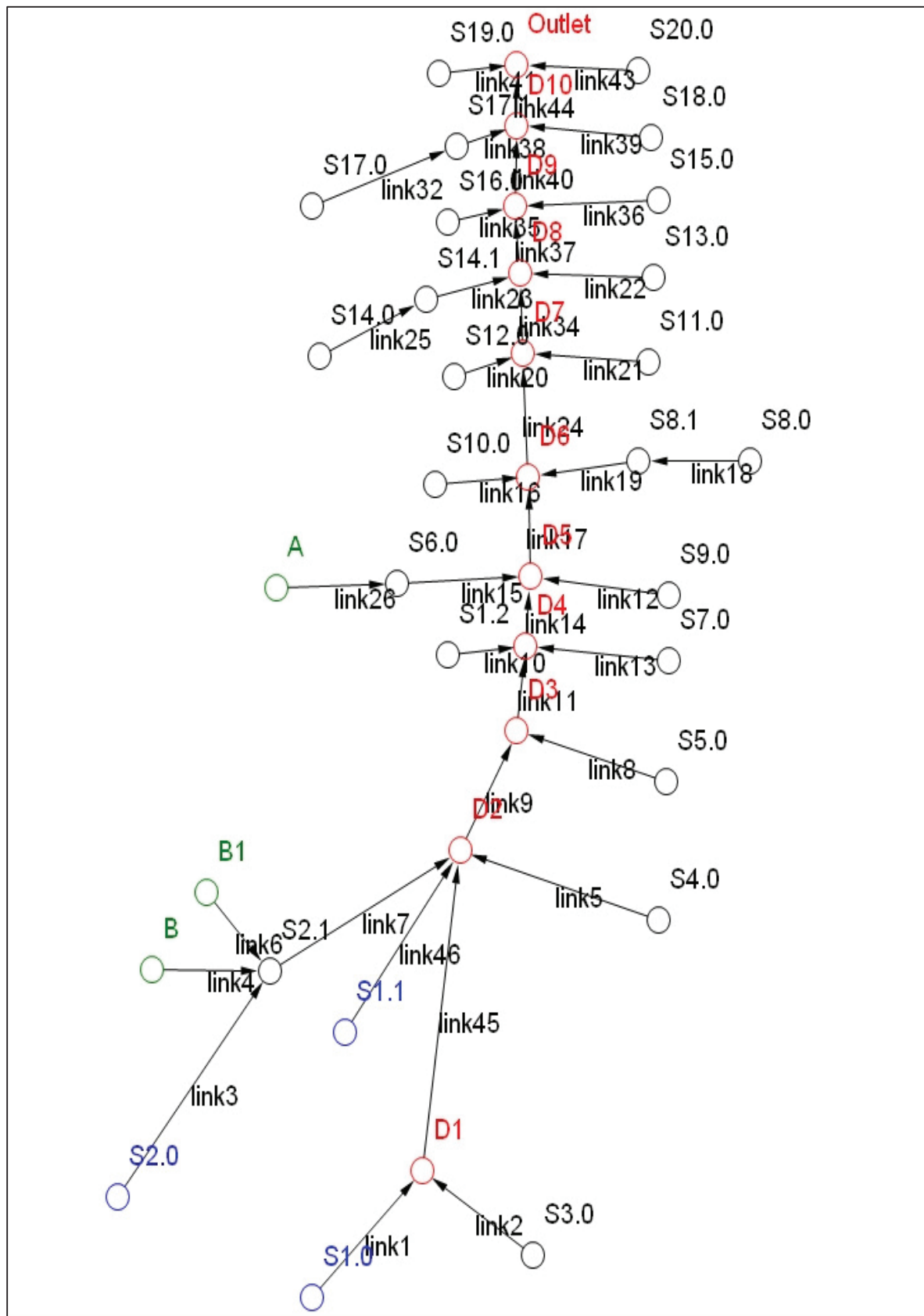
HYDER CONSULTING
PTY LTD
ABN 76 104 485 289
Level 5, 141 Walker Street
North Sydney NSW 2060
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.hyderconsulting.com
(c) Copyright reserved

Figure No
D1

Project No
AA003210



Issue
A1



Anzac Creek RAFTS Model Layout

Run started at: 6th September 2010 10:21:30

#####

RUNTIME RESULTS

#####

Max. no. of links allowed = 1500

Max. no. of routing increments allowed = 250000

Max. no. of rating curve points = 250000

Max. no. of storm temporal points = 250000

Max. no. of channel subreaches = 25

Max link stack level = 50

Input version number = 800

LINK S1.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 51.09
ESTIMATED PEAK FLOW (CUMECS) = 5.6
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK S3.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 5.074
ESTIMATED PEAK FLOW (CUMECS) = 4.0
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK D1 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 56.14
ESTIMATED PEAK FLOW (CUMECS) = 7.0
ESTIMATED TIME TO PEAK (MINS) = 30.00

LINK S2.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 6.864
ESTIMATED PEAK FLOW (CUMECS) = 0.43
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK B 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 8.645
ESTIMATED PEAK FLOW (CUMECS) = 5.1
ESTIMATED TIME TO PEAK (MINS) = 15.00

LINK B1 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 0.2985
ESTIMATED PEAK FLOW (CUMECS) = 0.61E-01
ESTIMATED TIME TO PEAK (MINS) = 26.00

LINK S2.1 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	28.81
ESTIMATED PEAK FLOW (CUMECS) =	6.8
ESTIMATED TIME TO PEAK (MINS) =	15.00

LINK S4.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	7.539
ESTIMATED PEAK FLOW (CUMECS) =	5.9
ESTIMATED TIME TO PEAK (MINS) =	15.00

LINK S1.1 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	7.297
ESTIMATED PEAK FLOW (CUMECS) =	0.46
ESTIMATED TIME TO PEAK (MINS) =	26.00

LINK D2 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	99.76
ESTIMATED PEAK FLOW (CUMECS) =	15.
ESTIMATED TIME TO PEAK (MINS) =	15.00

LINK S5.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	4.771
ESTIMATED PEAK FLOW (CUMECS) =	3.8
ESTIMATED TIME TO PEAK (MINS) =	15.00

LINK D3 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	104.4
ESTIMATED PEAK FLOW (CUMECS) =	16.
ESTIMATED TIME TO PEAK (MINS) =	22.00

LINK S1.2 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	11.55
ESTIMATED PEAK FLOW (CUMECS) =	1.1
ESTIMATED TIME TO PEAK (MINS) =	26.00

LINK S7.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	53.08
ESTIMATED PEAK FLOW (CUMECS) =	41.
ESTIMATED TIME TO PEAK (MINS) =	15.00

LINK D4 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	169.0
ESTIMATED PEAK FLOW (CUMECS) =	53.
ESTIMATED TIME TO PEAK (MINS) =	16.00

LINK S9.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	2.970
ESTIMATED PEAK FLOW (CUMECS) =	2.4
ESTIMATED TIME TO PEAK (MINS) =	15.00

LINK A 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	10.27
ESTIMATED PEAK FLOW (CUMECS) =	8.0
ESTIMATED TIME TO PEAK (MINS) =	15.00

LINK S6.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	18.38
ESTIMATED PEAK FLOW (CUMECS) =	9.1
ESTIMATED TIME TO PEAK (MINS) =	15.00

LINK D5	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		190.3
ESTIMATED PEAK FLOW (CUMECS) =		59.
ESTIMATED TIME TO PEAK (MINS) =		18.00
LINK S10.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		3.482
ESTIMATED PEAK FLOW (CUMECS) =		0.42
ESTIMATED TIME TO PEAK (MINS) =		26.00
LINK S8.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		16.26
ESTIMATED PEAK FLOW (CUMECS) =		13.
ESTIMATED TIME TO PEAK (MINS) =		15.00
LINK S8.1	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		20.02
ESTIMATED PEAK FLOW (CUMECS) =		16.
ESTIMATED TIME TO PEAK (MINS) =		15.00
LINK D6	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		213.7
ESTIMATED PEAK FLOW (CUMECS) =		72.
ESTIMATED TIME TO PEAK (MINS) =		20.00
LINK S12.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		10.58
ESTIMATED PEAK FLOW (CUMECS) =		8.3
ESTIMATED TIME TO PEAK (MINS) =		15.00
LINK S11.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		5.460
ESTIMATED PEAK FLOW (CUMECS) =		4.3
ESTIMATED TIME TO PEAK (MINS) =		15.00
LINK D7	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		229.5
ESTIMATED PEAK FLOW (CUMECS) =		76.
ESTIMATED TIME TO PEAK (MINS) =		26.00
LINK S13.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		33.99
ESTIMATED PEAK FLOW (CUMECS) =		27.
ESTIMATED TIME TO PEAK (MINS) =		15.00
LINK S14.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1.790
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK (MINS) =		14.00
LINK S14.1	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		4.452
ESTIMATED PEAK FLOW (CUMECS) =		4.1
ESTIMATED TIME TO PEAK (MINS) =		15.00
LINK D8	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		267.8
ESTIMATED PEAK FLOW (CUMECS) =		80.

ESTIMATED TIME TO PEAK	(MINS) =	28.00
LINK S16.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		19.83
ESTIMATED PEAK FLOW (CUMECS) =		23.
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK S15.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		6.374
ESTIMATED PEAK FLOW (CUMECS) =		4.4
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK D9	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		293.9
ESTIMATED PEAK FLOW (CUMECS) =		83.
ESTIMATED TIME TO PEAK	(MINS) =	30.00
LINK S17.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		28.95
ESTIMATED PEAK FLOW (CUMECS) =		28.
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK S17.1	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		39.38
ESTIMATED PEAK FLOW (CUMECS) =		40.
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK S18.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		8.864
ESTIMATED PEAK FLOW (CUMECS) =		4.8
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK D10	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		342.0
ESTIMATED PEAK FLOW (CUMECS) =		87.
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK S19.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		12.19
ESTIMATED PEAK FLOW (CUMECS) =		14.
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK S20.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		8.923
ESTIMATED PEAK FLOW (CUMECS) =		5.5
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK Outlet	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		363.0
ESTIMATED PEAK FLOW (CUMECS) =		95.
ESTIMATED TIME TO PEAK	(MINS) =	19.00

#####

Existing - 100 year re-run - Hyder Sept 2010

Results for period from 0: 0.0 1/ 1/1990
to 8:20.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 25.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 689.69
TOTAL OF SECOND SUB-AREAS (ha) = 386.68
TOTAL OF ALL SUB-AREAS (ha) = 1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area		Slope		% Impervious		Pern		B		Link No.
	#1 (ha)	#2	#1 (%)	#2	#1 (%)	#2	#1	#2	#1	#2	
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006

S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
S1.0	116.00	20.00	0.000	2.500	0.000	27.667	0.000	5.603	26.00	5.000
S3.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	4.048	15.00	5.000
D1	116.00	20.00	0.000	2.500	0.000	27.667	0.000	7.013	30.00	5.000
S2.0	116.00	20.00	0.000	2.500	0.000	27.667	0.000	0.4304	26.00	13.00
B	116.00	20.00	1.500	2.500	0.000	27.667	46.833	5.083	15.00	0.000
B1	116.00	20.00	0.000	2.500	0.000	27.667	0.000	0.0607	26.00	0.000
S2.1	116.00	20.00	1.500	2.500	0.000	27.667	46.833	6.838	15.00	0.000
S4.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	5.912	15.00	0.000
S1.1	116.00	20.00	0.000	2.500	0.000	27.667	0.000	0.4602	26.00	0.000
D2	116.00	20.00	0.000	2.500	0.000	27.667	0.000	14.985	15.00	7.000
S5.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	3.809	15.00	0.000
D3	116.00	20.00	0.000	2.500	0.000	27.667	0.000	16.384	22.00	3.000
S1.2	116.00	20.00	0.000	2.500	0.000	27.667	0.000	1.114	26.00	0.000
S7.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	41.400	15.00	1.000
D4	116.00	20.00	0.000	2.500	0.000	27.667	0.000	52.688	16.00	1.500

S9.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	2.383	15.00	0.000
A	116.00	20.00	1.500	2.500	0.000	27.667	46.833	7.999	15.00	0.000
S6.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	9.108	15.00	0.000
D5	116.00	20.00	0.000	2.500	0.000	27.667	0.000	59.249	18.00	1.500
S10.0	116.00	20.00	0.000	2.500	0.000	27.667	0.000	0.4175	26.00	0.000
S8.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	12.798	15.00	0.000
S8.1	116.00	20.00	1.500	2.500	0.000	27.667	46.833	15.756	15.00	9.000
D6	116.00	20.00	0.000	2.500	0.000	27.667	0.000	71.818	20.00	6.000
S12.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	8.315	15.00	0.000
S11.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	4.341	15.00	0.000
D7	116.00	20.00	0.000	2.500	0.000	27.667	0.000	75.502	26.00	2.500
S13.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	26.781	15.00	0.000
S14.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	2.042	14.00	0.000
S14.1	116.00	20.00	1.500	2.500	0.000	27.667	46.833	4.112	15.00	9.000
D8	116.00	20.00	0.000	2.500	0.000	27.667	0.000	80.283	28.00	2.500
S16.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	22.569	15.00	0.000
S15.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	4.366	15.00	0.000
D9	116.00	20.00	0.000	2.500	0.000	27.667	0.000	82.591	30.00	5.000
S17.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	28.209	15.00	0.000
S17.1	116.00	20.00	1.500	2.500	0.000	27.667	46.833	40.067	15.00	0.000
S18.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	4.824	15.00	0.000
D10	116.00	20.00	0.000	2.500	0.000	27.667	0.000	86.749	15.00	4.300
S19.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	13.871	15.00	0.000
S20.0	116.00	20.00	1.500	2.500	0.000	27.667	46.833	5.481	15.00	0.000
Outlet	116.00	20.00	0.000	2.500	0.000	27.667	0.000	94.559	19.00	0.000

LINK S1.0 2.000

ESTIMATED VOLUME (CU METRES*10**3) =	78.80
ESTIMATED PEAK FLOW (CUMECS) =	10.
ESTIMATED TIME TO PEAK (MINS) =	46.00

LINK S3.0 2.000

ESTIMATED VOLUME (CU METRES*10**3) =	7.176
ESTIMATED PEAK FLOW (CUMECS) =	3.4
ESTIMATED TIME TO PEAK (MINS) =	13.00

LINK D1 2.000

ESTIMATED VOLUME (CU METRES*10**3) =	85.94
ESTIMATED PEAK FLOW (CUMECS) =	12.
ESTIMATED TIME TO PEAK (MINS) =	50.00

LINK S2.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		11.12
ESTIMATED PEAK FLOW (CUMECS) =		0.83
ESTIMATED TIME TO PEAK (MINS) =		46.00
LINK B	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		12.45
ESTIMATED PEAK FLOW (CUMECS) =		4.4
ESTIMATED TIME TO PEAK (MINS) =		15.00
LINK B1	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		0.4576
ESTIMATED PEAK FLOW (CUMECS) =		0.13
ESTIMATED TIME TO PEAK (MINS) =		45.00
LINK S2.1	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		44.36
ESTIMATED PEAK FLOW (CUMECS) =		5.7
ESTIMATED TIME TO PEAK (MINS) =		15.00
LINK S4.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		10.57
ESTIMATED PEAK FLOW (CUMECS) =		5.1
ESTIMATED TIME TO PEAK (MINS) =		14.00
LINK S1.1	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		11.76
ESTIMATED PEAK FLOW (CUMECS) =		0.86
ESTIMATED TIME TO PEAK (MINS) =		46.00
LINK D2	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		152.6
ESTIMATED PEAK FLOW (CUMECS) =		16.
ESTIMATED TIME TO PEAK (MINS) =		55.00
LINK S5.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		6.747
ESTIMATED PEAK FLOW (CUMECS) =		3.2
ESTIMATED TIME TO PEAK (MINS) =		13.00
LINK D3	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		159.2
ESTIMATED PEAK FLOW (CUMECS) =		17.
ESTIMATED TIME TO PEAK (MINS) =		52.00
LINK S1.2	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		17.66
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK (MINS) =		46.00
LINK S7.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		74.95
ESTIMATED PEAK FLOW (CUMECS) =		35.
ESTIMATED TIME TO PEAK (MINS) =		15.00
LINK D4	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		251.7
ESTIMATED PEAK FLOW (CUMECS) =		43.

ESTIMATED TIME TO PEAK	(MINS) =	17.00
LINK S9.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		4.125
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK	(MINS) =	13.00
LINK A	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		14.37
ESTIMATED PEAK FLOW (CUMECS) =		6.7
ESTIMATED TIME TO PEAK	(MINS) =	16.00
LINK S6.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		26.68
ESTIMATED PEAK FLOW (CUMECS) =		7.5
ESTIMATED TIME TO PEAK	(MINS) =	16.00
LINK D5	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		282.4
ESTIMATED PEAK FLOW (CUMECS) =		51.
ESTIMATED TIME TO PEAK	(MINS) =	19.00
LINK S10.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		5.441
ESTIMATED PEAK FLOW (CUMECS) =		0.80
ESTIMATED TIME TO PEAK	(MINS) =	46.00
LINK S8.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		23.07
ESTIMATED PEAK FLOW (CUMECS) =		11.
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK S8.1	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		28.39
ESTIMATED PEAK FLOW (CUMECS) =		14.
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK D6	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		316.2
ESTIMATED PEAK FLOW (CUMECS) =		63.
ESTIMATED TIME TO PEAK	(MINS) =	22.00
LINK S12.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		14.98
ESTIMATED PEAK FLOW (CUMECS) =		7.2
ESTIMATED TIME TO PEAK	(MINS) =	15.00
LINK S11.0	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		7.730
ESTIMATED PEAK FLOW (CUMECS) =		3.7
ESTIMATED TIME TO PEAK	(MINS) =	14.00
LINK D7	2.000	
ESTIMATED VOLUME (CU METRES*10**3) =		338.6
ESTIMATED PEAK FLOW (CUMECS) =		69.
ESTIMATED TIME TO PEAK	(MINS) =	28.00
LINK S13.0	2.000	

ESTIMATED VOLUME (CU METRES*10**3) =	47.78
ESTIMATED PEAK FLOW (CUMECS) =	23.
ESTIMATED TIME TO PEAK (MINS) =	14.00
LINK S14.0	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	2.402
ESTIMATED PEAK FLOW (CUMECS) =	1.8
ESTIMATED TIME TO PEAK (MINS) =	14.00
LINK S14.1	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	6.160
ESTIMATED PEAK FLOW (CUMECS) =	3.5
ESTIMATED TIME TO PEAK (MINS) =	15.00
LINK D8	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	392.5
ESTIMATED PEAK FLOW (CUMECS) =	84.
ESTIMATED TIME TO PEAK (MINS) =	30.00
LINK S16.0	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	26.66
ESTIMATED PEAK FLOW (CUMECS) =	20.
ESTIMATED TIME TO PEAK (MINS) =	15.00
LINK S15.0	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	9.086
ESTIMATED PEAK FLOW (CUMECS) =	3.5
ESTIMATED TIME TO PEAK (MINS) =	15.00
LINK D9	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	428.1
ESTIMATED PEAK FLOW (CUMECS) =	95.
ESTIMATED TIME TO PEAK (MINS) =	33.00
LINK S17.0	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	39.80
ESTIMATED PEAK FLOW (CUMECS) =	25.
ESTIMATED TIME TO PEAK (MINS) =	15.00
LINK S17.1	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	53.80
ESTIMATED PEAK FLOW (CUMECS) =	35.
ESTIMATED TIME TO PEAK (MINS) =	15.00
LINK S18.0	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	12.86
ESTIMATED PEAK FLOW (CUMECS) =	3.8
ESTIMATED TIME TO PEAK (MINS) =	15.00
LINK D10	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	494.5
ESTIMATED PEAK FLOW (CUMECS) =	0.11E+03
ESTIMATED TIME TO PEAK (MINS) =	38.00
LINK S19.0	2.000
ESTIMATED VOLUME (CU METRES*10**3) =	16.35
ESTIMATED PEAK FLOW (CUMECS) =	12.
ESTIMATED TIME TO PEAK (MINS) =	15.00

ESTIMATED VOLUME (CU METRES*10**3) =	12.88
ESTIMATED PEAK FLOW (CUMECS) =	4.3
ESTIMATED TIME TO PEAK (MINS) =	15.00

ESTIMATED VOLUME (CU METRES*10**3) =	523.5
ESTIMATED PEAK FLOW (CUMECS) =	0.12E+03
ESTIMATED TIME TO PEAK (MINS) =	42.00

```
#####
#####
```

Existing - 100 year re-run - Hyder Sept 2010

```
Results for period from 0: 0.0 1/ 1/1990
                      to 8:20.0 1/ 1/1990
```

```
#####
#####
```

ROUTING INCREMENT (MINS)	=	1.00	
STORM DURATION (MINS)	=	45.	
RETURN PERIOD (YRS)	=	100.	
BX	=	1.0000	
TOTAL OF FIRST SUB-AREAS (ha)	=	689.69	
TOTAL OF SECOND SUB-AREAS (ha)	=	386.68	
TOTAL OF ALL SUB-AREAS (ha)	=	1076.37	

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch.	Area	Slope		% Impervious		Pern		B		Link No.
	#1 (ha)	#2	#1 (%)	#2	#1	#2	#1	#2	#1	#2	
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00

A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
Outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
S1.0	85.000	20.00	0.000	2.500	0.000	42.375	0.000	10.212	46.00	5.000
S3.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	3.444	13.00	5.000
D1	85.000	20.00	0.000	2.500	0.000	42.375	0.000	11.519	50.00	5.000
S2.0	85.000	20.00	0.000	2.500	0.000	42.375	0.000	0.8285	46.00	13.00
B	85.000	20.00	1.500	2.500	0.000	42.375	62.250	4.354	15.00	0.000
B1	85.000	20.00	0.000	2.500	0.000	42.375	0.000	0.1265	45.00	0.000
S2.1	85.000	20.00	1.500	2.500	0.000	42.375	62.250	5.665	15.00	0.000
S4.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	5.089	14.00	0.000
S1.1	85.000	20.00	0.000	2.500	0.000	42.375	0.000	0.8635	46.00	0.000

D2	85.000	20.00	0.000	2.500	0.000	42.375	0.000	15.956	55.00	7.000
S5.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	3.244	13.00	0.000
D3	85.000	20.00	0.000	2.500	0.000	42.375	0.000	16.654	52.00	3.000
S1.2	85.000	20.00	0.000	2.500	0.000	42.375	0.000	2.047	46.00	0.000
S7.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	35.468	15.00	1.000
D4	85.000	20.00	0.000	2.500	0.000	42.375	0.000	42.828	17.00	1.500
S9.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	2.000	13.00	0.000
A	85.000	20.00	1.500	2.500	0.000	42.375	62.250	6.743	16.00	0.000
S6.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	7.545	16.00	0.000
D5	85.000	20.00	0.000	2.500	0.000	42.375	0.000	51.121	19.00	1.500
S10.0	85.000	20.00	0.000	2.500	0.000	42.375	0.000	0.8003	46.00	0.000
S8.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	11.051	15.00	0.000
S8.1	85.000	20.00	1.500	2.500	0.000	42.375	62.250	13.610	15.00	9.000
D6	85.000	20.00	0.000	2.500	0.000	42.375	0.000	62.719	22.00	6.000
S12.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	7.183	15.00	0.000
S11.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	3.695	14.00	0.000
D7	85.000	20.00	0.000	2.500	0.000	42.375	0.000	68.936	28.00	2.500
S13.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	23.020	14.00	0.000
S14.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	1.793	14.00	0.000
S14.1	85.000	20.00	1.500	2.500	0.000	42.375	62.250	3.534	15.00	9.000
D8	85.000	20.00	0.000	2.500	0.000	42.375	0.000	84.452	30.00	2.500
S16.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	19.763	15.00	0.000
S15.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	3.452	15.00	0.000
D9	85.000	20.00	0.000	2.500	0.000	42.375	0.000	95.023	33.00	5.000
S17.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	24.559	15.00	0.000
S17.1	85.000	20.00	1.500	2.500	0.000	42.375	62.250	34.955	15.00	0.000
S18.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	3.816	15.00	0.000
D10	85.000	20.00	0.000	2.500	0.000	42.375	0.000	109.90	38.00	4.300
S19.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	12.162	15.00	0.000
S20.0	85.000	20.00	1.500	2.500	0.000	42.375	62.250	4.263	15.00	0.000
outlet	85.000	20.00	0.000	2.500	0.000	42.375	0.000	116.44	42.00	0.000

LINK S1.0 3.000

ESTIMATED VOLUME (CU METRES*10**3) =	95.08
ESTIMATED PEAK FLOW (CUMECS) =	13.
ESTIMATED TIME TO PEAK (MINS) =	61.00

LINK S3.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		8.409
ESTIMATED PEAK FLOW (CUMECS) =		3.9
ESTIMATED TIME TO PEAK (MINS) =		25.00
LINK D1	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		103.5
ESTIMATED PEAK FLOW (CUMECS) =		15.
ESTIMATED TIME TO PEAK (MINS) =		65.00
LINK S2.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		13.50
ESTIMATED PEAK FLOW (CUMECS) =		1.1
ESTIMATED TIME TO PEAK (MINS) =		61.00
LINK B	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		14.80
ESTIMATED PEAK FLOW (CUMECS) =		4.9
ESTIMATED TIME TO PEAK (MINS) =		25.00
LINK B1	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		0.5491
ESTIMATED PEAK FLOW (CUMECS) =		0.14
ESTIMATED TIME TO PEAK (MINS) =		52.00
LINK S2.1	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		53.49
ESTIMATED PEAK FLOW (CUMECS) =		6.8
ESTIMATED TIME TO PEAK (MINS) =		25.00
LINK S4.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		12.39
ESTIMATED PEAK FLOW (CUMECS) =		5.7
ESTIMATED TIME TO PEAK (MINS) =		25.00
LINK S1.1	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		14.31
ESTIMATED PEAK FLOW (CUMECS) =		1.1
ESTIMATED TIME TO PEAK (MINS) =		61.00
LINK D2	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		183.6
ESTIMATED PEAK FLOW (CUMECS) =		20.
ESTIMATED TIME TO PEAK (MINS) =		60.00
LINK S5.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		7.893
ESTIMATED PEAK FLOW (CUMECS) =		3.7
ESTIMATED TIME TO PEAK (MINS) =		25.00
LINK D3	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		191.3
ESTIMATED PEAK FLOW (CUMECS) =		21.
ESTIMATED TIME TO PEAK (MINS) =		67.00
LINK S1.2	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		21.46

ESTIMATED PEAK FLOW	(CUMECS) =	2.6
ESTIMATED TIME TO PEAK	(MINS) =	61.00
LINK S7.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		87.80
ESTIMATED PEAK FLOW	(CUMECS) =	39.
ESTIMATED TIME TO PEAK	(MINS) =	25.00
LINK D4	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		300.5
ESTIMATED PEAK FLOW	(CUMECS) =	52.
ESTIMATED TIME TO PEAK	(MINS) =	26.00
LINK S9.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		4.865
ESTIMATED PEAK FLOW	(CUMECS) =	2.3
ESTIMATED TIME TO PEAK	(MINS) =	25.00
LINK A	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		16.85
ESTIMATED PEAK FLOW	(CUMECS) =	7.4
ESTIMATED TIME TO PEAK	(MINS) =	25.00
LINK S6.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		31.69
ESTIMATED PEAK FLOW	(CUMECS) =	8.6
ESTIMATED TIME TO PEAK	(MINS) =	25.00
LINK D5	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		337.0
ESTIMATED PEAK FLOW	(CUMECS) =	60.
ESTIMATED TIME TO PEAK	(MINS) =	28.00
LINK S10.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		6.514
ESTIMATED PEAK FLOW	(CUMECS) =	1.0
ESTIMATED TIME TO PEAK	(MINS) =	61.00
LINK S8.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		27.07
ESTIMATED PEAK FLOW	(CUMECS) =	12.
ESTIMATED TIME TO PEAK	(MINS) =	25.00
LINK S8.1	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		33.33
ESTIMATED PEAK FLOW	(CUMECS) =	15.
ESTIMATED TIME TO PEAK	(MINS) =	25.00
LINK D6	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		376.7
ESTIMATED PEAK FLOW	(CUMECS) =	69.
ESTIMATED TIME TO PEAK	(MINS) =	30.00
LINK S12.0	3.000	
ESTIMATED VOLUME (CU METRES*10**3) =		17.55
ESTIMATED PEAK FLOW	(CUMECS) =	8.0
ESTIMATED TIME TO PEAK	(MINS) =	25.00
LINK S11.0	3.000	

ESTIMATED VOLUME (CU METRES*10**3) =	9.058
ESTIMATED PEAK FLOW (CUMECS) =	4.2
ESTIMATED TIME TO PEAK (MINS) =	24.00
LINK D7	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	403.1
ESTIMATED PEAK FLOW (CUMECS) =	75.
ESTIMATED TIME TO PEAK (MINS) =	36.00
LINK S13.0	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	56.04
ESTIMATED PEAK FLOW (CUMECS) =	26.
ESTIMATED TIME TO PEAK (MINS) =	24.00
LINK S14.0	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	2.770
ESTIMATED PEAK FLOW (CUMECS) =	1.9
ESTIMATED TIME TO PEAK (MINS) =	24.00
LINK S14.1	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	7.157
ESTIMATED PEAK FLOW (CUMECS) =	3.9
ESTIMATED TIME TO PEAK (MINS) =	25.00
LINK D8	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	466.1
ESTIMATED PEAK FLOW (CUMECS) =	87.
ESTIMATED TIME TO PEAK (MINS) =	39.00
LINK S16.0	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	30.70
ESTIMATED PEAK FLOW (CUMECS) =	21.
ESTIMATED TIME TO PEAK (MINS) =	25.00
LINK S15.0	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	10.71
ESTIMATED PEAK FLOW (CUMECS) =	4.4
ESTIMATED TIME TO PEAK (MINS) =	25.00
LINK D9	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	507.4
ESTIMATED PEAK FLOW (CUMECS) =	96.
ESTIMATED TIME TO PEAK (MINS) =	42.00
LINK S17.0	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	46.21
ESTIMATED PEAK FLOW (CUMECS) =	27.
ESTIMATED TIME TO PEAK (MINS) =	25.00
LINK S17.1	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	62.36
ESTIMATED PEAK FLOW (CUMECS) =	38.
ESTIMATED TIME TO PEAK (MINS) =	25.00
LINK S18.0	3.000
ESTIMATED VOLUME (CU METRES*10**3) =	15.17
ESTIMATED PEAK FLOW (CUMECS) =	4.9
ESTIMATED TIME TO PEAK (MINS) =	25.00

```

LINK D10                3.000

ESTIMATED VOLUME (CU METRES*10**3) =          584.7
ESTIMATED PEAK FLOW      (CUMECS) =           0.11E+03
ESTIMATED TIME TO PEAK   (MINS) =            47.00

LINK S19.0              3.000

ESTIMATED VOLUME (CU METRES*10**3) =          18.86
ESTIMATED PEAK FLOW      (CUMECS) =            13.
ESTIMATED TIME TO PEAK   (MINS) =            25.00

LINK S20.0              3.000

ESTIMATED VOLUME (CU METRES*10**3) =          15.23
ESTIMATED PEAK FLOW      (CUMECS) =             5.7
ESTIMATED TIME TO PEAK   (MINS) =            25.00

LINK Outlet             3.000

ESTIMATED VOLUME (CU METRES*10**3) =          618.6
ESTIMATED PEAK FLOW      (CUMECS) =           0.11E+03
ESTIMATED TIME TO PEAK   (MINS) =            51.00

```


 #####

Existing - 100 year re-run - Hyder Sept 2010

Results for period from 0: 0.0 1/ 1/1990
 to 8:20.0 1/ 1/1990

 #####

```

ROUTING INCREMENT (MINS) =          1.00
STORM DURATION (MINS)   =           60.
RETURN PERIOD (YRS)     =          100.
BX                       =          1.0000
TOTAL OF FIRST SUB-AREAS (ha) =        689.69
TOTAL OF SECOND SUB-AREAS (ha) =        386.68
TOTAL OF ALL SUB-AREAS (ha) =       1076.37

```

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link Label	Catch. #1	Area #2	Slope #1	% Impervious #2	Pern #1	B #2	Link No.				
	(ha)		(%)	(%)							
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	1.000				
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	2.000				
D1	.00001	0.000	.0010	0.000	0.000	0.000	1.001				
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	3.000				
B	17.350	8.701	.5000	.5000	0.000	100.0	4.000				
B1	1.073	0.000	.5000	0.000	5.000	0.000	5.000				
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	3.001				
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	6.000				
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	7.000				
D2	.00001	0.000	.0010	0.000	0.000	0.000	1.002				

S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
S1.0	73.000	20.00	0.000	2.500	0.000	51.083	0.000	13.314	61.00	5.000
S3.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	3.915	25.00	5.000

D1	73.000	20.00	0.000	2.500	0.000	51.083	0.000	14.534	65.00	5.000
S2.0	73.000	20.00	0.000	2.500	0.000	51.083	0.000	1.085	61.00	13.00
B	73.000	20.00	1.500	2.500	0.000	51.083	71.500	4.865	25.00	0.000
B1	73.000	20.00	0.000	2.500	0.000	51.083	0.000	0.1435	52.00	0.000
S2.1	73.000	20.00	1.500	2.500	0.000	51.083	71.500	6.769	25.00	0.000
S4.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	5.653	25.00	0.000
S1.1	73.000	20.00	0.000	2.500	0.000	51.083	0.000	1.128	61.00	0.000
D2	73.000	20.00	0.000	2.500	0.000	51.083	0.000	20.320	60.00	7.000
S5.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	3.687	25.00	0.000
D3	73.000	20.00	0.000	2.500	0.000	51.083	0.000	21.029	67.00	3.000
S1.2	73.000	20.00	0.000	2.500	0.000	51.083	0.000	2.592	61.00	0.000
S7.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	38.608	25.00	1.000
D4	73.000	20.00	0.000	2.500	0.000	51.083	0.000	51.865	26.00	1.500
S9.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	2.307	25.00	0.000
A	73.000	20.00	1.500	2.500	0.000	51.083	71.500	7.373	25.00	0.000
S6.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	8.591	25.00	0.000
D5	73.000	20.00	0.000	2.500	0.000	51.083	0.000	59.538	28.00	1.500
S10.0	73.000	20.00	0.000	2.500	0.000	51.083	0.000	1.030	61.00	0.000
S8.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	12.093	25.00	0.000
S8.1	73.000	20.00	1.500	2.500	0.000	51.083	71.500	14.944	25.00	9.000
D6	73.000	20.00	0.000	2.500	0.000	51.083	0.000	69.140	30.00	6.000
S12.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	7.959	25.00	0.000
S11.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	4.198	24.00	0.000
D7	73.000	20.00	0.000	2.500	0.000	51.083	0.000	75.018	36.00	2.500
S13.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	25.743	24.00	0.000
S14.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	1.934	24.00	0.000
S14.1	73.000	20.00	1.500	2.500	0.000	51.083	71.500	3.888	25.00	9.000
D8	73.000	20.00	0.000	2.500	0.000	51.083	0.000	87.120	39.00	2.500
S16.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	21.197	25.00	0.000
S15.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	4.428	25.00	0.000
D9	73.000	20.00	0.000	2.500	0.000	51.083	0.000	95.915	42.00	5.000
S17.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	26.719	25.00	0.000
S17.1	73.000	20.00	1.500	2.500	0.000	51.083	71.500	37.886	25.00	0.000
S18.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	4.883	25.00	0.000
D10	73.000	20.00	0.000	2.500	0.000	51.083	0.000	108.67	47.00	4.300

s19.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	13.090	25.00	0.000
s20.0	73.000	20.00	1.500	2.500	0.000	51.083	71.500	5.655	25.00	0.000
outlet	73.000	20.00	0.000	2.500	0.000	51.083	0.000	114.67	51.00	0.000

LINK S1.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	117.4
ESTIMATED PEAK FLOW (CUMECS) =	16.
ESTIMATED TIME TO PEAK (MINS) =	82.00

LINK S3.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	10.01
ESTIMATED PEAK FLOW (CUMECS) =	4.3
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK D1 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	127.5
ESTIMATED PEAK FLOW (CUMECS) =	17.
ESTIMATED TIME TO PEAK (MINS) =	81.00

LINK S2.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	17.13
ESTIMATED PEAK FLOW (CUMECS) =	1.4
ESTIMATED TIME TO PEAK (MINS) =	91.00

LINK B 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	18.04
ESTIMATED PEAK FLOW (CUMECS) =	5.2
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK B1 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	0.6719
ESTIMATED PEAK FLOW (CUMECS) =	0.15
ESTIMATED TIME TO PEAK (MINS) =	57.00

LINK S2.1 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	67.24
ESTIMATED PEAK FLOW (CUMECS) =	7.5
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK S4.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	14.88
ESTIMATED PEAK FLOW (CUMECS) =	6.1
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK S1.1 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	18.13
ESTIMATED PEAK FLOW (CUMECS) =	1.5
ESTIMATED TIME TO PEAK (MINS) =	91.00

LINK D2 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	227.7
ESTIMATED PEAK FLOW (CUMECS) =	25.
ESTIMATED TIME TO PEAK (MINS) =	86.00

LINK S5.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	9.411
ESTIMATED PEAK FLOW (CUMECS) =	4.0
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK D3 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	237.1
ESTIMATED PEAK FLOW (CUMECS) =	26.
ESTIMATED TIME TO PEAK (MINS) =	91.00

LINK S1.2 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	26.71
ESTIMATED PEAK FLOW (CUMECS) =	3.2
ESTIMATED TIME TO PEAK (MINS) =	90.00

LINK S7.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	106.2
ESTIMATED PEAK FLOW (CUMECS) =	41.
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK D4 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	369.9
ESTIMATED PEAK FLOW (CUMECS) =	53.
ESTIMATED TIME TO PEAK (MINS) =	31.00

LINK S9.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	5.812
ESTIMATED PEAK FLOW (CUMECS) =	2.5
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK A 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	20.15
ESTIMATED PEAK FLOW (CUMECS) =	7.9
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK S6.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	38.73
ESTIMATED PEAK FLOW (CUMECS) =	9.4
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK D5 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	414.5
ESTIMATED PEAK FLOW (CUMECS) =	61.
ESTIMATED TIME TO PEAK (MINS) =	33.00

LINK S10.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	8.030
ESTIMATED PEAK FLOW (CUMECS) =	1.2
ESTIMATED TIME TO PEAK (MINS) =	76.00

LINK S8.0 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	32.58
ESTIMATED PEAK FLOW (CUMECS) =	13.
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK S8.1 4.000

ESTIMATED VOLUME (CU METRES*10**3) =	40.08
ESTIMATED PEAK FLOW (CUMECS) =	16.
ESTIMATED TIME TO PEAK (MINS) =	30.00

LINK D6	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		462.6
ESTIMATED PEAK FLOW (CUMECS) =		71.
ESTIMATED TIME TO PEAK (MINS) =		35.00
LINK S12.0	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		20.97
ESTIMATED PEAK FLOW (CUMECS) =		8.5
ESTIMATED TIME TO PEAK (MINS) =		30.00
LINK S11.0	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		10.79
ESTIMATED PEAK FLOW (CUMECS) =		4.6
ESTIMATED TIME TO PEAK (MINS) =		30.00
LINK D7	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		494.2
ESTIMATED PEAK FLOW (CUMECS) =		75.
ESTIMATED TIME TO PEAK (MINS) =		41.00
LINK S13.0	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		67.02
ESTIMATED PEAK FLOW (CUMECS) =		28.
ESTIMATED TIME TO PEAK (MINS) =		29.00
LINK S14.0	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		3.264
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK (MINS) =		29.00
LINK S14.1	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		8.517
ESTIMATED PEAK FLOW (CUMECS) =		4.2
ESTIMATED TIME TO PEAK (MINS) =		30.00
LINK D8	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		569.7
ESTIMATED PEAK FLOW (CUMECS) =		86.
ESTIMATED TIME TO PEAK (MINS) =		44.00
LINK S16.0	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		36.19
ESTIMATED PEAK FLOW (CUMECS) =		22.
ESTIMATED TIME TO PEAK (MINS) =		30.00
LINK S15.0	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		12.86
ESTIMATED PEAK FLOW (CUMECS) =		5.0
ESTIMATED TIME TO PEAK (MINS) =		30.00
LINK D9	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		618.8
ESTIMATED PEAK FLOW (CUMECS) =		98.
ESTIMATED TIME TO PEAK (MINS) =		33.00
LINK S17.0	4.000	
ESTIMATED VOLUME (CU METRES*10**3) =		54.89
ESTIMATED PEAK FLOW (CUMECS) =		28.

```

ESTIMATED TIME TO PEAK          (MINS) =                30.00
LINK S17.1                      4.000
ESTIMATED VOLUME (CU METRES*10**3) =                73.92
ESTIMATED PEAK FLOW              (CUMECS) =                40.
ESTIMATED TIME TO PEAK          (MINS) =                30.00

LINK S18.0                      4.000
ESTIMATED VOLUME (CU METRES*10**3) =                18.27
ESTIMATED PEAK FLOW              (CUMECS) =                 5.5
ESTIMATED TIME TO PEAK          (MINS) =                30.00

LINK D10                       4.000
ESTIMATED VOLUME (CU METRES*10**3) =                710.9
ESTIMATED PEAK FLOW              (CUMECS) =                0.11E+03
ESTIMATED TIME TO PEAK          (MINS) =                38.00

LINK S19.0                      4.000
ESTIMATED VOLUME (CU METRES*10**3) =                22.23
ESTIMATED PEAK FLOW              (CUMECS) =                 14.
ESTIMATED TIME TO PEAK          (MINS) =                30.00

LINK S20.0                      4.000
ESTIMATED VOLUME (CU METRES*10**3) =                18.31
ESTIMATED PEAK FLOW              (CUMECS) =                 6.5
ESTIMATED TIME TO PEAK          (MINS) =                30.00

LINK Outlet                    4.000
ESTIMATED VOLUME (CU METRES*10**3) =                751.4
ESTIMATED PEAK FLOW              (CUMECS) =                0.12E+03
ESTIMATED TIME TO PEAK          (MINS) =                42.00

```

```

#####
#####
Existing - 100 year re-run - Hyder Sept 2010

Results for period from 0: 0.0 1/ 1/1990
                        to 13:20.0 1/ 1/1990
#####
#####

```

```

ROUTING INCREMENT (MINS) =                1.00
STORM DURATION (MINS)    =                90.
RETURN PERIOD (YRS)     =                100.
BX                       =                1.0000
TOTAL OF FIRST SUB-AREAS (ha) =                689.69
TOTAL OF SECOND SUB-AREAS (ha) =                386.68
TOTAL OF ALL SUB-AREAS (ha) =                1076.37

```

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link	Catch. Area		Slope		% Impervious		Pern		B		Link
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001

S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00

s20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2 (mm)	Cont. #1 (mm/h)	Loss #2 (mm/h)	Excess #1 (mm)	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
s1.0	57.000	20.00	0.000	2.500	0.000	62.375	0.000	16.062	82.00	5.000
s3.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	4.288	30.00	5.000
D1	57.000	20.00	0.000	2.500	0.000	62.375	0.000	17.180	81.00	5.000
s2.0	57.000	20.00	0.000	2.500	0.000	62.375	0.000	1.404	91.00	13.00
B	57.000	20.00	1.500	2.500	0.000	62.375	84.000	5.225	30.00	0.000
B1	57.000	20.00	0.000	2.500	0.000	62.375	0.000	0.1477	57.00	0.000
s2.1	57.000	20.00	1.500	2.500	0.000	62.375	84.000	7.467	30.00	0.000
s4.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	6.100	30.00	0.000
s1.1	57.000	20.00	0.000	2.500	0.000	62.375	0.000	1.462	91.00	0.000
D2	57.000	20.00	0.000	2.500	0.000	62.375	0.000	25.086	86.00	7.000
s5.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	4.041	30.00	0.000
D3	57.000	20.00	0.000	2.500	0.000	62.375	0.000	25.690	91.00	3.000
s1.2	57.000	20.00	0.000	2.500	0.000	62.375	0.000	3.235	90.00	0.000
s7.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	41.123	30.00	1.000
D4	57.000	20.00	0.000	2.500	0.000	62.375	0.000	53.470	31.00	1.500
s9.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	2.525	30.00	0.000
A	57.000	20.00	1.500	2.500	0.000	62.375	84.000	7.882	30.00	0.000
s6.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	9.372	30.00	0.000
D5	57.000	20.00	0.000	2.500	0.000	62.375	0.000	60.569	33.00	1.500
s10.0	57.000	20.00	0.000	2.500	0.000	62.375	0.000	1.202	76.00	0.000
s8.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	12.917	30.00	0.000
s8.1	57.000	20.00	1.500	2.500	0.000	62.375	84.000	15.965	30.00	9.000
D6	57.000	20.00	0.000	2.500	0.000	62.375	0.000	70.576	35.00	6.000
s12.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	8.544	30.00	0.000
s11.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	4.579	30.00	0.000
D7	57.000	20.00	0.000	2.500	0.000	62.375	0.000	75.383	41.00	2.500
s13.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	27.711	29.00	0.000
s14.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	2.043	29.00	0.000
s14.1	57.000	20.00	1.500	2.500	0.000	62.375	84.000	4.151	30.00	9.000
D8	57.000	20.00	0.000	2.500	0.000	62.375	0.000	86.355	44.00	2.500
s16.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	22.413	30.00	0.000

S15.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	5.023	30.00	0.000
D9	57.000	20.00	0.000	2.500	0.000	62.375	0.000	97.944	33.00	5.000
S17.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	28.399	30.00	0.000
S17.1	57.000	20.00	1.500	2.500	0.000	62.375	84.000	40.211	30.00	0.000
S18.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	5.521	30.00	0.000
D10	57.000	20.00	0.000	2.500	0.000	62.375	0.000	113.37	38.00	4.300
S19.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	13.805	30.00	0.000
S20.0	57.000	20.00	1.500	2.500	0.000	62.375	84.000	6.541	30.00	0.000
Outlet	57.000	20.00	0.000	2.500	0.000	62.375	0.000	121.10	42.00	0.000

LINK S1.0 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	134.4
ESTIMATED PEAK FLOW (CUMECS) =	17.
ESTIMATED TIME TO PEAK (MINS) =	86.00

LINK S3.0 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	11.36
ESTIMATED PEAK FLOW (CUMECS) =	4.0
ESTIMATED TIME TO PEAK (MINS) =	33.00

LINK D1 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	145.8
ESTIMATED PEAK FLOW (CUMECS) =	19.
ESTIMATED TIME TO PEAK (MINS) =	90.00

LINK S2.0 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	19.80
ESTIMATED PEAK FLOW (CUMECS) =	1.7
ESTIMATED TIME TO PEAK (MINS) =	120.00

LINK B 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	20.57
ESTIMATED PEAK FLOW (CUMECS) =	4.9
ESTIMATED TIME TO PEAK (MINS) =	35.00

LINK B1 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	0.7674
ESTIMATED PEAK FLOW (CUMECS) =	0.16
ESTIMATED TIME TO PEAK (MINS) =	65.00

LINK S2.1 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	76.89
ESTIMATED PEAK FLOW (CUMECS) =	6.8
ESTIMATED TIME TO PEAK (MINS) =	35.00

LINK S4.0 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	16.79
ESTIMATED PEAK FLOW (CUMECS) =	5.7
ESTIMATED TIME TO PEAK (MINS) =	34.00

LINK S1.1 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	20.93
ESTIMATED PEAK FLOW (CUMECS) =	1.8
ESTIMATED TIME TO PEAK (MINS) =	120.00

LINK D2 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	260.4
ESTIMATED PEAK FLOW (CUMECS) =	28.
ESTIMATED TIME TO PEAK (MINS) =	100.00

LINK S5.0 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	10.68
ESTIMATED PEAK FLOW (CUMECS) =	3.8
ESTIMATED TIME TO PEAK (MINS) =	33.00

LINK D3 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	271.0
ESTIMATED PEAK FLOW (CUMECS) =	28.
ESTIMATED TIME TO PEAK (MINS) =	107.00

LINK S1.2 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	30.39
ESTIMATED PEAK FLOW (CUMECS) =	3.5
ESTIMATED TIME TO PEAK (MINS) =	101.00

LINK S7.0 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	120.4
ESTIMATED PEAK FLOW (CUMECS) =	38.
ESTIMATED TIME TO PEAK (MINS) =	35.00

LINK D4 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	421.8
ESTIMATED PEAK FLOW (CUMECS) =	50.
ESTIMATED TIME TO PEAK (MINS) =	36.00

LINK S9.0 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	6.576
ESTIMATED PEAK FLOW (CUMECS) =	2.3
ESTIMATED TIME TO PEAK (MINS) =	33.00

LINK A 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	22.85
ESTIMATED PEAK FLOW (CUMECS) =	7.3
ESTIMATED TIME TO PEAK (MINS) =	36.00

LINK S6.0 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	44.18
ESTIMATED PEAK FLOW (CUMECS) =	8.6
ESTIMATED TIME TO PEAK (MINS) =	36.00

LINK D5 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	472.5
ESTIMATED PEAK FLOW (CUMECS) =	59.
ESTIMATED TIME TO PEAK (MINS) =	38.00

LINK S10.0 5.000

ESTIMATED VOLUME (CU METRES*10**3) =	9.220
ESTIMATED PEAK FLOW (CUMECS) =	1.3
ESTIMATED TIME TO PEAK (MINS) =	86.00

LINK S8.0	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		36.96
ESTIMATED PEAK FLOW (CUMECS) =		12.
ESTIMATED TIME TO PEAK (MINS) =		35.00
LINK S8.1	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		45.44
ESTIMATED PEAK FLOW (CUMECS) =		15.
ESTIMATED TIME TO PEAK (MINS) =		35.00
LINK D6	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		527.1
ESTIMATED PEAK FLOW (CUMECS) =		68.
ESTIMATED TIME TO PEAK (MINS) =		41.00
LINK S12.0	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		23.79
ESTIMATED PEAK FLOW (CUMECS) =		8.0
ESTIMATED TIME TO PEAK (MINS) =		35.00
LINK S11.0	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		12.24
ESTIMATED PEAK FLOW (CUMECS) =		4.3
ESTIMATED TIME TO PEAK (MINS) =		33.00
LINK D7	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		563.1
ESTIMATED PEAK FLOW (CUMECS) =		72.
ESTIMATED TIME TO PEAK (MINS) =		47.00
LINK S13.0	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		75.85
ESTIMATED PEAK FLOW (CUMECS) =		26.
ESTIMATED TIME TO PEAK (MINS) =		34.00
LINK S14.0	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		3.665
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK (MINS) =		34.00
LINK S14.1	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		9.603
ESTIMATED PEAK FLOW (CUMECS) =		3.9
ESTIMATED TIME TO PEAK (MINS) =		35.00
LINK D8	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		648.5
ESTIMATED PEAK FLOW (CUMECS) =		84.
ESTIMATED TIME TO PEAK (MINS) =		50.00
LINK S16.0	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		40.62
ESTIMATED PEAK FLOW (CUMECS) =		21.
ESTIMATED TIME TO PEAK (MINS) =		35.00
LINK S15.0	5.000	
ESTIMATED VOLUME (CU METRES*10**3) =		14.57

ESTIMATED PEAK FLOW	(CUMECS) =	4.5
ESTIMATED TIME TO PEAK	(MINS) =	35.00
LINK D9 5.000		
ESTIMATED VOLUME (CU METRES*10**3) =		703.7
ESTIMATED PEAK FLOW	(CUMECS) =	91.
ESTIMATED TIME TO PEAK	(MINS) =	53.00
LINK S17.0 5.000		
ESTIMATED VOLUME (CU METRES*10**3) =		61.84
ESTIMATED PEAK FLOW	(CUMECS) =	27.
ESTIMATED TIME TO PEAK	(MINS) =	35.00
LINK S17.1 5.000		
ESTIMATED VOLUME (CU METRES*10**3) =		83.20
ESTIMATED PEAK FLOW	(CUMECS) =	38.
ESTIMATED TIME TO PEAK	(MINS) =	35.00
LINK S18.0 5.000		
ESTIMATED VOLUME (CU METRES*10**3) =		20.84
ESTIMATED PEAK FLOW	(CUMECS) =	4.9
ESTIMATED TIME TO PEAK	(MINS) =	35.00
LINK D10 5.000		
ESTIMATED VOLUME (CU METRES*10**3) =		807.6
ESTIMATED PEAK FLOW	(CUMECS) =	0.11E+03
ESTIMATED TIME TO PEAK	(MINS) =	41.00
LINK S19.0 5.000		
ESTIMATED VOLUME (CU METRES*10**3) =		24.94
ESTIMATED PEAK FLOW	(CUMECS) =	13.
ESTIMATED TIME TO PEAK	(MINS) =	35.00
LINK S20.0 5.000		
ESTIMATED VOLUME (CU METRES*10**3) =		20.82
ESTIMATED PEAK FLOW	(CUMECS) =	5.7
ESTIMATED TIME TO PEAK	(MINS) =	35.00
LINK Outlet 5.000		
ESTIMATED VOLUME (CU METRES*10**3) =		853.3
ESTIMATED PEAK FLOW	(CUMECS) =	0.11E+03
ESTIMATED TIME TO PEAK	(MINS) =	45.00

Existing - 100 year re-run - Hyder Sept 2010
Results for period from 0: 0.0 1/ 1/1990
to 13:20.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS)	=	1.00
STORM DURATION (MINS)	=	120.
RETURN PERIOD (YRS)	=	100.
BX	=	1.0000
TOTAL OF FIRST SUB-AREAS (ha)	=	689.69
TOTAL OF SECOND SUB-AREAS (ha)	=	386.68

TOTAL OF ALL SUB-AREAS (ha) = 1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link	Catch.	Area	Slope		% Impervious		Pern		B		Link
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00

D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
S1.0	47.800	20.00	0.000	2.500	0.000	71.517	0.000	17.390	86.00	5.000
S3.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	3.990	33.00	5.000
D1	47.800	20.00	0.000	2.500	0.000	71.517	0.000	18.680	90.00	5.000
S2.0	47.800	20.00	0.000	2.500	0.000	71.517	0.000	1.684	120.0	13.00
B	47.800	20.00	1.500	2.500	0.000	71.517	94.100	4.906	35.00	0.000
B1	47.800	20.00	0.000	2.500	0.000	71.517	0.000	0.1558	65.00	0.000
S2.1	47.800	20.00	1.500	2.500	0.000	71.517	94.100	6.797	35.00	0.000
S4.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	5.739	34.00	0.000
S1.1	47.800	20.00	0.000	2.500	0.000	71.517	0.000	1.759	120.0	0.000
D2	47.800	20.00	0.000	2.500	0.000	71.517	0.000	27.758	100.0	7.000
S5.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	3.752	33.00	0.000
D3	47.800	20.00	0.000	2.500	0.000	71.517	0.000	28.479	107.0	3.000
S1.2	47.800	20.00	0.000	2.500	0.000	71.517	0.000	3.519	101.0	0.000
S7.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	38.284	35.00	1.000
D4	47.800	20.00	0.000	2.500	0.000	71.517	0.000	49.535	36.00	1.500
S9.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	2.344	33.00	0.000
A	47.800	20.00	1.500	2.500	0.000	71.517	94.100	7.342	36.00	0.000
S6.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	8.621	36.00	0.000
D5	47.800	20.00	0.000	2.500	0.000	71.517	0.000	59.242	38.00	1.500
S10.0	47.800	20.00	0.000	2.500	0.000	71.517	0.000	1.303	86.00	0.000
S8.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	12.117	35.00	0.000
S8.1	47.800	20.00	1.500	2.500	0.000	71.517	94.100	14.988	35.00	9.000
D6	47.800	20.00	0.000	2.500	0.000	71.517	0.000	67.949	41.00	6.000
S12.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	8.046	35.00	0.000

S11.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	4.264	33.00	0.000
D7	47.800	20.00	0.000	2.500	0.000	71.517	0.000	72.454	47.00	2.500
S13.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	26.094	34.00	0.000
S14.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	1.956	34.00	0.000
S14.1	47.800	20.00	1.500	2.500	0.000	71.517	94.100	3.903	35.00	9.000
D8	47.800	20.00	0.000	2.500	0.000	71.517	0.000	83.538	50.00	2.500
S16.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	21.307	35.00	0.000
S15.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	4.466	35.00	0.000
D9	47.800	20.00	0.000	2.500	0.000	71.517	0.000	91.010	53.00	5.000
S17.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	27.016	35.00	0.000
S17.1	47.800	20.00	1.500	2.500	0.000	71.517	94.100	38.270	35.00	0.000
S18.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	4.933	35.00	0.000
D10	47.800	20.00	0.000	2.500	0.000	71.517	0.000	105.66	41.00	4.300
S19.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	13.213	35.00	0.000
S20.0	47.800	20.00	1.500	2.500	0.000	71.517	94.100	5.706	35.00	0.000
outlet	47.800	20.00	0.000	2.500	0.000	71.517	0.000	114.40	45.00	0.000

LINK S1.0 6.000

ESTIMATED VOLUME (CU METRES*10**3) =	160.3
ESTIMATED PEAK FLOW (CUMECS) =	18.
ESTIMATED TIME TO PEAK (MINS) =	117.00

LINK S3.0 6.000

ESTIMATED VOLUME (CU METRES*10**3) =	13.35
ESTIMATED PEAK FLOW (CUMECS) =	2.5
ESTIMATED TIME TO PEAK (MINS) =	45.00

LINK D1 6.000

ESTIMATED VOLUME (CU METRES*10**3) =	173.7
ESTIMATED PEAK FLOW (CUMECS) =	19.
ESTIMATED TIME TO PEAK (MINS) =	121.00

LINK S2.0 6.000

ESTIMATED VOLUME (CU METRES*10**3) =	23.41
ESTIMATED PEAK FLOW (CUMECS) =	1.9
ESTIMATED TIME TO PEAK (MINS) =	149.00

LINK B 6.000

ESTIMATED VOLUME (CU METRES*10**3) =	24.24
ESTIMATED PEAK FLOW (CUMECS) =	2.9
ESTIMATED TIME TO PEAK (MINS) =	45.00

LINK B1 6.000

ESTIMATED VOLUME (CU METRES*10**3) =	0.9167
ESTIMATED PEAK FLOW (CUMECS) =	0.14
ESTIMATED TIME TO PEAK (MINS) =	76.00

LINK S2.1	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		91.33
ESTIMATED PEAK FLOW (CUMECS) =		6.7
ESTIMATED TIME TO PEAK (MINS) =		150.00
LINK S4.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		19.83
ESTIMATED PEAK FLOW (CUMECS) =		3.4
ESTIMATED TIME TO PEAK (MINS) =		45.00
LINK S1.1	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		24.75
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK (MINS) =		150.00
LINK D2	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		309.6
ESTIMATED PEAK FLOW (CUMECS) =		29.
ESTIMATED TIME TO PEAK (MINS) =		120.00
LINK S5.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		12.55
ESTIMATED PEAK FLOW (CUMECS) =		2.4
ESTIMATED TIME TO PEAK (MINS) =		45.00
LINK D3	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		322.1
ESTIMATED PEAK FLOW (CUMECS) =		30.
ESTIMATED TIME TO PEAK (MINS) =		127.00
LINK S1.2	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		36.42
ESTIMATED PEAK FLOW (CUMECS) =		3.7
ESTIMATED TIME TO PEAK (MINS) =		121.00
LINK S7.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		141.9
ESTIMATED PEAK FLOW (CUMECS) =		23.
ESTIMATED TIME TO PEAK (MINS) =		45.00
LINK D4	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		500.4
ESTIMATED PEAK FLOW (CUMECS) =		44.
ESTIMATED TIME TO PEAK (MINS) =		121.00
LINK S9.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		7.746
ESTIMATED PEAK FLOW (CUMECS) =		1.5
ESTIMATED TIME TO PEAK (MINS) =		45.00
LINK A	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		26.85
ESTIMATED PEAK FLOW (CUMECS) =		4.5
ESTIMATED TIME TO PEAK (MINS) =		45.00
LINK S6.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		52.15
ESTIMATED PEAK FLOW (CUMECS) =		5.6

ESTIMATED TIME TO PEAK	(MINS) =	45.00
LINK D5	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		560.2
ESTIMATED PEAK FLOW (CUMECS) =		49.
ESTIMATED TIME TO PEAK	(MINS) =	123.00
LINK S10.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		10.96
ESTIMATED PEAK FLOW (CUMECS) =		1.3
ESTIMATED TIME TO PEAK	(MINS) =	102.00
LINK S8.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		43.44
ESTIMATED PEAK FLOW (CUMECS) =		7.0
ESTIMATED TIME TO PEAK	(MINS) =	45.00
LINK S8.1	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		53.41
ESTIMATED PEAK FLOW (CUMECS) =		8.7
ESTIMATED TIME TO PEAK	(MINS) =	45.00
LINK D6	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		624.6
ESTIMATED PEAK FLOW (CUMECS) =		54.
ESTIMATED TIME TO PEAK	(MINS) =	125.00
LINK S12.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		27.96
ESTIMATED PEAK FLOW (CUMECS) =		4.7
ESTIMATED TIME TO PEAK	(MINS) =	45.00
LINK S11.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		14.39
ESTIMATED PEAK FLOW (CUMECS) =		2.6
ESTIMATED TIME TO PEAK	(MINS) =	45.00
LINK D7	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		666.8
ESTIMATED PEAK FLOW (CUMECS) =		57.
ESTIMATED TIME TO PEAK	(MINS) =	131.00
LINK S13.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		89.45
ESTIMATED PEAK FLOW (CUMECS) =		15.
ESTIMATED TIME TO PEAK	(MINS) =	45.00
LINK S14.0	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		4.292
ESTIMATED PEAK FLOW (CUMECS) =		1.1
ESTIMATED TIME TO PEAK	(MINS) =	45.00
LINK S14.1	6.000	
ESTIMATED VOLUME (CU METRES*10**3) =		11.30
ESTIMATED PEAK FLOW (CUMECS) =		2.3
ESTIMATED TIME TO PEAK	(MINS) =	45.00
LINK D8	6.000	

ESTIMATED VOLUME (CU METRES*10**3) =	767.5
ESTIMATED PEAK FLOW (CUMECS) =	65.
ESTIMATED TIME TO PEAK (MINS) =	132.00
LINK S16.0	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	47.61
ESTIMATED PEAK FLOW (CUMECS) =	12.
ESTIMATED TIME TO PEAK (MINS) =	45.00
LINK S15.0	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	17.25
ESTIMATED PEAK FLOW (CUMECS) =	3.2
ESTIMATED TIME TO PEAK (MINS) =	45.00
LINK D9	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	832.3
ESTIMATED PEAK FLOW (CUMECS) =	70.
ESTIMATED TIME TO PEAK (MINS) =	45.00
LINK S17.0	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	72.72
ESTIMATED PEAK FLOW (CUMECS) =	15.
ESTIMATED TIME TO PEAK (MINS) =	45.00
LINK S17.1	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	97.73
ESTIMATED PEAK FLOW (CUMECS) =	21.
ESTIMATED TIME TO PEAK (MINS) =	45.00
LINK S18.0	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	24.68
ESTIMATED PEAK FLOW (CUMECS) =	3.7
ESTIMATED TIME TO PEAK (MINS) =	75.00
LINK D10	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	954.7
ESTIMATED PEAK FLOW (CUMECS) =	89.
ESTIMATED TIME TO PEAK (MINS) =	45.00
LINK S19.0	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	29.22
ESTIMATED PEAK FLOW (CUMECS) =	7.3
ESTIMATED TIME TO PEAK (MINS) =	45.00
LINK S20.0	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	24.60
ESTIMATED PEAK FLOW (CUMECS) =	4.3
ESTIMATED TIME TO PEAK (MINS) =	45.00
LINK Outlet	6.000
ESTIMATED VOLUME (CU METRES*10**3) =	1008.
ESTIMATED PEAK FLOW (CUMECS) =	95.
ESTIMATED TIME TO PEAK (MINS) =	49.00

 #####
 Existing - 100 year re-run - Hyder Sept 2010

Results for period from 0: 0.0 1/ 1/1990
to 13:20.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 689.69
TOTAL OF SECOND SUB-AREAS (ha) = 386.68
TOTAL OF ALL SUB-AREAS (ha) = 1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. #1 (ha)	Area #2	Slope #1 (%)	#2	% Impervious #1 (%)	#2	Pern #1	#2	B #1	#2	Link No.
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00

D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
S1.0	37.200	20.00	0.000	2.500	0.000	85.142	0.000	17.540	117.0	5.000
S3.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	2.498	45.00	5.000
D1	37.200	20.00	0.000	2.500	0.000	85.142	0.000	18.715	121.0	5.000
S2.0	37.200	20.00	0.000	2.500	0.000	85.142	0.000	1.883	149.0	13.00
B	37.200	20.00	1.500	2.500	0.000	85.142	110.10	2.884	45.00	0.000
B1	37.200	20.00	0.000	2.500	0.000	85.142	0.000	0.1396	76.00	0.000
S2.1	37.200	20.00	1.500	2.500	0.000	85.142	110.10	6.684	150.0	0.000
S4.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	3.395	45.00	0.000
S1.1	37.200	20.00	0.000	2.500	0.000	85.142	0.000	1.977	150.0	0.000
D2	37.200	20.00	0.000	2.500	0.000	85.142	0.000	28.752	120.0	7.000
S5.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	2.358	45.00	0.000
D3	37.200	20.00	0.000	2.500	0.000	85.142	0.000	29.640	127.0	3.000
S1.2	37.200	20.00	0.000	2.500	0.000	85.142	0.000	3.724	121.0	0.000
S7.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	22.579	45.00	1.000
D4	37.200	20.00	0.000	2.500	0.000	85.142	0.000	43.555	121.0	1.500
S9.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	1.484	45.00	0.000
A	37.200	20.00	1.500	2.500	0.000	85.142	110.10	4.501	45.00	0.000
S6.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	5.590	45.00	0.000

D5	37.200	20.00	0.000	2.500	0.000	85.142	0.000	48.676	123.0	1.500
S10.0	37.200	20.00	0.000	2.500	0.000	85.142	0.000	1.254	102.0	0.000
S8.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	7.008	45.00	0.000
S8.1	37.200	20.00	1.500	2.500	0.000	85.142	110.10	8.676	45.00	9.000
D6	37.200	20.00	0.000	2.500	0.000	85.142	0.000	54.326	125.0	6.000
S12.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	4.680	45.00	0.000
S11.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	2.648	45.00	0.000
D7	37.200	20.00	0.000	2.500	0.000	85.142	0.000	57.464	131.0	2.500
S13.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	15.490	45.00	0.000
S14.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	1.070	45.00	0.000
S14.1	37.200	20.00	1.500	2.500	0.000	85.142	110.10	2.280	45.00	9.000
D8	37.200	20.00	0.000	2.500	0.000	85.142	0.000	64.903	132.0	2.500
S16.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	11.770	45.00	0.000
S15.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	3.231	45.00	0.000
D9	37.200	20.00	0.000	2.500	0.000	85.142	0.000	70.466	45.00	5.000
S17.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	15.150	45.00	0.000
S17.1	37.200	20.00	1.500	2.500	0.000	85.142	110.10	21.353	45.00	0.000
S18.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	3.665	75.00	0.000
D10	37.200	20.00	0.000	2.500	0.000	85.142	0.000	88.537	45.00	4.300
S19.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	7.254	45.00	0.000
S20.0	37.200	20.00	1.500	2.500	0.000	85.142	110.10	4.321	45.00	0.000
Outlet	37.200	20.00	0.000	2.500	0.000	85.142	0.000	95.092	49.00	0.000

LINK S1.0 7.000

ESTIMATED VOLUME (CU METRES*10**3) =	189.6
ESTIMATED PEAK FLOW (CUMECS) =	17.
ESTIMATED TIME TO PEAK (MINS) =	140.00

LINK S3.0 7.000

ESTIMATED VOLUME (CU METRES*10**3) =	15.68
ESTIMATED PEAK FLOW (CUMECS) =	2.4
ESTIMATED TIME TO PEAK (MINS) =	75.00

LINK D1 7.000

ESTIMATED VOLUME (CU METRES*10**3) =	205.3
ESTIMATED PEAK FLOW (CUMECS) =	18.
ESTIMATED TIME TO PEAK (MINS) =	141.00

LINK S2.0 7.000

ESTIMATED VOLUME (CU METRES*10**3) =	27.87
ESTIMATED PEAK FLOW (CUMECS) =	1.9
ESTIMATED TIME TO PEAK (MINS) =	182.00

LINK B	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		28.56
ESTIMATED PEAK FLOW (CUMECS) =		2.7
ESTIMATED TIME TO PEAK (MINS) =		75.00
LINK B1	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1.077
ESTIMATED PEAK FLOW (CUMECS) =		0.15
ESTIMATED TIME TO PEAK (MINS) =		94.00
LINK S2.1	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		108.2
ESTIMATED PEAK FLOW (CUMECS) =		6.9
ESTIMATED TIME TO PEAK (MINS) =		192.00
LINK S4.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		23.23
ESTIMATED PEAK FLOW (CUMECS) =		3.1
ESTIMATED TIME TO PEAK (MINS) =		75.00
LINK S1.1	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		29.54
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK (MINS) =		183.00
LINK D2	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		366.3
ESTIMATED PEAK FLOW (CUMECS) =		28.
ESTIMATED TIME TO PEAK (MINS) =		150.00
LINK S5.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		14.72
ESTIMATED PEAK FLOW (CUMECS) =		2.2
ESTIMATED TIME TO PEAK (MINS) =		75.00
LINK D3	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		380.9
ESTIMATED PEAK FLOW (CUMECS) =		29.
ESTIMATED TIME TO PEAK (MINS) =		157.00
LINK S1.2	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		43.03
ESTIMATED PEAK FLOW (CUMECS) =		3.6
ESTIMATED TIME TO PEAK (MINS) =		151.00
LINK S7.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		167.0
ESTIMATED PEAK FLOW (CUMECS) =		20.
ESTIMATED TIME TO PEAK (MINS) =		75.00
LINK D4	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		590.9
ESTIMATED PEAK FLOW (CUMECS) =		43.
ESTIMATED TIME TO PEAK (MINS) =		152.00
LINK S9.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		9.075

ESTIMATED PEAK FLOW	(CUMECS) =	1.4
ESTIMATED TIME TO PEAK	(MINS) =	75.00
LINK A	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		31.56
ESTIMATED PEAK FLOW	(CUMECS) =	4.1
ESTIMATED TIME TO PEAK	(MINS) =	75.00
LINK S6.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		61.46
ESTIMATED PEAK FLOW	(CUMECS) =	5.2
ESTIMATED TIME TO PEAK	(MINS) =	75.00
LINK D5	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		661.5
ESTIMATED PEAK FLOW	(CUMECS) =	48.
ESTIMATED TIME TO PEAK	(MINS) =	154.00
LINK S10.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		12.95
ESTIMATED PEAK FLOW	(CUMECS) =	1.2
ESTIMATED TIME TO PEAK	(MINS) =	135.00
LINK S8.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		51.11
ESTIMATED PEAK FLOW	(CUMECS) =	6.4
ESTIMATED TIME TO PEAK	(MINS) =	75.00
LINK S8.1	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		62.82
ESTIMATED PEAK FLOW	(CUMECS) =	7.9
ESTIMATED TIME TO PEAK	(MINS) =	75.00
LINK D6	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		737.2
ESTIMATED PEAK FLOW	(CUMECS) =	53.
ESTIMATED TIME TO PEAK	(MINS) =	156.00
LINK S12.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		32.87
ESTIMATED PEAK FLOW	(CUMECS) =	4.3
ESTIMATED TIME TO PEAK	(MINS) =	75.00
LINK S11.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		16.89
ESTIMATED PEAK FLOW	(CUMECS) =	2.5
ESTIMATED TIME TO PEAK	(MINS) =	75.00
LINK D7	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		786.9
ESTIMATED PEAK FLOW	(CUMECS) =	57.
ESTIMATED TIME TO PEAK	(MINS) =	161.00
LINK S13.0	7.000	
ESTIMATED VOLUME (CU METRES*10**3) =		105.0
ESTIMATED PEAK FLOW	(CUMECS) =	14.
ESTIMATED TIME TO PEAK	(MINS) =	75.00
LINK S14.0	7.000	

ESTIMATED VOLUME (CU METRES*10**3) =	5.017
ESTIMATED PEAK FLOW (CUMECS) =	0.96
ESTIMATED TIME TO PEAK (MINS) =	75.00
LINK S14.1	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	13.24
ESTIMATED PEAK FLOW (CUMECS) =	2.1
ESTIMATED TIME TO PEAK (MINS) =	75.00
LINK D8	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	905.1
ESTIMATED PEAK FLOW (CUMECS) =	67.
ESTIMATED TIME TO PEAK (MINS) =	89.00
LINK S16.0	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	55.63
ESTIMATED PEAK FLOW (CUMECS) =	10.
ESTIMATED TIME TO PEAK (MINS) =	75.00
LINK S15.0	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	20.26
ESTIMATED PEAK FLOW (CUMECS) =	3.4
ESTIMATED TIME TO PEAK (MINS) =	90.00
LINK D9	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	980.9
ESTIMATED PEAK FLOW (CUMECS) =	77.
ESTIMATED TIME TO PEAK (MINS) =	90.00
LINK S17.0	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	85.10
ESTIMATED PEAK FLOW (CUMECS) =	14.
ESTIMATED TIME TO PEAK (MINS) =	75.00
LINK S17.1	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	114.3
ESTIMATED PEAK FLOW (CUMECS) =	19.
ESTIMATED TIME TO PEAK (MINS) =	75.00
LINK S18.0	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	29.03
ESTIMATED PEAK FLOW (CUMECS) =	4.1
ESTIMATED TIME TO PEAK (MINS) =	90.00
LINK D10	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	1124.
ESTIMATED PEAK FLOW (CUMECS) =	89.
ESTIMATED TIME TO PEAK (MINS) =	90.00
LINK S19.0	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	34.15
ESTIMATED PEAK FLOW (CUMECS) =	6.5
ESTIMATED TIME TO PEAK (MINS) =	75.00
LINK S20.0	7.000
ESTIMATED VOLUME (CU METRES*10**3) =	28.93
ESTIMATED PEAK FLOW (CUMECS) =	4.7
ESTIMATED TIME TO PEAK (MINS) =	90.00

LINK Outlet 7.000

ESTIMATED VOLUME (CU METRES*10**3) = 1187.
ESTIMATED PEAK FLOW (CUMECS) = 96.
ESTIMATED TIME TO PEAK (MINS) = 94.00

#####

Existing - 100 year re-run - Hyder Sept 2010

Results for period from 0: 0.0 1/ 1/1990
to 16:40.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 270.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 689.69
TOTAL OF SECOND SUB-AREAS (ha) = 386.68
TOTAL OF ALL SUB-AREAS (ha) = 1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. #1 (ha)	Area #2	Slope #1 (%)	% Impervious #2 (%)	Pern #1	#2	B #1	#2	Link No.
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	1.005

S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
S1.0	28.900	20.00	0.000	2.500	0.000	100.55	0.000	16.979	140.0	5.000
S3.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	2.350	75.00	5.000
D1	28.900	20.00	0.000	2.500	0.000	100.55	0.000	18.174	141.0	5.000
S2.0	28.900	20.00	0.000	2.500	0.000	100.55	0.000	1.912	182.0	13.00
B	28.900	20.00	1.500	2.500	0.000	100.55	128.55	2.667	75.00	0.000
B1	28.900	20.00	0.000	2.500	0.000	100.55	0.000	0.1504	94.00	0.000
S2.1	28.900	20.00	1.500	2.500	0.000	100.55	128.55	6.876	192.0	0.000
S4.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	3.134	75.00	0.000
S1.1	28.900	20.00	0.000	2.500	0.000	100.55	0.000	2.015	183.0	0.000
D2	28.900	20.00	0.000	2.500	0.000	100.55	0.000	28.173	150.0	7.000
S5.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	2.215	75.00	0.000

D3	28.900	20.00	0.000	2.500	0.000	100.55	0.000	29.062	157.0	3.000
S1.2	28.900	20.00	0.000	2.500	0.000	100.55	0.000	3.648	151.0	0.000
S7.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	20.389	75.00	1.000
D4	28.900	20.00	0.000	2.500	0.000	100.55	0.000	42.922	152.0	1.500
S9.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	1.404	75.00	0.000
A	28.900	20.00	1.500	2.500	0.000	100.55	128.55	4.112	75.00	0.000
S6.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	5.246	75.00	0.000
D5	28.900	20.00	0.000	2.500	0.000	100.55	0.000	47.962	154.0	1.500
S10.0	28.900	20.00	0.000	2.500	0.000	100.55	0.000	1.206	135.0	0.000
S8.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	6.352	75.00	0.000
S8.1	28.900	20.00	1.500	2.500	0.000	100.55	128.55	7.877	75.00	9.000
D6	28.900	20.00	0.000	2.500	0.000	100.55	0.000	53.479	156.0	6.000
S12.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	4.287	75.00	0.000
S11.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	2.482	75.00	0.000
D7	28.900	20.00	0.000	2.500	0.000	100.55	0.000	56.646	161.0	2.500
S13.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	14.270	75.00	0.000
S14.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	0.9562	75.00	0.000
S14.1	28.900	20.00	1.500	2.500	0.000	100.55	128.55	2.073	75.00	9.000
D8	28.900	20.00	0.000	2.500	0.000	100.55	0.000	67.183	89.00	2.500
S16.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	10.487	75.00	0.000
S15.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	3.356	90.00	0.000
D9	28.900	20.00	0.000	2.500	0.000	100.55	0.000	77.409	90.00	5.000
S17.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	13.654	75.00	0.000
S17.1	28.900	20.00	1.500	2.500	0.000	100.55	128.55	19.182	75.00	0.000
S18.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	4.118	90.00	0.000
D10	28.900	20.00	0.000	2.500	0.000	100.55	0.000	89.388	90.00	4.300
S19.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	6.471	75.00	0.000
S20.0	28.900	20.00	1.500	2.500	0.000	100.55	128.55	4.712	90.00	0.000
outlet	28.900	20.00	0.000	2.500	0.000	100.55	0.000	95.530	94.00	0.000

LINK S1.0 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	212.7
ESTIMATED PEAK FLOW (CUMECS) =	19.
ESTIMATED TIME TO PEAK (MINS) =	161.00

LINK S3.0 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	17.54
ESTIMATED PEAK FLOW (CUMECS) =	2.1

ESTIMATED TIME TO PEAK	(MINS) =	120.00
LINK D1	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		230.2
ESTIMATED PEAK FLOW (CUMECS) =		20.
ESTIMATED TIME TO PEAK	(MINS) =	156.00
LINK S2.0	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		31.22
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK	(MINS) =	211.00
LINK B	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		31.94
ESTIMATED PEAK FLOW (CUMECS) =		2.3
ESTIMATED TIME TO PEAK	(MINS) =	120.00
LINK B1	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1.211
ESTIMATED PEAK FLOW (CUMECS) =		0.15
ESTIMATED TIME TO PEAK	(MINS) =	136.00
LINK S2.1	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		121.2
ESTIMATED PEAK FLOW (CUMECS) =		7.1
ESTIMATED TIME TO PEAK	(MINS) =	222.00
LINK S4.0	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		26.03
ESTIMATED PEAK FLOW (CUMECS) =		2.7
ESTIMATED TIME TO PEAK	(MINS) =	120.00
LINK S1.1	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		33.07
ESTIMATED PEAK FLOW (CUMECS) =		2.1
ESTIMATED TIME TO PEAK	(MINS) =	215.00
LINK D2	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		410.6
ESTIMATED PEAK FLOW (CUMECS) =		30.
ESTIMATED TIME TO PEAK	(MINS) =	176.00
LINK S5.0	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		16.49
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK	(MINS) =	120.00
LINK D3	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		427.0
ESTIMATED PEAK FLOW (CUMECS) =		31.
ESTIMATED TIME TO PEAK	(MINS) =	180.00
LINK S1.2	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		48.25
ESTIMATED PEAK FLOW (CUMECS) =		3.9
ESTIMATED TIME TO PEAK	(MINS) =	177.00
LINK S7.0	8.000	

ESTIMATED VOLUME (CU METRES*10**3) =	186.9
ESTIMATED PEAK FLOW (CUMECS) =	16.
ESTIMATED TIME TO PEAK (MINS) =	120.00

LINK D4 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	662.1
ESTIMATED PEAK FLOW (CUMECS) =	45.
ESTIMATED TIME TO PEAK (MINS) =	181.00

LINK S9.0 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	10.16
ESTIMATED PEAK FLOW (CUMECS) =	1.3
ESTIMATED TIME TO PEAK (MINS) =	120.00

LINK A 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	35.33
ESTIMATED PEAK FLOW (CUMECS) =	3.4
ESTIMATED TIME TO PEAK (MINS) =	120.00

LINK S6.0 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	68.90
ESTIMATED PEAK FLOW (CUMECS) =	5.2
ESTIMATED TIME TO PEAK (MINS) =	150.00

LINK D5 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	741.2
ESTIMATED PEAK FLOW (CUMECS) =	50.
ESTIMATED TIME TO PEAK (MINS) =	181.00

LINK S10.0 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	14.51
ESTIMATED PEAK FLOW (CUMECS) =	1.4
ESTIMATED TIME TO PEAK (MINS) =	155.00

LINK S8.0 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	57.22
ESTIMATED PEAK FLOW (CUMECS) =	5.1
ESTIMATED TIME TO PEAK (MINS) =	120.00

LINK S8.1 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	70.31
ESTIMATED PEAK FLOW (CUMECS) =	6.4
ESTIMATED TIME TO PEAK (MINS) =	120.00

LINK D6 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	825.9
ESTIMATED PEAK FLOW (CUMECS) =	56.
ESTIMATED TIME TO PEAK (MINS) =	155.00

LINK S12.0 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	36.78
ESTIMATED PEAK FLOW (CUMECS) =	3.6
ESTIMATED TIME TO PEAK (MINS) =	120.00

LINK S11.0 8.000

ESTIMATED VOLUME (CU METRES*10**3) =	18.90
ESTIMATED PEAK FLOW (CUMECS) =	2.2
ESTIMATED TIME TO PEAK (MINS) =	120.00

LINK D7	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		881.5
ESTIMATED PEAK FLOW (CUMECS) =		59.
ESTIMATED TIME TO PEAK (MINS) =		161.00
LINK S13.0	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		117.5
ESTIMATED PEAK FLOW (CUMECS) =		12.
ESTIMATED TIME TO PEAK (MINS) =		120.00
LINK S14.0	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		5.608
ESTIMATED PEAK FLOW (CUMECS) =		0.72
ESTIMATED TIME TO PEAK (MINS) =		120.00
LINK S14.1	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		14.81
ESTIMATED PEAK FLOW (CUMECS) =		1.7
ESTIMATED TIME TO PEAK (MINS) =		120.00
LINK D8	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1014.
ESTIMATED PEAK FLOW (CUMECS) =		69.
ESTIMATED TIME TO PEAK (MINS) =		164.00
LINK S16.0	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		62.23
ESTIMATED PEAK FLOW (CUMECS) =		7.9
ESTIMATED TIME TO PEAK (MINS) =		120.00
LINK S15.0	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		22.68
ESTIMATED PEAK FLOW (CUMECS) =		3.1
ESTIMATED TIME TO PEAK (MINS) =		120.00
LINK D9	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1099.
ESTIMATED PEAK FLOW (CUMECS) =		73.
ESTIMATED TIME TO PEAK (MINS) =		167.00
LINK S17.0	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		95.22
ESTIMATED PEAK FLOW (CUMECS) =		11.
ESTIMATED TIME TO PEAK (MINS) =		120.00
LINK S17.1	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		127.9
ESTIMATED PEAK FLOW (CUMECS) =		15.
ESTIMATED TIME TO PEAK (MINS) =		120.00
LINK S18.0	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		32.52
ESTIMATED PEAK FLOW (CUMECS) =		3.8
ESTIMATED TIME TO PEAK (MINS) =		120.00
LINK D10	8.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1259.
ESTIMATED PEAK FLOW (CUMECS) =		86.

```

ESTIMATED TIME TO PEAK          (MINS) =          143.00
LINK S19.0                      8.000
ESTIMATED VOLUME (CU METRES*10**3) =          38.19
ESTIMATED PEAK FLOW              (CUMECS) =           4.9
ESTIMATED TIME TO PEAK          (MINS) =          120.00

LINK S20.0                      8.000
ESTIMATED VOLUME (CU METRES*10**3) =          32.41
ESTIMATED PEAK FLOW              (CUMECS) =           4.3
ESTIMATED TIME TO PEAK          (MINS) =          120.00

LINK Outlet                    8.000
ESTIMATED VOLUME (CU METRES*10**3) =          1330.
ESTIMATED PEAK FLOW              (CUMECS) =           92.
ESTIMATED TIME TO PEAK          (MINS) =          147.00

```

```

#####
#####
Existing - 100 year re-run - Hyder Sept 2010

Results for period from 0: 0.0 1/ 1/1990
                      to 16:40.0 1/ 1/1990
#####
#####

```

```

ROUTING INCREMENT (MINS) =          1.00
STORM DURATION (MINS)    =          360.
RETURN PERIOD (YRS)     =          100.
BX                       =          1.0000
TOTAL OF FIRST SUB-AREAS (ha) =          689.69
TOTAL OF SECOND SUB-AREAS (ha) =          386.68
TOTAL OF ALL SUB-AREAS (ha) =          1076.37

```

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link Label	Catch. Area		Slope		% Impervious		Pern		B		Link No.
	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	
	(ha)		(%)		(%)						
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
Outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
S1.0	24.200	20.00	0.000	2.500	0.000	112.87	0.000	18.700	161.0	5.000
S3.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	2.123	120.0	5.000
D1	24.200	20.00	0.000	2.500	0.000	112.87	0.000	20.041	156.0	5.000
S2.0	24.200	20.00	0.000	2.500	0.000	112.87	0.000	1.985	211.0	13.00
B	24.200	20.00	1.500	2.500	0.000	112.87	143.70	2.301	120.0	0.000

B1	24.200	20.00	0.000	2.500	0.000	112.87	0.000	0.1461	136.0	0.000
S2.1	24.200	20.00	1.500	2.500	0.000	112.87	143.70	7.140	222.0	0.000
S4.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	2.704	120.0	0.000
S1.1	24.200	20.00	0.000	2.500	0.000	112.87	0.000	2.081	215.0	0.000
D2	24.200	20.00	0.000	2.500	0.000	112.87	0.000	29.944	176.0	7.000
S5.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	2.008	120.0	0.000
D3	24.200	20.00	0.000	2.500	0.000	112.87	0.000	30.876	180.0	3.000
S1.2	24.200	20.00	0.000	2.500	0.000	112.87	0.000	3.858	177.0	0.000
S7.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	16.177	120.0	1.000
D4	24.200	20.00	0.000	2.500	0.000	112.87	0.000	44.542	181.0	1.500
S9.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	1.298	120.0	0.000
A	24.200	20.00	1.500	2.500	0.000	112.87	143.70	3.377	120.0	0.000
S6.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	5.194	150.0	0.000
D5	24.200	20.00	0.000	2.500	0.000	112.87	0.000	49.604	181.0	1.500
S10.0	24.200	20.00	0.000	2.500	0.000	112.87	0.000	1.365	155.0	0.000
S8.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	5.131	120.0	0.000
S8.1	24.200	20.00	1.500	2.500	0.000	112.87	143.70	6.409	120.0	9.000
D6	24.200	20.00	0.000	2.500	0.000	112.87	0.000	55.733	155.0	6.000
S12.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	3.610	120.0	0.000
S11.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	2.230	120.0	0.000
D7	24.200	20.00	0.000	2.500	0.000	112.87	0.000	59.469	161.0	2.500
S13.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	12.333	120.0	0.000
S14.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	0.7217	120.0	0.000
S14.1	24.200	20.00	1.500	2.500	0.000	112.87	143.70	1.684	120.0	9.000
D8	24.200	20.00	0.000	2.500	0.000	112.87	0.000	68.546	164.0	2.500
S16.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	7.878	120.0	0.000
S15.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	3.067	120.0	0.000
D9	24.200	20.00	0.000	2.500	0.000	112.87	0.000	73.111	167.0	5.000
S17.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	10.741	120.0	0.000
S17.1	24.200	20.00	1.500	2.500	0.000	112.87	143.70	14.888	120.0	0.000
S18.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	3.772	120.0	0.000
D10	24.200	20.00	0.000	2.500	0.000	112.87	0.000	85.571	143.0	4.300
S19.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	4.864	120.0	0.000
S20.0	24.200	20.00	1.500	2.500	0.000	112.87	143.70	4.272	120.0	0.000
Outlet	24.200	20.00	0.000	2.500	0.000	112.87	0.000	92.379	147.0	0.000

LINK S1.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		244.8
ESTIMATED PEAK FLOW (CUMECS) =		20.
ESTIMATED TIME TO PEAK (MINS) =		331.00
LINK S3.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		20.36
ESTIMATED PEAK FLOW (CUMECS) =		1.9
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK D1	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		265.1
ESTIMATED PEAK FLOW (CUMECS) =		22.
ESTIMATED TIME TO PEAK (MINS) =		335.00
LINK S2.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		35.80
ESTIMATED PEAK FLOW (CUMECS) =		2.3
ESTIMATED TIME TO PEAK (MINS) =		351.00
LINK B	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		36.90
ESTIMATED PEAK FLOW (CUMECS) =		2.7
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK B1	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1.395
ESTIMATED PEAK FLOW (CUMECS) =		0.14
ESTIMATED TIME TO PEAK (MINS) =		317.00
LINK S2.1	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		139.4
ESTIMATED PEAK FLOW (CUMECS) =		8.7
ESTIMATED TIME TO PEAK (MINS) =		330.00
LINK S4.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		30.19
ESTIMATED PEAK FLOW (CUMECS) =		2.6
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S1.1	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		37.90
ESTIMATED PEAK FLOW (CUMECS) =		2.4
ESTIMATED TIME TO PEAK (MINS) =		355.00
LINK D2	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		472.6
ESTIMATED PEAK FLOW (CUMECS) =		34.
ESTIMATED TIME TO PEAK (MINS) =		340.00
LINK S5.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		19.13
ESTIMATED PEAK FLOW (CUMECS) =		1.8
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK D3	9.000	

ESTIMATED VOLUME (CU METRES*10**3) =	491.6
ESTIMATED PEAK FLOW (CUMECS) =	35.
ESTIMATED TIME TO PEAK (MINS) =	337.00
LINK S1.2	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	55.44
ESTIMATED PEAK FLOW (CUMECS) =	4.2
ESTIMATED TIME TO PEAK (MINS) =	331.00
LINK S7.0	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	216.6
ESTIMATED PEAK FLOW (CUMECS) =	17.
ESTIMATED TIME TO PEAK (MINS) =	300.00
LINK D4	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	763.6
ESTIMATED PEAK FLOW (CUMECS) =	53.
ESTIMATED TIME TO PEAK (MINS) =	331.00
LINK S9.0	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	11.79
ESTIMATED PEAK FLOW (CUMECS) =	1.2
ESTIMATED TIME TO PEAK (MINS) =	300.00
LINK A	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	40.96
ESTIMATED PEAK FLOW (CUMECS) =	3.4
ESTIMATED TIME TO PEAK (MINS) =	300.00
LINK S6.0	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	79.52
ESTIMATED PEAK FLOW (CUMECS) =	5.9
ESTIMATED TIME TO PEAK (MINS) =	330.00
LINK D5	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	854.9
ESTIMATED PEAK FLOW (CUMECS) =	59.
ESTIMATED TIME TO PEAK (MINS) =	333.00
LINK S10.0	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	16.70
ESTIMATED PEAK FLOW (CUMECS) =	1.4
ESTIMATED TIME TO PEAK (MINS) =	331.00
LINK S8.0	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	66.29
ESTIMATED PEAK FLOW (CUMECS) =	5.3
ESTIMATED TIME TO PEAK (MINS) =	300.00
LINK S8.1	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	81.47
ESTIMATED PEAK FLOW (CUMECS) =	6.6
ESTIMATED TIME TO PEAK (MINS) =	300.00
LINK D6	9.000
ESTIMATED VOLUME (CU METRES*10**3) =	953.0
ESTIMATED PEAK FLOW (CUMECS) =	66.
ESTIMATED TIME TO PEAK (MINS) =	335.00

LINK S12.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		42.66
ESTIMATED PEAK FLOW (CUMECS) =		3.6
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S11.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		21.94
ESTIMATED PEAK FLOW (CUMECS) =		2.0
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK D7	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1017.
ESTIMATED PEAK FLOW (CUMECS) =		70.
ESTIMATED TIME TO PEAK (MINS) =		341.00
LINK S13.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		136.3
ESTIMATED PEAK FLOW (CUMECS) =		12.
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S14.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		6.539
ESTIMATED PEAK FLOW (CUMECS) =		0.64
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S14.1	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		17.22
ESTIMATED PEAK FLOW (CUMECS) =		1.6
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK D8	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1171.
ESTIMATED PEAK FLOW (CUMECS) =		80.
ESTIMATED TIME TO PEAK (MINS) =		330.00
LINK S16.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		72.53
ESTIMATED PEAK FLOW (CUMECS) =		7.0
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S15.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		26.29
ESTIMATED PEAK FLOW (CUMECS) =		2.7
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK D9	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1270.
ESTIMATED PEAK FLOW (CUMECS) =		86.
ESTIMATED TIME TO PEAK (MINS) =		330.00
LINK S17.0	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		110.7
ESTIMATED PEAK FLOW (CUMECS) =		10.
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S17.1	9.000	
ESTIMATED VOLUME (CU METRES*10**3) =		148.8

```

ESTIMATED PEAK FLOW          (CUMECS) =          14.
ESTIMATED TIME TO PEAK      (MINS) =          300.00

LINK S18.0                    9.000

ESTIMATED VOLUME (CU METRES*10**3) =          37.63
ESTIMATED PEAK FLOW          (CUMECS) =           3.5
ESTIMATED TIME TO PEAK      (MINS) =          300.00

LINK D10                      9.000

ESTIMATED VOLUME (CU METRES*10**3) =          1456.
ESTIMATED PEAK FLOW          (CUMECS) =           99.
ESTIMATED TIME TO PEAK      (MINS) =          330.00

LINK S19.0                    9.000

ESTIMATED VOLUME (CU METRES*10**3) =          44.51
ESTIMATED PEAK FLOW          (CUMECS) =           4.3
ESTIMATED TIME TO PEAK      (MINS) =          300.00

LINK S20.0                    9.000

ESTIMATED VOLUME (CU METRES*10**3) =          37.51
ESTIMATED PEAK FLOW          (CUMECS) =           3.8
ESTIMATED TIME TO PEAK      (MINS) =          300.00

LINK Outlet                   9.000

ESTIMATED VOLUME (CU METRES*10**3) =          1538.
ESTIMATED PEAK FLOW          (CUMECS) =          0.11E+03
ESTIMATED TIME TO PEAK      (MINS) =          327.00

```

```

#####
#####
Existing - 100 year re-run - Hyder Sept 2010

Results for period from 0: 0.0 1/ 1/1990
                        to 16:40.0 1/ 1/1990
#####
#####

```

```

ROUTING INCREMENT (MINS) =          1.00
STORM DURATION (MINS)    =          540.
RETURN PERIOD (YRS)      =          100.
BX                        =          1.0000
TOTAL OF FIRST SUB-AREAS (ha) =          689.69
TOTAL OF SECOND SUB-AREAS (ha) =          386.68
TOTAL OF ALL SUB-AREAS (ha) =          1076.37

```

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link Label	Catch. Area		Slope		% Impervious		Pern		B		Link No.
	#1 (ha)	#2	#1 (%)	#2	#1 (%)	#2	#1	#2	#1	#2	
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000

S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
S1.0	18.800	20.00	0.000	2.500	0.000	130.07	0.000	19.911	331.0	5.000
S3.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	1.926	300.0	5.000
D1	18.800	20.00	0.000	2.500	0.000	130.07	0.000	21.589	335.0	5.000
S2.0	18.800	20.00	0.000	2.500	0.000	130.07	0.000	2.310	351.0	13.00
B	18.800	20.00	1.500	2.500	0.000	130.07	167.70	2.662	300.0	0.000
B1	18.800	20.00	0.000	2.500	0.000	130.07	0.000	0.1352	317.0	0.000
S2.1	18.800	20.00	1.500	2.500	0.000	130.07	167.70	8.713	330.0	0.000
S4.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	2.645	300.0	0.000
S1.1	18.800	20.00	0.000	2.500	0.000	130.07	0.000	2.421	355.0	0.000
D2	18.800	20.00	0.000	2.500	0.000	130.07	0.000	33.937	340.0	7.000
S5.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	1.815	300.0	0.000
D3	18.800	20.00	0.000	2.500	0.000	130.07	0.000	34.989	337.0	3.000
S1.2	18.800	20.00	0.000	2.500	0.000	130.07	0.000	4.210	331.0	0.000
S7.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	16.841	300.0	1.000
D4	18.800	20.00	0.000	2.500	0.000	130.07	0.000	52.795	331.0	1.500
S9.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	1.157	300.0	0.000
A	18.800	20.00	1.500	2.500	0.000	130.07	167.70	3.433	300.0	0.000
S6.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	5.858	330.0	0.000
D5	18.800	20.00	0.000	2.500	0.000	130.07	0.000	58.958	333.0	1.500
S10.0	18.800	20.00	0.000	2.500	0.000	130.07	0.000	1.412	331.0	0.000
S8.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	5.322	300.0	0.000
S8.1	18.800	20.00	1.500	2.500	0.000	130.07	167.70	6.613	300.0	9.000
D6	18.800	20.00	0.000	2.500	0.000	130.07	0.000	66.309	335.0	6.000
S12.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	3.612	300.0	0.000
S11.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	2.046	300.0	0.000
D7	18.800	20.00	0.000	2.500	0.000	130.07	0.000	69.927	341.0	2.500
S13.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	11.923	300.0	0.000
S14.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	0.6380	300.0	0.000
S14.1	18.800	20.00	1.500	2.500	0.000	130.07	167.70	1.571	300.0	9.000
D8	18.800	20.00	0.000	2.500	0.000	130.07	0.000	79.560	330.0	2.500
S16.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	7.029	300.0	0.000
S15.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	2.673	300.0	0.000
D9	18.800	20.00	0.000	2.500	0.000	130.07	0.000	85.798	330.0	5.000

s17.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	10.101	300.0	0.000
s17.1	18.800	20.00	1.500	2.500	0.000	130.07	167.70	13.796	300.0	0.000
s18.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	3.481	300.0	0.000
d10	18.800	20.00	0.000	2.500	0.000	130.07	0.000	99.065	330.0	4.300
s19.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	4.324	300.0	0.000
s20.0	18.800	20.00	1.500	2.500	0.000	130.07	167.70	3.763	300.0	0.000
outlet	18.800	20.00	0.000	2.500	0.000	130.07	0.000	105.65	327.0	0.000

LINK S1.0 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	271.3
ESTIMATED PEAK FLOW (CUMECS) =	18.
ESTIMATED TIME TO PEAK (MINS) =	421.00

LINK S3.0 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	22.60
ESTIMATED PEAK FLOW (CUMECS) =	2.0
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK D1 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	293.9
ESTIMATED PEAK FLOW (CUMECS) =	20.
ESTIMATED TIME TO PEAK (MINS) =	425.00

LINK S2.0 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	40.18
ESTIMATED PEAK FLOW (CUMECS) =	2.0
ESTIMATED TIME TO PEAK (MINS) =	421.00

LINK B 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	41.16
ESTIMATED PEAK FLOW (CUMECS) =	2.8
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK B1 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	1.540
ESTIMATED PEAK FLOW (CUMECS) =	0.14
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK S2.1 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	156.3
ESTIMATED PEAK FLOW (CUMECS) =	8.0
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK S4.0 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	33.54
ESTIMATED PEAK FLOW (CUMECS) =	2.8
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK S1.1 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	42.54
ESTIMATED PEAK FLOW (CUMECS) =	2.1
ESTIMATED TIME TO PEAK (MINS) =	423.00

LINK D2	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		526.3
ESTIMATED PEAK FLOW (CUMECS) =		30.
ESTIMATED TIME TO PEAK (MINS) =		430.00
LINK S5.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		21.24
ESTIMATED PEAK FLOW (CUMECS) =		1.9
ESTIMATED TIME TO PEAK (MINS) =		420.00
LINK D3	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		547.5
ESTIMATED PEAK FLOW (CUMECS) =		31.
ESTIMATED TIME TO PEAK (MINS) =		437.00
LINK S1.2	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		61.56
ESTIMATED PEAK FLOW (CUMECS) =		3.8
ESTIMATED TIME TO PEAK (MINS) =		421.00
LINK S7.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		241.8
ESTIMATED PEAK FLOW (CUMECS) =		17.
ESTIMATED TIME TO PEAK (MINS) =		420.00
LINK D4	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		850.9
ESTIMATED PEAK FLOW (CUMECS) =		50.
ESTIMATED TIME TO PEAK (MINS) =		421.00
LINK S9.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		13.08
ESTIMATED PEAK FLOW (CUMECS) =		1.2
ESTIMATED TIME TO PEAK (MINS) =		420.00
LINK A	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		45.57
ESTIMATED PEAK FLOW (CUMECS) =		3.6
ESTIMATED TIME TO PEAK (MINS) =		420.00
LINK S6.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		88.55
ESTIMATED PEAK FLOW (CUMECS) =		6.1
ESTIMATED TIME TO PEAK (MINS) =		420.00
LINK D5	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		952.5
ESTIMATED PEAK FLOW (CUMECS) =		56.
ESTIMATED TIME TO PEAK (MINS) =		421.00
LINK S10.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		18.50
ESTIMATED PEAK FLOW (CUMECS) =		1.3
ESTIMATED TIME TO PEAK (MINS) =		421.00
LINK S8.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		73.87
ESTIMATED PEAK FLOW (CUMECS) =		5.5

ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK S8.1	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		90.73
ESTIMATED PEAK FLOW (CUMECS) =		6.9
ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK D6	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1062.
ESTIMATED PEAK FLOW (CUMECS) =		64.
ESTIMATED TIME TO PEAK	(MINS) =	425.00
LINK S12.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		47.42
ESTIMATED PEAK FLOW (CUMECS) =		3.8
ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK S11.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		24.35
ESTIMATED PEAK FLOW (CUMECS) =		2.2
ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK D7	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1134.
ESTIMATED PEAK FLOW (CUMECS) =		67.
ESTIMATED TIME TO PEAK	(MINS) =	429.00
LINK S13.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		151.5
ESTIMATED PEAK FLOW (CUMECS) =		13.
ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK S14.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		7.281
ESTIMATED PEAK FLOW (CUMECS) =		0.64
ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK S14.1	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		19.14
ESTIMATED PEAK FLOW (CUMECS) =		1.6
ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK D8	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1304.
ESTIMATED PEAK FLOW (CUMECS) =		76.
ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK S16.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		80.78
ESTIMATED PEAK FLOW (CUMECS) =		7.1
ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK S15.0	10.000	
ESTIMATED VOLUME (CU METRES*10**3) =		29.14
ESTIMATED PEAK FLOW (CUMECS) =		2.8
ESTIMATED TIME TO PEAK	(MINS) =	420.00
LINK D9	10.000	

ESTIMATED VOLUME (CU METRES*10**3) =	1414.
ESTIMATED PEAK FLOW (CUMECS) =	85.
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK S17.0 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	123.2
ESTIMATED PEAK FLOW (CUMECS) =	10.
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK S17.1 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	165.6
ESTIMATED PEAK FLOW (CUMECS) =	14.
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK S18.0 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	41.70
ESTIMATED PEAK FLOW (CUMECS) =	3.7
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK D10 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	1621.
ESTIMATED PEAK FLOW (CUMECS) =	97.
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK S19.0 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	49.57
ESTIMATED PEAK FLOW (CUMECS) =	4.4
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK S20.0 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	41.55
ESTIMATED PEAK FLOW (CUMECS) =	3.9
ESTIMATED TIME TO PEAK (MINS) =	420.00

LINK Outlet 10.000

ESTIMATED VOLUME (CU METRES*10**3) =	1712.
ESTIMATED PEAK FLOW (CUMECS) =	0.10E+03
ESTIMATED TIME TO PEAK (MINS) =	424.00

```
#####
#####
Existing - 100 year re-run - Hyder Sept 2010

Results for period from 0: 0.0 1/ 1/1990
                        to 2: 0.0 3/ 1/1990
#####
#####
```

ROUTING INCREMENT (MINS) =	1.00
STORM DURATION (MINS) =	720.
RETURN PERIOD (YRS) =	100.
BX =	1.0000
TOTAL OF FIRST SUB-AREAS (ha) =	689.69
TOTAL OF SECOND SUB-AREAS (ha) =	386.68
TOTAL OF ALL SUB-AREAS (ha) =	1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA					
Link	Catch. Area	Slope	% Impervious	Pern	Link

Label	#1 (ha)	#2	#1 (%)	#2	#1 (%)	#2	#1	#2	#1	#2	No.
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00
S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00

S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
Outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
S1.0	15.700	20.00	0.000	2.500	0.000	143.61	0.000	18.152	421.0	5.000
S3.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	2.023	420.0	5.000
D1	15.700	20.00	0.000	2.500	0.000	143.61	0.000	20.082	425.0	5.000
S2.0	15.700	20.00	0.000	2.500	0.000	143.61	0.000	2.001	421.0	13.00
B	15.700	20.00	1.500	2.500	0.000	143.61	186.90	2.790	420.0	0.000
B1	15.700	20.00	0.000	2.500	0.000	143.61	0.000	0.1403	420.0	0.000
S2.1	15.700	20.00	1.500	2.500	0.000	143.61	186.90	7.951	420.0	0.000
S4.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	2.792	420.0	0.000
S1.1	15.700	20.00	0.000	2.500	0.000	143.61	0.000	2.083	423.0	0.000
D2	15.700	20.00	0.000	2.500	0.000	143.61	0.000	30.397	430.0	7.000
S5.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	1.905	420.0	0.000
D3	15.700	20.00	0.000	2.500	0.000	143.61	0.000	31.276	437.0	3.000
S1.2	15.700	20.00	0.000	2.500	0.000	143.61	0.000	3.761	421.0	0.000
S7.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	17.336	420.0	1.000
D4	15.700	20.00	0.000	2.500	0.000	143.61	0.000	49.607	421.0	1.500
S9.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	1.196	420.0	0.000
A	15.700	20.00	1.500	2.500	0.000	143.61	186.90	3.565	420.0	0.000
S6.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	6.107	420.0	0.000
D5	15.700	20.00	0.000	2.500	0.000	143.61	0.000	55.527	421.0	1.500
S10.0	15.700	20.00	0.000	2.500	0.000	143.61	0.000	1.306	421.0	0.000
S8.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	5.529	420.0	0.000
S8.1	15.700	20.00	1.500	2.500	0.000	143.61	186.90	6.901	420.0	9.000
D6	15.700	20.00	0.000	2.500	0.000	143.61	0.000	63.523	425.0	6.000
S12.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	3.798	420.0	0.000
S11.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	2.159	420.0	0.000
D7	15.700	20.00	0.000	2.500	0.000	143.61	0.000	66.532	429.0	2.500
S13.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	12.697	420.0	0.000

s14.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	0.6439	420.0	0.000
s14.1	15.700	20.00	1.500	2.500	0.000	143.61	186.90	1.639	420.0	9.000
D8	15.700	20.00	0.000	2.500	0.000	143.61	0.000	76.480	420.0	2.500
s16.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	7.105	420.0	0.000
s15.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	2.766	420.0	0.000
D9	15.700	20.00	0.000	2.500	0.000	143.61	0.000	84.523	420.0	5.000
s17.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	10.391	420.0	0.000
s17.1	15.700	20.00	1.500	2.500	0.000	143.61	186.90	14.119	420.0	0.000
s18.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	3.729	420.0	0.000
D10	15.700	20.00	0.000	2.500	0.000	143.61	0.000	97.392	420.0	4.300
s19.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	4.365	420.0	0.000
s20.0	15.700	20.00	1.500	2.500	0.000	143.61	186.90	3.919	420.0	0.000
outlet	15.700	20.00	0.000	2.500	0.000	143.61	0.000	101.92	424.0	0.000

Run completed at: 6th September 2010 10:21:53

Run started at: 6th September 2010 10:33:42

#####

#####

RUNTIME RESULTS

Max. no. of links allowed = 1500

Max. no. of routing increments allowed = 250000

Max. no. of rating curve points = 250000

Max. no. of storm temporal points = 250000

Max. no. of channel subreaches = 25

Max link stack level = 50

Input version number = 800

LINK S1.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 307.6
ESTIMATED PEAK FLOW (CUMECS) = 25.
ESTIMATED TIME TO PEAK (MINS) = 331.00

LINK S3.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 24.94
ESTIMATED PEAK FLOW (CUMECS) = 2.4
ESTIMATED TIME TO PEAK (MINS) = 300.00

LINK D1 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 332.6
ESTIMATED PEAK FLOW (CUMECS) = 27.
ESTIMATED TIME TO PEAK (MINS) = 335.00

LINK S2.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 45.05
ESTIMATED PEAK FLOW (CUMECS) = 2.9
ESTIMATED TIME TO PEAK (MINS) = 345.00

LINK B 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 45.60
ESTIMATED PEAK FLOW (CUMECS) = 3.3
ESTIMATED TIME TO PEAK (MINS) = 300.00

LINK B1 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 1.752
ESTIMATED PEAK FLOW (CUMECS) = 0.17
ESTIMATED TIME TO PEAK (MINS) = 318.00

LINK S2.1 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	174.4
ESTIMATED PEAK FLOW (CUMECS) =	11.
ESTIMATED TIME TO PEAK (MINS) =	330.00

LINK S4.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	36.99
ESTIMATED PEAK FLOW (CUMECS) =	3.2
ESTIMATED TIME TO PEAK (MINS) =	300.00

LINK S1.1 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	47.74
ESTIMATED PEAK FLOW (CUMECS) =	3.0
ESTIMATED TIME TO PEAK (MINS) =	347.00

LINK D2 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	591.7
ESTIMATED PEAK FLOW (CUMECS) =	42.
ESTIMATED TIME TO PEAK (MINS) =	330.00

LINK S5.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	23.45
ESTIMATED PEAK FLOW (CUMECS) =	2.2
ESTIMATED TIME TO PEAK (MINS) =	300.00

LINK D3 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	615.1
ESTIMATED PEAK FLOW (CUMECS) =	44.
ESTIMATED TIME TO PEAK (MINS) =	337.00

LINK S1.2 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	69.65
ESTIMATED PEAK FLOW (CUMECS) =	5.3
ESTIMATED TIME TO PEAK (MINS) =	331.00

LINK S7.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	265.6
ESTIMATED PEAK FLOW (CUMECS) =	21.
ESTIMATED TIME TO PEAK (MINS) =	300.00

LINK D4 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	950.3
ESTIMATED PEAK FLOW (CUMECS) =	66.
ESTIMATED TIME TO PEAK (MINS) =	331.00

LINK S9.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	14.44
ESTIMATED PEAK FLOW (CUMECS) =	1.4
ESTIMATED TIME TO PEAK (MINS) =	300.00

LINK A 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	50.16
ESTIMATED PEAK FLOW (CUMECS) =	4.2
ESTIMATED TIME TO PEAK (MINS) =	300.00

LINK S6.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	98.53
ESTIMATED PEAK FLOW (CUMECS) =	7.2
ESTIMATED TIME TO PEAK (MINS) =	330.00

LINK D5	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1063.
ESTIMATED PEAK FLOW (CUMECS) =		73.
ESTIMATED TIME TO PEAK (MINS) =		333.00
LINK S10.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		20.98
ESTIMATED PEAK FLOW (CUMECS) =		1.8
ESTIMATED TIME TO PEAK (MINS) =		330.00
LINK S8.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		81.28
ESTIMATED PEAK FLOW (CUMECS) =		6.5
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S8.1	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		99.88
ESTIMATED PEAK FLOW (CUMECS) =		8.1
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK D6	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1184.
ESTIMATED PEAK FLOW (CUMECS) =		82.
ESTIMATED TIME TO PEAK (MINS) =		335.00
LINK S12.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		52.28
ESTIMATED PEAK FLOW (CUMECS) =		4.4
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S11.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		26.87
ESTIMATED PEAK FLOW (CUMECS) =		2.5
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK D7	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1263.
ESTIMATED PEAK FLOW (CUMECS) =		87.
ESTIMATED TIME TO PEAK (MINS) =		339.00
LINK S13.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		167.1
ESTIMATED PEAK FLOW (CUMECS) =		15.
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S14.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		7.886
ESTIMATED PEAK FLOW (CUMECS) =		0.77
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK S14.1	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		20.98
ESTIMATED PEAK FLOW (CUMECS) =		1.9
ESTIMATED TIME TO PEAK (MINS) =		300.00
LINK D8	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1451.
ESTIMATED PEAK FLOW (CUMECS) =		99.

ESTIMATED TIME TO PEAK	(MINS) =	330.00
LINK S16.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		87.47
ESTIMATED PEAK FLOW (CUMECS) =		8.5
ESTIMATED TIME TO PEAK	(MINS) =	300.00
LINK S15.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		32.40
ESTIMATED PEAK FLOW (CUMECS) =		3.3
ESTIMATED TIME TO PEAK	(MINS) =	300.00
LINK D9	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1571.
ESTIMATED PEAK FLOW (CUMECS) =		0.11E+03
ESTIMATED TIME TO PEAK	(MINS) =	330.00
LINK S17.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		134.6
ESTIMATED PEAK FLOW (CUMECS) =		12.
ESTIMATED TIME TO PEAK	(MINS) =	300.00
LINK S17.1	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		180.5
ESTIMATED PEAK FLOW (CUMECS) =		17.
ESTIMATED TIME TO PEAK	(MINS) =	300.00
LINK S18.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		46.57
ESTIMATED PEAK FLOW (CUMECS) =		4.3
ESTIMATED TIME TO PEAK	(MINS) =	300.00
LINK D10	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1798.
ESTIMATED PEAK FLOW (CUMECS) =		0.12E+03
ESTIMATED TIME TO PEAK	(MINS) =	330.00
LINK S19.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		53.68
ESTIMATED PEAK FLOW (CUMECS) =		5.2
ESTIMATED TIME TO PEAK	(MINS) =	300.00
LINK S20.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		46.35
ESTIMATED PEAK FLOW (CUMECS) =		4.6
ESTIMATED TIME TO PEAK	(MINS) =	300.00
LINK Outlet	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		1898.
ESTIMATED PEAK FLOW (CUMECS) =		0.13E+03
ESTIMATED TIME TO PEAK	(MINS) =	327.00

 #####
 Existing - 100 year re-run - Hyder Sept 2010

Results for period from 0: 0.0 1/ 1/1990
 to 16:40.0 1/ 1/1990

 #####

ROUTING INCREMENT (MINS) = 1.00
 STORM DURATION (MINS) = 540.
 RETURN PERIOD (YRS) = 100.
 BX = 1.0000
 TOTAL OF FIRST SUB-AREAS (ha) = 689.69
 TOTAL OF SECOND SUB-AREAS (ha) = 386.68
 TOTAL OF ALL SUB-AREAS (ha) = 1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link	Catch. Area		Slope		% Impervious		Pern		B		Link
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	0.000	100.0	.050	.025	.2928	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00

S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
S1.0	22.560	20.00	0.000	2.500	0.000	163.33	0.000	24.609	331.0	5.000
S3.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	2.362	300.0	5.000
D1	22.560	20.00	0.000	2.500	0.000	163.33	0.000	26.633	335.0	5.000
S2.0	22.560	20.00	0.000	2.500	0.000	163.33	0.000	2.883	345.0	13.00
B	22.560	20.00	1.500	2.500	0.000	163.33	201.54	3.283	300.0	0.000
B1	22.560	20.00	0.000	2.500	0.000	163.33	0.000	0.1666	318.0	0.000
S2.1	22.560	20.00	1.500	2.500	0.000	163.33	201.54	11.087	330.0	0.000
S4.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	3.214	300.0	0.000
S1.1	22.560	20.00	0.000	2.500	0.000	163.33	0.000	3.025	347.0	0.000
D2	22.560	20.00	0.000	2.500	0.000	163.33	0.000	42.326	330.0	7.000
S5.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	2.225	300.0	0.000
D3	22.560	20.00	0.000	2.500	0.000	163.33	0.000	43.677	337.0	3.000
S1.2	22.560	20.00	0.000	2.500	0.000	163.33	0.000	5.306	331.0	0.000
S7.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	20.673	300.0	1.000
D4	22.560	20.00	0.000	2.500	0.000	163.33	0.000	65.901	331.0	1.500
S9.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	1.402	300.0	0.000

A	22.560	20.00	1.500	2.500	0.000	163.33	201.54	4.164	300.0	0.000
S6.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	7.224	330.0	0.000
D5	22.560	20.00	0.000	2.500	0.000	163.33	0.000	73.455	333.0	1.500
S10.0	22.560	20.00	0.000	2.500	0.000	163.33	0.000	1.764	330.0	0.000
S8.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	6.531	300.0	0.000
S8.1	22.560	20.00	1.500	2.500	0.000	163.33	201.54	8.113	300.0	9.000
D6	22.560	20.00	0.000	2.500	0.000	163.33	0.000	82.434	335.0	6.000
S12.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	4.398	300.0	0.000
S11.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	2.505	300.0	0.000
D7	22.560	20.00	0.000	2.500	0.000	163.33	0.000	86.839	339.0	2.500
S13.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	14.594	300.0	0.000
S14.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	0.7688	300.0	0.000
S14.1	22.560	20.00	1.500	2.500	0.000	163.33	201.54	1.919	300.0	9.000
D8	22.560	20.00	0.000	2.500	0.000	163.33	0.000	98.742	330.0	2.500
S16.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	8.467	300.0	0.000
S15.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	3.289	300.0	0.000
D9	22.560	20.00	0.000	2.500	0.000	163.33	0.000	106.12	330.0	5.000
S17.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	12.188	300.0	0.000
S17.1	22.560	20.00	1.500	2.500	0.000	163.33	201.54	16.632	300.0	0.000
S18.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	4.255	300.0	0.000
D10	22.560	20.00	0.000	2.500	0.000	163.33	0.000	121.95	330.0	4.300
S19.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	5.206	300.0	0.000
S20.0	22.560	20.00	1.500	2.500	0.000	163.33	201.54	4.590	300.0	0.000
Outlet	22.560	20.00	0.000	2.500	0.000	163.33	0.000	129.92	327.0	0.000

Run completed at: 6th September 2010 10:33:45

Run started at: 6th September 2010 10:38:46

#####

RUNTIME RESULTS

#####

Max. no. of links allowed = 1500

Max. no. of routing increments allowed = 250000

Max. no. of rating curve points = 250000

Max. no. of storm temporal points = 250000

Max. no. of channel subreaches = 25

Max link stack level = 50

Input Version number = 800

LINK S1.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 619.5
ESTIMATED PEAK FLOW (CUMECS) = 0.15E+03
ESTIMATED TIME TO PEAK (MINS) = 51.00

LINK S3.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 44.93
ESTIMATED PEAK FLOW (CUMECS) = 15.
ESTIMATED TIME TO PEAK (MINS) = 27.00

LINK D1 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 664.5
ESTIMATED PEAK FLOW (CUMECS) = 0.16E+03
ESTIMATED TIME TO PEAK (MINS) = 56.00

LINK S2.0 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 90.96
ESTIMATED PEAK FLOW (CUMECS) = 14.
ESTIMATED TIME TO PEAK (MINS) = 60.00

LINK B 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 85.17
ESTIMATED PEAK FLOW (CUMECS) = 17.
ESTIMATED TIME TO PEAK (MINS) = 42.00

LINK B1 1.000

ESTIMATED VOLUME (CU METRES*10**3) = 3.540
ESTIMATED PEAK FLOW (CUMECS) = 1.1
ESTIMATED TIME TO PEAK (MINS) = 36.00

LINK S2.1 1.000

ESTIMATED VOLUME (CU METRES*10**3) =	343.4
ESTIMATED PEAK FLOW (CUMECS) =	50.
ESTIMATED TIME TO PEAK (MINS) =	57.00
LINK S4.0	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	66.59
ESTIMATED PEAK FLOW (CUMECS) =	19.
ESTIMATED TIME TO PEAK (MINS) =	27.00
LINK S1.1	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	96.46
ESTIMATED PEAK FLOW (CUMECS) =	15.
ESTIMATED TIME TO PEAK (MINS) =	60.00
LINK D2	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	1171.
ESTIMATED PEAK FLOW (CUMECS) =	0.23E+03
ESTIMATED TIME TO PEAK (MINS) =	57.00
LINK S5.0	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	42.22
ESTIMATED PEAK FLOW (CUMECS) =	15.
ESTIMATED TIME TO PEAK (MINS) =	27.00
LINK D3	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	1213.
ESTIMATED PEAK FLOW (CUMECS) =	0.24E+03
ESTIMATED TIME TO PEAK (MINS) =	64.00
LINK S1.2	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	140.6
ESTIMATED PEAK FLOW (CUMECS) =	31.
ESTIMATED TIME TO PEAK (MINS) =	53.00
LINK S7.0	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	478.7
ESTIMATED PEAK FLOW (CUMECS) =	0.11E+03
ESTIMATED TIME TO PEAK (MINS) =	27.00
LINK D4	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	1832.
ESTIMATED PEAK FLOW (CUMECS) =	0.32E+03
ESTIMATED TIME TO PEAK (MINS) =	60.00
LINK S9.0	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	26.02
ESTIMATED PEAK FLOW (CUMECS) =	9.3
ESTIMATED TIME TO PEAK (MINS) =	27.00
LINK A	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	90.04
ESTIMATED PEAK FLOW (CUMECS) =	23.
ESTIMATED TIME TO PEAK (MINS) =	27.00
LINK S6.0	1.000
ESTIMATED VOLUME (CU METRES*10**3) =	186.7
ESTIMATED PEAK FLOW (CUMECS) =	44.
ESTIMATED TIME TO PEAK (MINS) =	43.00

LINK D5	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		2045.
ESTIMATED PEAK FLOW (CUMECS) =		0.36E+03
ESTIMATED TIME TO PEAK (MINS) =		55.00
LINK S10.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		42.24
ESTIMATED PEAK FLOW (CUMECS) =		11.
ESTIMATED TIME TO PEAK (MINS) =		47.00
LINK S8.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		146.5
ESTIMATED PEAK FLOW (CUMECS) =		35.
ESTIMATED TIME TO PEAK (MINS) =		27.00
LINK S8.1	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		180.0
ESTIMATED PEAK FLOW (CUMECS) =		45.
ESTIMATED TIME TO PEAK (MINS) =		27.00
LINK D6	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		2267.
ESTIMATED PEAK FLOW (CUMECS) =		0.40E+03
ESTIMATED TIME TO PEAK (MINS) =		57.00
LINK S12.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		94.19
ESTIMATED PEAK FLOW (CUMECS) =		26.
ESTIMATED TIME TO PEAK (MINS) =		27.00
LINK S11.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		48.40
ESTIMATED PEAK FLOW (CUMECS) =		16.
ESTIMATED TIME TO PEAK (MINS) =		27.00
LINK D7	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		2409.
ESTIMATED PEAK FLOW (CUMECS) =		0.42E+03
ESTIMATED TIME TO PEAK (MINS) =		57.00
LINK S13.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		301.1
ESTIMATED PEAK FLOW (CUMECS) =		89.
ESTIMATED TIME TO PEAK (MINS) =		27.00
LINK S14.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		13.10
ESTIMATED PEAK FLOW (CUMECS) =		5.4
ESTIMATED TIME TO PEAK (MINS) =		9.00
LINK S14.1	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		36.72
ESTIMATED PEAK FLOW (CUMECS) =		12.
ESTIMATED TIME TO PEAK (MINS) =		27.00
LINK D8	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		2747.
ESTIMATED PEAK FLOW (CUMECS) =		0.48E+03

ESTIMATED TIME TO PEAK	(MINS) =	57.00
LINK S16.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		145.3
ESTIMATED PEAK FLOW (CUMECS) =		58.
ESTIMATED TIME TO PEAK (MINS) =		9.00
LINK S15.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		60.05
ESTIMATED PEAK FLOW (CUMECS) =		22.
ESTIMATED TIME TO PEAK (MINS) =		27.00
LINK D9	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		2952.
ESTIMATED PEAK FLOW (CUMECS) =		0.50E+03
ESTIMATED TIME TO PEAK (MINS) =		59.00
LINK S17.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		232.8
ESTIMATED PEAK FLOW (CUMECS) =		74.
ESTIMATED TIME TO PEAK (MINS) =		27.00
LINK S17.1	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		309.1
ESTIMATED PEAK FLOW (CUMECS) =		0.10E+03
ESTIMATED TIME TO PEAK (MINS) =		9.00
LINK S18.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		88.04
ESTIMATED PEAK FLOW (CUMECS) =		29.
ESTIMATED TIME TO PEAK (MINS) =		33.00
LINK D10	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		3349.
ESTIMATED PEAK FLOW (CUMECS) =		0.57E+03
ESTIMATED TIME TO PEAK (MINS) =		50.00
LINK S19.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		89.17
ESTIMATED PEAK FLOW (CUMECS) =		36.
ESTIMATED TIME TO PEAK (MINS) =		9.00
LINK S20.0	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		86.89
ESTIMATED PEAK FLOW (CUMECS) =		31.
ESTIMATED TIME TO PEAK (MINS) =		27.00
LINK Outlet	1.000	
ESTIMATED VOLUME (CU METRES*10**3) =		3525.
ESTIMATED PEAK FLOW (CUMECS) =		0.60E+03
ESTIMATED TIME TO PEAK (MINS) =		45.00

 #####
 PMF

Results for period from 0: 0.0 1/ 1/1990
 to 8:20.0 1/ 1/1990

 #####

ROUTING INCREMENT (MINS) = 1.00
 STORM DURATION (MINS) = 60.
 RETURN PERIOD (YRS) = 100000.
 BX = 1.0000
 TOTAL OF FIRST SUB-AREAS (ha) = 689.69
 TOTAL OF SECOND SUB-AREAS (ha) = 386.68
 TOTAL OF ALL SUB-AREAS (ha) = 1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link	Catch. Area		Slope		% Impervious		Pern		B		Link
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
S1.0	189.00	0.000	1.700	0.000	5.000	0.000	.050	0.00	.4083	0.000	1.000
S3.0	6.840	6.840	1.200	1.200	5.000	100.0	.050	.015	.0865	.0037	2.000
D1	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
S2.0	28.000	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3594	0.000	3.000
B	17.350	8.701	.5000	.5000	0.000	100.0	.050	.015	.2700	.0065	4.000
B1	1.073	0.000	.5000	0.000	5.000	0.000	.050	0.00	.0511	0.000	5.000
S2.1	47.903	2.521	.5000	.5000	0.000	100.0	.050	.015	.4578	.0034	3.001
S4.0	10.150	10.150	.7000	.7000	5.000	100.0	.050	.015	.1389	.0059	6.000
S1.1	29.650	0.000	.3000	0.000	5.000	0.000	.050	0.00	.3703	0.000	7.000
D2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
S5.0	6.430	6.430	1.200	1.200	5.000	100.0	.050	.015	.0837	.0036	8.000
D3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003
S1.2	42.887	0.000	.7000	0.000	5.000	0.000	.050	0.00	.2940	0.000	9.000
S7.0	73.180	73.180	.5000	.5000	5.000	100.0	.050	.015	.4591	.0196	10.00
D4	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.004
S9.0	3.960	3.960	1.200	1.200	5.000	100.0	.050	.015	.0651	.0028	11.00
A	13.232	14.221	.7000	.7000	0.000	100.0	.050	.025	.1983	.0142	12.00
S6.0	28.014	1.474	.7000	.7000	5.000	100.0	.050	.025	.2356	.0044	12.00
D5	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.005
S10.0	12.890	0.000	.6000	0.000	5.000	0.000	.050	0.00	.1699	0.000	13.00
S8.0	22.360	22.360	.4000	.4000	5.000	100.0	.050	.015	.2770	.0118	14.00
S8.1	5.100	5.110	.4000	.4000	5.000	100.0	.050	.015	.1284	.0055	14.00
D6	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.006
S12.0	14.350	14.350	.6000	.6000	5.000	100.0	.050	.015	.1797	.0077	15.00

S11.0	7.370	7.370	1.100	1.100	5.000	100.0	.050	.015	.0939	.0040	16.00
D7	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.007
S13.0	45.840	45.840	1.500	1.500	5.000	100.0	.050	.015	.2080	.0089	17.00
S14.0	0.4000	3.590	.4000	.4000	5.000	100.0	.050	.015	.0342	.0046	18.00
S14.1	3.590	3.590	.5000	.5000	5.000	100.0	.050	.025	.0957	.0082	18.00
D8	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.008
S16.0	4.430	39.830	.6000	.6000	5.000	100.0	.050	.015	.0975	.0131	19.00
S15.0	11.550	6.720	2.700	2.700	5.000	100.0	.050	.015	.0758	.0024	20.00
D9	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.009
S17.0	21.600	49.340	.8000	.8000	5.000	100.0	.050	.015	.1925	.0126	21.00
S17.1	2.320	20.920	.5000	.5000	5.000	100.0	.050	.015	.0763	.0102	21.00
S18.0	19.320	7.470	1.900	1.900	5.000	100.0	.050	.015	.1180	.0031	22.00
D10	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.010
S19.0	2.720	24.440	.6000	.6000	5.000	100.0	.050	.015	.0757	.0101	23.00
S20.0	18.180	8.270	3.000	3.000	5.000	100.0	.050	.015	.0910	.0026	24.00
outlet	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.011

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2 (mm/h)	Cont. #1 (mm/h)	Loss #2 (mm/h)	Excess #1 (mm)	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
s1.0	330.00	0.000	0.000	1.000	0.000	329.00	0.000	148.78	51.00	5.000
S3.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	15.355	27.00	5.000
D1	330.00	20.00	0.000	2.500	0.000	307.67	0.000	158.48	56.00	5.000
S2.0	330.00	0.000	0.000	1.000	0.000	329.00	0.000	14.493	60.00	13.00
B	330.00	0.000	1.500	1.000	0.000	329.00	328.50	16.869	42.00	0.000
B1	330.00	0.000	0.000	1.000	0.000	329.00	0.000	1.144	36.00	0.000
S2.1	330.00	0.000	1.500	1.000	0.000	329.00	328.50	49.843	57.00	0.000
S4.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	19.298	27.00	0.000
S1.1	330.00	0.000	0.000	1.000	0.000	329.00	0.000	15.128	60.00	0.000
D2	330.00	20.00	0.000	2.500	0.000	307.67	0.000	233.60	57.00	7.000
S5.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	14.508	27.00	0.000
D3	330.00	20.00	0.000	2.500	0.000	307.67	0.000	237.04	64.00	3.000
S1.2	330.00	0.000	0.000	1.000	0.000	329.00	0.000	31.031	53.00	0.000
S7.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	110.35	27.00	1.000
D4	330.00	20.00	0.000	2.500	0.000	307.67	0.000	319.48	60.00	1.500
S9.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	9.286	27.00	0.000

A	330.00	0.000	1.500	1.000	0.000	329.00	328.50	23.096	27.00	0.000
S6.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	44.288	43.00	0.000
D5	330.00	20.00	0.000	2.500	0.000	307.67	0.000	357.57	55.00	1.500
S10.0	330.00	0.000	0.000	1.000	0.000	329.00	0.000	10.914	47.00	0.000
S8.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	35.479	27.00	0.000
S8.1	330.00	0.000	1.500	1.000	0.000	329.00	328.50	44.688	27.00	9.000
D6	330.00	20.00	0.000	2.500	0.000	307.67	0.000	401.70	57.00	6.000
S12.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	25.574	27.00	0.000
S11.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	16.121	27.00	0.000
D7	330.00	20.00	0.000	2.500	0.000	307.67	0.000	420.41	57.00	2.500
S13.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	88.552	27.00	0.000
S14.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	5.361	9.000	0.000
S14.1	330.00	0.000	1.500	1.000	0.000	329.00	328.50	11.955	27.00	9.000
D8	330.00	20.00	0.000	2.500	0.000	307.67	0.000	476.51	57.00	2.500
S16.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	57.766	9.000	0.000
S15.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	22.101	27.00	0.000
D9	330.00	20.00	0.000	2.500	0.000	307.67	0.000	497.91	59.00	5.000
S17.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	74.340	27.00	0.000
S17.1	330.00	0.000	1.500	1.000	0.000	329.00	328.50	104.09	9.000	0.000
S18.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	28.755	33.00	0.000
D10	330.00	20.00	0.000	2.500	0.000	307.67	0.000	570.83	50.00	4.300
S19.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	35.863	9.000	0.000
S20.0	330.00	0.000	1.500	1.000	0.000	329.00	328.50	31.401	27.00	0.000
Outlet	330.00	20.00	0.000	2.500	0.000	307.67	0.000	599.60	45.00	0.000

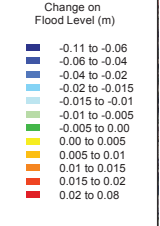
Run completed at: 6th September 2010 10:38:47

APPENDIX E

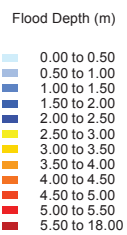
ANZAC CREEK TUFLOW MODEL INPUTS AND RESULTS – EXISTING AND PROPOSED CONDITIONS



LEGEND Project Site Boundary Flood Level Contour (m AHD) Line		Notes TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (Az_exg_100y9h_01_Blockage_25pc.tcf - TUFLOW Version 2006-06-BF). Adjustments were made to represent existing flows leaving the project site. The mapping on this drawing represents TUFLOW model results for the 100 year ARI 9 hour storm duration. Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forester (August 2010). This figure may not represent local flow regimes away from the Anzac Creek corridor. TUFLOW run files: (TUFLOW Version 2006-06-08) F:\AA003210-D-Calculations\Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOWruns\Creek\TUFLOWruns\Az_Hy_Exg100y9h_02.tcf Figure Workspace: F:\AA003210-D-Calculations\Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\100yr_Ext_Anzac_Ck_Flood_Map.wor Aerial Imagery by NearMap 2011 ©		Client SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA) Scale: 1:3500 @ A1 TUFLOW Grid Size: 5m Datum: GDA94 Projection: MGA56	Project MOOREBANK INTERMODAL TERMINAL FACILITY Title ANZAC CREEK MODEL - 100 YEAR ARI FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR EXISTING CONDITION	Hyder HYDER CONSULTING PTY LTD ABN 76 104 485 289 Level 5, 141 Walker Street North Sydney NSW 2060 Tel: +61 (0)2 8907 9000 Fax: +61 (0)2 8907 9001 www.hyderconsulting.com (c) Copyright reserved Figure No E1 Project No AA003210 N Issue 01
--	--	--	--	---	---	--



LEGEND		Notes		Client		Project		HYDER CONSULTING PTY LTD	
Project Site Boundary Line		TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (Az_exg_100y9h_01_Blockage_25pcf.tcf – TUFLOW Version 2006-06-BF). Adjustments were made to represent existing and proposed flows leaving the project site.		SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)		MOOREBANK INTERMODAL TERMINAL FACILITY		 ABN 76 104 485 289 Level 5, 141 Walker Street North Sydney NSW 2060 Tel: +61 (0)2 8907 9000 Fax: +61 (0)2 8907 9001 www.hyderconsulting.com (c) Copyright reserved	
		The mapping on this drawing represents TUFLOW model results for the 100 year ARI 9 hour storm duration.		Scale: 1:3500 @ A1		Title			
		Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forester (August 2010).		TUFLOW Grid Size: 5m		ANZAC CREEK MODEL - CHANGE IN 100 YEAR ARI FLOW REGIMES BETWEEN EXISTING AND PROPOSED CONDITIONS			
		TUFLOW run files: (TUFLOW Version 2006-06-DB) F:\AA003210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOW\runs\Creek\TUFLOW\runs\Az_Hy_Eng100y9h_02.tcf Az_Hy_Eng100y9h_02.tcf Az_Hy_Prop100y9h_02.tcf		Datum: GDA94					
		Figure Workspace: F:\AA003210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\100yr_Afflux_Anzac_Ck_Flood_Map.wor		Projection: MGA56				Figure No E2	
		Aerial Imagery by NearMap 2011 ©						Project No AA003210	
								 N	
								Issue 01	




**HYDER CONSULTING
PTY LTD**
 ABN 76 104 485 289
 Level 5, 141 Walker Street
 North Sydney NSW 2060
 Tel: +61 (0)2 8907 9000
 Fax: +61 (0)2 8907 9001
www.hyderconsulting.com
 (c) Copyright reserved



LEGEND

Project Site Boundary
Line
Flood Level Contour (m AHD)
Line

Notes

TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (Az_gxg_PMF1h_01.tcf - TUFLOW Version 2006-06-BF). Adjustments were made to represent proposed flows leaving the project site.

The mapping on this drawing represents TUFLOW model results for the PMP 1 hour storm duration.

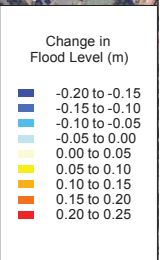
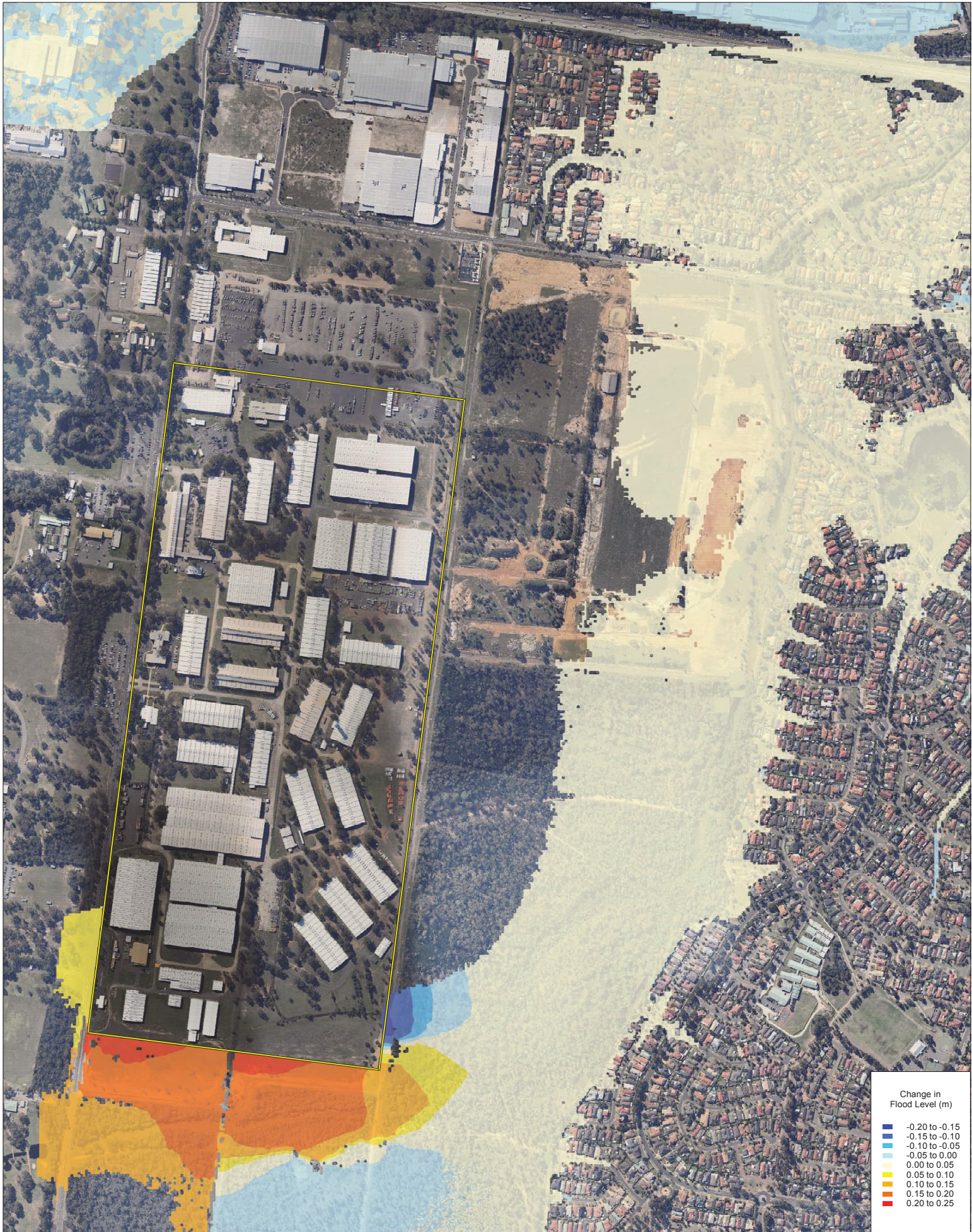
Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forester (August 2010). This figure may not represent local flow regimes away from the Anzac Creek corridor.

TUFLOW run files: (TUFLOW Version 2006-06-BF)
F:\AA003210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOWruns\Creek\TUFLOWruns\Az_Hy_PropPMF1h_03.tcf

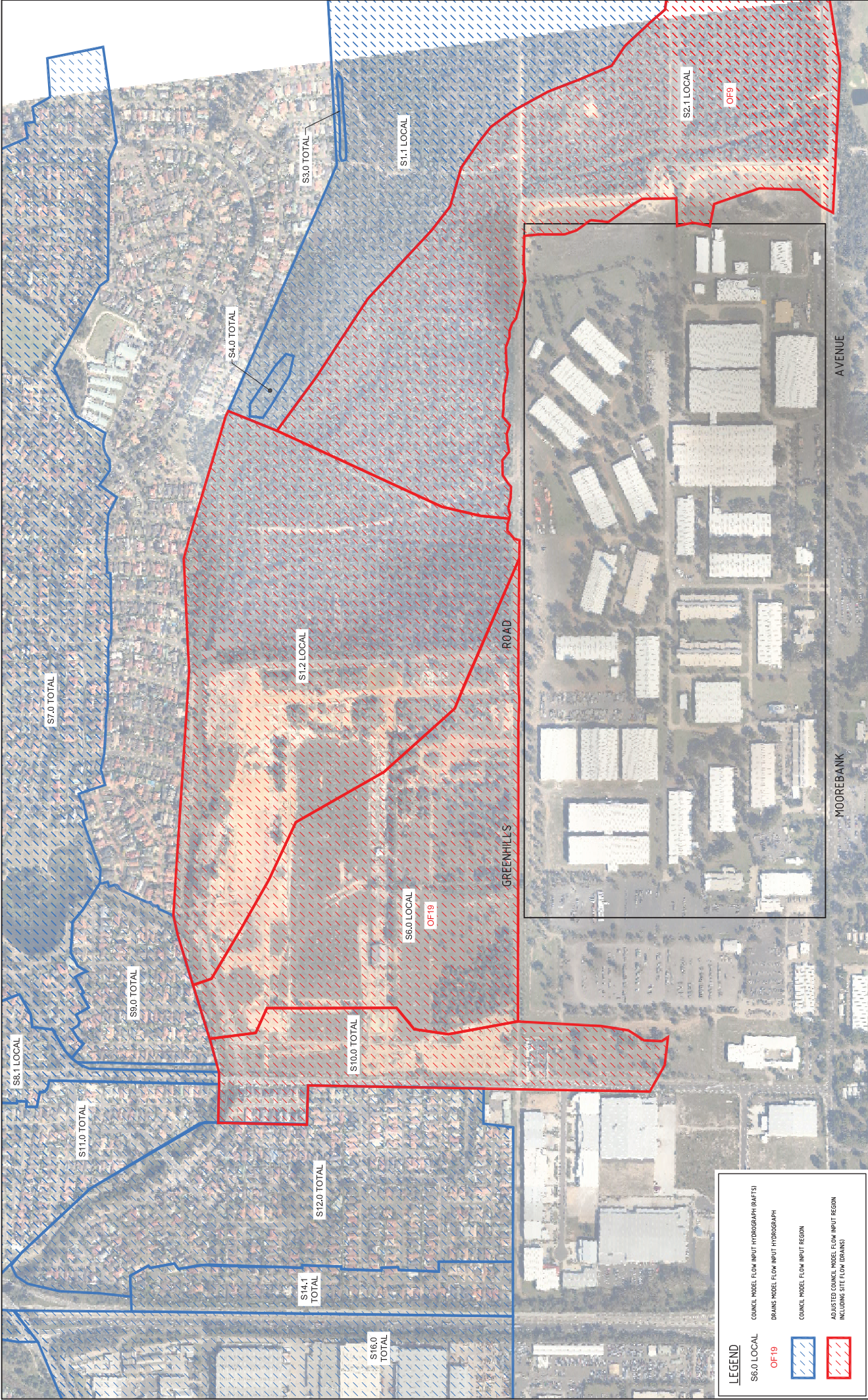
Figure Workspace:
F:\AA003210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\PMF_Proposed_Anzac_Ck_Flood_Map.wor

Aerial Imagery by NearMap 2011 ©

Client SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)	Project MOOREBANK INTERMODAL TERMINAL FACILITY	 HYDER CONSULTING PTY LTD ABN 76 104 485 289 Level 5, 141 Walker Street North Sydney NSW 2060 Tel: +61 (0)2 8907 9000 Fax: +61 (0)2 8907 9001 www.hyderconsulting.com (c) Copyright reserved			
Scale: 1:3500 @ A1	Title ANZAC CREEK MODEL - PROBABLE MAXIMUM FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR PROPOSED CONDITION	Figure No E4		Project No AA003210	 Issue 01
TUFLOW Grid Size: 5m					
Datum: GDA94					
Projection: MGA56					



LEGEND Project Site Boundary Line	Notes TUFLOW modelling was undertaken using Liverpool City Councils' TUFLOW model for Anzac Creek (Az_exg_PMF1h_01.tcf - TUFLOW Version 2006-06-BF). Adjustments were made to represent existing and proposed flows leaving the project site. The mapping on this drawing represents flood depth afflux for the PMF 1 hour storm duration. Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forester (August 2010). This figure may not represent local flow regimes and afflux away from the Anzac Creek corridor. TUFLOW run files: (TUFLOW Version 2006-06-DB) F:\AA003210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOWruns\Creek\TUFLOWruns\Az_Hy_Exg\PMF1h_03.tcf Az_Hy_Prop\PMF1h_03.tcf Figure Workspace: F:\AA003210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\PMF_Afflux_Anzac_Ck_Flood_Map.wor Aerial Imagery by NearMap 2011 ©	Client SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)	Project MOOREBANK INTERMODAL TERMINAL FACILITY	HYDER CONSULTING PTY LTD ABN 76 104 485 289 Level 5, 141 Walker Street North Sydney NSW 2060 Tel: +61 (0)2 8907 9000 Fax: +61 (0)2 8907 9001 www.hyderconsulting.com (c) Copyright reserved
		Scale: 1:3500 @ A1	Title ANZAC CREEK MODEL - CHANGE IN PMF FLOW REGIMES BETWEEN EXISTING AND PROPOSED CONDITION	
		Datum: GDA94		
		Projection: MGA56		
		Figure No E5	Project No AA003210	Issue 01



LEGEND

S6.0 LOCAL COUNCIL MODEL FLOW INPUT HYDROGRAPH (BAFES)

OF19 DRAINS MODEL FLOW INPUT HYDROGRAPH

COUNCIL MODEL FLOW INPUT REGION

ADJUSTED COUNCIL MODEL FLOW INPUT REGION INCLUDING SITE FLOW (DRAINS)

					
Client		Project		Drawing No.	
SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY		EXISTING ANZAC CREEK MODEL FLOW INPUT PLAN		FIG-E6 - AA003210 - 01	
Status		Preliminary		Issue	
NOT TO BE USED FOR CONSTRUCTION		Current Issue Signatures		Title	
Scales		1: 3500		S. MORGAN	
Original Size		A1		C. MCELLEND	
Height		AHD		G. VES	
Datum		MGA		N. MCELLEN	
Grid		Approved		Issue	
Filename		Date		12/08/11	
01		ISSUE FOR REVIEW		Date	
Issue		Description		When to Review	
01		ISSUE FOR REVIEW		When to Review	

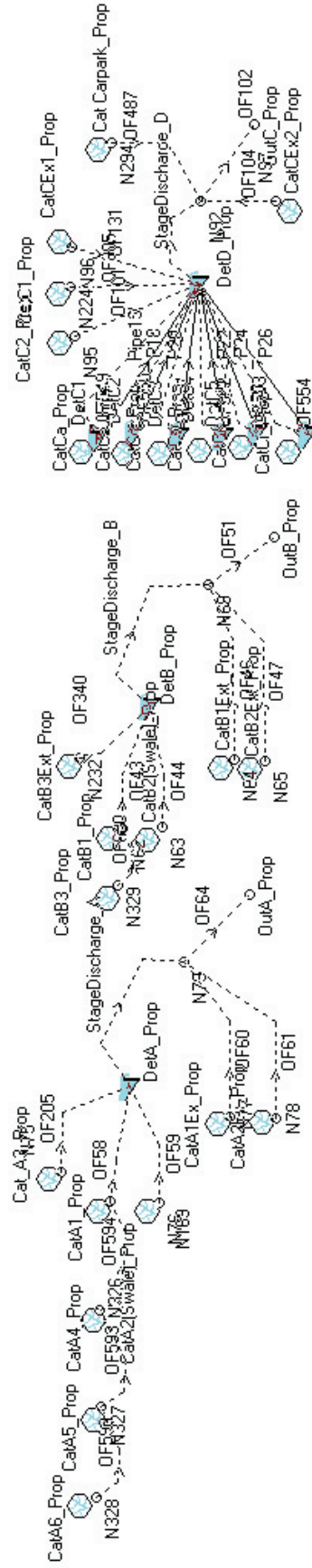
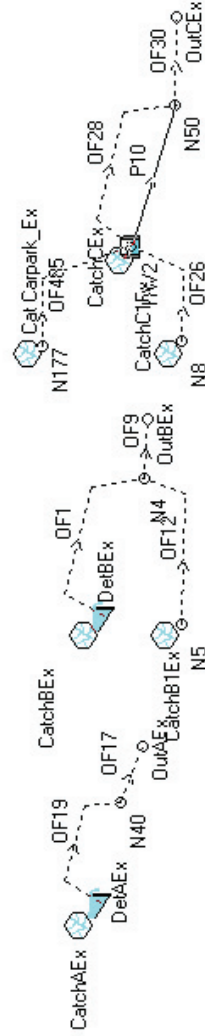
HYDER CONSULTING PTY LTD
ABN 76 104 465 289
Sydney
North Sydney NSW 2060
Australia
Tel: +61 (0)2 8807 9000
Fax: +61 (0)2 8807 9001
Email: info@hyder.com.au
© Copyright reserved

APPENDIX F

'SITE ONLY' DRAINS MODEL INPUTS AND RESULTS – EXISTING AND PROPOSED CONDITIONS



Cat1
 N320 CatA324 Cat6
 N321 Cat3
 N322 Cat4
 N323



Drains Model Name and File Path:
Drains Version:
Modeler's Name:
Description:

F:\A003210D-Calculations\Civil\Stormwater\Drains\Posi PEAI\Moorebank_REV02-201\0713.drn
201009-3 August 2010
Chris McCalland
Moorebank OSD

DATA

PIT / NODE DETAILS															
Name	Type	Family	Version 9 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	Boil-down lid	id	Part Full Shock Loss	
N4	Node						14		0	755.938	215.845		33		
N5	Node								0	500	150		34		
N8	Node								0	1000	150		37		
OutBx	Node						13		0	861.978	209.629		1051047		
N40	Node						14		0	186.986	258.088		4370447		
OutAEx	Node								0	286.406	221.475		4370448		
OutCEX	Node								0	1568.098	160.549		5647966		
N62	Node								0	372.322	233.435		13086144		
N63	Node								0	375.778	312.923		13086145		
N64	Node								0	505.378	481.163		13086146		
N65	Node								0	503.65	511.643		13086147		
N69	Node								0	845.794	401.051		13086153		
OutB Prop	Node								0	937.378	528.923		13086154		
N75	Node								0	-353.438	-210.971		14111581		
N76	Node								0	-356.694	-306.011		14111582		
N77	Node								0	-189.278	-442.323		14111583		
N78	Node								0	-192.734	-532.379		14111584		
N79	Node								0	111.594	-354.395		14111585		
OutC Prop	Node								0	242.722	-460.539		14111586		
N92	Node						16		0	1591.566	-387.112		15137076		
OutC Prop	Node								0	1743.309	-491.164		15137077		
N95	Node								0	1331.362	-142.543		15137086		
N96	Node								0	1503.471	-136.322		15137090		
N97	Node								0	1591.566	-533.112		15137091		
N169	Node								0	-296.422	-113.077		46653769		
N177	Node								0	980.6	-397.15		51463360		
N224	Node								0	1425.586	-133.112		66908726		
N232	Node								0	507.444	-149.02		73934574		
HW2	Headwall				0.5	14.2			0	1164.783	240.386		83086008		
N50	Node					16			0	1414.306	162.277		5647965		
N294	Node								0	1705.992	214.147		84070742		
N320	Node								0	-339.614	676.982		84400956		
N321	Node								0	-345.374	628.022		84400957		
N322	Node								0	-359.774	571.862		84400958		
N323	Node								0	-358.334	520.022		84400959		
N324	Node								0	-184.094	664.022		84400960		
N325	Node								0	-181.214	597.782		84400961		
N326	Node								0	-564.6	-189.264		84402416		
N327	Node								0	-753.297	-183.411		84402417		
N328	Node								0	-929.553	-183.043		84402418		
N329	Node								0	260.666	-225.898		84402438		
DETENTION BASIN DETAILS															
Name	Elev	Volume	Int Vol. (cu.m)	Outlet Type	K	Dia.(mm)	Ceritte RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Length(m)	Id
DetBx	13.24	0	0	None											
	13.3	0.015								514.018	288.421	No			48
	13.4	0.19													
	13.5	4.388													
	13.6	23.289													
	13.7	70.52													
	13.8	162.39													
	13.9	328.238													
	14	586.966													
	14.1	1051.16													
	14.2	1925.63													
	14.3	2996.53													
	14.4	4603.56													
	14.5	6635.68													
	14.6	9172.45													
	14.7	12162.7													
	14.8	15734.5													
	14.82	16517.8													
DetAEx	13	0	0	None											
	13.1	0.457													
	13.2	7.16													
	13.3	26.646													
	13.4	71.296													
	13.5	153.944													
	13.6	292.6													
	13.7	516.484													
	13.8	880.951													
	13.9	1439.4													
	14	2241.32													
	14.1	3343.31													
							</								

[illegible]

[illegible]

2 Year ARI Results

DRAINS Model Name and File Path:		F:\AA003210\D-Calculations\C-Civil\Stormwater\DRAINS\Post PEA\Moorebank_REV02-20110713.drn															
DRAINS Version:		2010.09 - 5 August 2010															
Modeller's Name:		Chris McClelland															
Description:		Moorebank OSD															
DRAINS results prepared 09 August, 2011 from Version 2010.09																	
PIT / NODE DETAILS		RESULTS 2 YEAR ARI															
Version 8																	
Name	Max HGL											Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint
												HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)	
			(cu.m/s)	(cu.m)	(m)												
HW2	12.34	5.744			1.86	0	None										
N50	11.97		0														
SUB-CATCHMENT DETAILS																	
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm										
	Flow Q	Max Q	Max Q	Tc	Tc	Tc											
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)											
CatchB1Ex	0.185	0	0.185	3	8	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1										
CatchC1Ex	0.617	0.542	0.076	7	7	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatchBEx	2.76	1.56	1.313	14.5	24	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1										
CatchAEx	4.115	3.019	1.136	13.75	15	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatB1_Prop	2.392	2.392	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatB2(Swale)_Prop	0.785	0.785	0	9.5	8.5	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatB1Ext_Prop	0.185	0	0.185	5	8	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1										
CatB2Ext_Prop	0.06	0	0.06	8.5	15.5	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1										
CatA1_Prop	2.222	2.222	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatA2(Swale)_Prop	0.819	0.819	0	12	11	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatA1Ex_Prop	1.185	0.682	0.512	13.2	8.3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatA2Ex_Prop	0.076	0	0.076	0	18	0	AR&R 2 year, 1 hour storm, average 33.7 mm/h, Zone 1										
CatCa_Prop	1.078	1.078	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1										
CatCb_Prop	1.022	1.022	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1										
CatCc_Prop	1.021	1.021	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1										
CatCd_Prop	1.064	1.064	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1										
CatCe_Prop	0.979	0.979	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1										
CatCf_Prop	1.095	1.095	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1										
CatC2_Prop	3.907	3.907	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1										
CatCEx1_Prop	0.617	0.542	0.076	7	7	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatCEx2_Prop	0.268	0.197	0.087	21.7	25	0	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1										
Cat_A3_Prop	0.721	0.721	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1										
Cat Carpark_Ext	0.618	0.618	0	5	0	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatC1_Prop	0.648	0.648	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1										
CatB3Ext_Prop	0.083	0	0.083	0	8	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1										
CatchCEx	4.757	3.863	0.998	25	30	0	AR&R 2 year, 1 hour storm, average 33.7 mm/h, Zone 1										
Cat Carpark_Prop	0.618	0.618	0	5	0	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
Cat1	0.279	0.192	0.09	5	12	0	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1										
Cat2	0.869	0.727	0.147	7	15	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
Cat3	0.117	0.072	0.045	4	8	0	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1										
Cat4	3.294	3.126	0.175	5	15	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
Cat5	0.127	0.083	0.045	6	8	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
Cat6	0.044	0.029	0.015	6	8	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatA4_Prop	1.533	1.533	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatA5_Prop	1.732	1.732	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatA6_Prop	1.668	1.668	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
CatB3_Prop	1.258	1.258	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1										
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)																	
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff													
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)													
AR&R 2 year, 5 min	19807.55	12757.59 (64.4%)	12649.92 (63.9%)	107.67 (1.9%)													
AR&R 2 year, 10 min	30347.35	21235.00 (70.0%)	20213.78 (66.7%)	1021.22 (11.9%)													
AR&R 2 year, 15 min	38161.34	28053.71 (73.5%)	25821.41 (67.7%)	2232.30 (20.7%)													
AR&R 2 year, 20 min	44485.22	33654.47 (75.7%)	30359.75 (68.2%)	3294.72 (26.2%)													
AR&R 2 year, 25 min	49700.61	38202.99 (76.9%)	34102.68 (68.6%)	4100.31 (29.2%)													
AR&R 2 year, 30 min	54298.14	41954.61 (77.3%)	37401.99 (68.9%)	4552.62 (29.7%)													
AR&R 2 year, 45 min	65092.34	51071.20 (78.5%)	45148.41 (69.4%)	5922.79 (32.2%)													
AR&R 2 year, 1 hour	73487.84	58130.29 (79.1%)	51173.34 (69.5%)	6956.94 (33.5%)													
AR&R 2 year, 1.5 hours	86026.57	68093.83 (79.1%)	60171.75 (69.9%)	7922.08 (32.6%)													
AR&R 2 year, 2 hours	95948.54	76033.59 (79.2%)	67292.29 (69.7%)	8741.31 (32.3%)													
AR&R 2 year, 3 hours	110558.87	87557.55 (79.2%)	77778.05 (69.5%)	9779.50 (31.3%)													
AR&R 2 year, 4.5 hours	127567.9	99997.64 (78.4%)	89984.34 (69.8%)	10013.30 (27.8%)													
PIPE DETAILS																	
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm												
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)													
Pipe13	1.018	1.5	15.29	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1												
P18	0.964	1.4	15.284	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1												
P20	0.962	1.4	15.284	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1												
P22	1.004	1.5	15.288	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1												
P24	0.921	1.4	15.283	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1												
P26	1.034	1.5	15.292	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1												
P10	5.744	2.5	12.017	11.967	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1												
CHANNEL DETAILS																	
Name	Max Q	Max V	Chainage	Max	Due to Storm												
	(cu.m/s)	(m/s)	(m)	HGL (m)													
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									
OF9	0.4	0.4	0.256	0.06	0.04	15.94	0.75	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1									
OF12	0.185	0.185	0.256	0.044	0.03	12.89	0.59	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1									
OF26	0.617	0.617	0.256	0.071	0.06	18.28	0.84	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1									
OF1	0.279	0.279	0.256	0.052	0.03	14.33	0.67	AR&R 2 year, 3 hours storm, average 16.9 mm/h, Zone 1									
OF19	2.424	2.424	0.256	0.125	0.15	29.06	1.21	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1									

2 Year ARI Results

OF17	2.424	2.424	0.256	0.125	0.15	29.06	1.21	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1				
StageDischarge_B	0.15	0.15	0.256	0.041	0.02	12.17	0.55	AR&R 2 year, 4.5 hours storm, average 13 mm/h, Zone 1				
OF43	3.635	3.635	0.256	0.148	0.2	33.55	1.34	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF44	0.785	0.785	0.256	0.079	0.07	19.72	0.9	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF46	0.185	0.185	0.256	0.044	0.03	12.89	0.59	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1				
OF47	0.06	0.06	0.256	0.029	0.01	9.73	0.42	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1				
OF51	0.297	0.297	0.256	0.053	0.04	14.69	0.68	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1				
OF58	7.046	7.046	0.256	0.194	0.31	42.71	1.58	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF59	0.819	0.819	0.256	0.08	0.07	20.08	0.9	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF60	1.185	1.185	0.256	0.094	0.09	22.77	0.99	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF61	0.076	0.076	0.256	0.032	0.01	10.38	0.45	AR&R 2 year, 1 hour storm, average 33.7 mm/h, Zone 1				
OF64	1.687	1.687	0.256	0.108	0.12	25.64	1.09	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1				
StageDischarge_A	0.644	0.644	0.256	0.072	0.06	18.46	0.86	AR&R 2 year, 4.5 hours storm, average 13 mm/h, Zone 1				
OF549	0	0	0.256	0	0	0	0					
StageDischarge_D	2.895	2.895	0.256	0.135	0.17	31.03	1.25	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1				
OF550	0	0	0.256	0	0	0	0					
OF551	0	0	0.256	0	0	0	0					
OF552	0	0	0.256	0	0	0	0					
OF553	0	0	0.256	0	0	0	0					
OF554	0	0	0.256	0	0	0	0					
OF102	3.427	3.427	0.256	0.144	0.19	32.83	1.32	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1				
OF101	3.907	3.907	0.256	0.152	0.21	34.44	1.36	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1				
OF131	0.617	0.617	0.256	0.071	0.06	18.28	0.84	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF104	0.268	0.268	0.256	0.051	0.03	14.15	0.67	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1				
OF205	0.721	0.721	0.256	0.076	0.07	19.18	0.88	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1				
OF485	0.618	0.618	0.256	0.071	0.06	18.28	0.84	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF305	0.648	0.648	0.256	0.073	0.06	18.64	0.84	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1				
OF340	0.083	0.083	0.256	0.033	0.02	10.56	0.46	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1				
OF28	0	0	0.256	0	0	0	0					
OF30	5.744	5.744	0.256	0.178	0.27	39.65	1.5	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1				
OF487	0.618	0.618	0.256	0.071	0.06	18.28	0.84	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF594	4.88	4.88	0.256	0.167	0.24	37.32	1.44	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF593	3.38	3.38	0.256	0.143	0.19	32.65	1.32	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF590	1.668	1.668	0.256	0.107	0.12	25.46	1.1	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
OF600	1.258	1.258	0.256	0.096	0.1	23.13	1.02	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1				
DETENTION BASIN DETAILS												
Name	Max WL	MaxVol	Max Q	Max Q	Max Q							
			Total	Low Level	High Level							
DetBEx	14.41	4876.2	0.279	0	0.279							
DetAEx	14.03	2581.4	2.424	0	2.424							
DetB_Prop	14.84	7513.2	0.15	0	0.15							
DetA_Prop	14.83	11146	0.644	0	0.644							
DetC1	15.4	158.6	1.018	1.018	0							
DetD_Prop	15.27	6864.5	2.895	0	2.895							
DetC2	15.38	152.9	0.964	0.964	0							
DetC3	15.38	152.7	0.962	0.962	0							
DetC4	15.39	157.1	1.004	1.004	0							
DetC5	15.37	148.3	0.921	0.921	0							
DetC6	15.4	160.2	1.034	1.034	0							
CONTINUITY CHECK for AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1												
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %								
N4	2738.34	2738.34	0	0								
N5	154.26	154.26	0	0								
N8	918.79	918.79	0	0								
DetBEx	6196.01	2587.98	3610.1	0								
OutBEx	2734.44	2734.44	0	0								
DetAEx	7860.27	7860.33	0	0								
N40	7860.33	7860.33	0	0								
OutAEx	7860.33	7860.33	0	0								
OutCEx	14438.72	14438.72	0	0								
DetB_Prop	6943.71	1187.58	5757.1	0								
N62	5559.47	5559.47	0	0								
N63	1315.37	1315.37	0	0								
N64	154.26	154.26	0	0								
N65	78.4	78.4	0	0								
N69	1418.31	1418.31	0	0								
OutB_Prop	1416.37	1416.37	0	0								
N75	10897.49	10897.5	0	0								
N76	1507.58	1507.58	0	0								
N77	1820.55	1820.55	0	0								
N78	111.59	111.59	0	0								
N79	7109.66	7109.65	0	0								
OutA_Prop	7101.74	7101.74	0	0								
DetA_Prop	13428.48	5185.42	8246.99	0								
DetC1	1531.66	1530.95	0.72	0								
DetD_Prop	16271.57	15231.24	1042.43	0								
DetC2	1452.11	1451.4	0.71	0								
DetC3	1449.53	1448.82	0.71	0								
DetC4	1510.59	1509.88	0.71	0								
DetC5	1389.76	1389.05	0.71	0								
DetC6	1554.88	1554.16	0.72	0								
N92	16785.89	16785.88	0	0								
OutC_Prop	16781.74	16781.74	0	0								
N95	5548.72	5548.72	0	0								
N96	918.79	918.79	0	0								
N97	662.22	662.22	0	0								
N169	1023.4	1023.4	0	0								
N177	896.55	896.55	0	0								
N224	919.77	919.77	0	0								
N232	68.87	68.87	0	0								
HW2	14438.71	14438.72	0	0								

2 Year ARI Results

[illegible]

2 Year ARI Results

OF12	0.07	0.07	7.665	0.031	0.01	10.2	0.44	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF26	0.208	0.208	7.665	0.046	0.03	13.25	0.61	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF1	0.286	0.286	7.665	0.053	0.04	14.51	0.67	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1
OF19	1.28	1.28	7.665	0.097	0.1	23.31	1.02	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1
OF17	1.28	1.28	7.665	0.097	0.1	23.31	1.02	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1
StageDischarge_B	0.176	0.176	7.665	0.044	0.03	12.71	0.58	AR&R 2 year, 24 hours storm, average 4.45 mm/h, Zone 1
OF43	1.164	1.164	7.665	0.093	0.09	22.59	0.99	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF44	0.275	0.275	7.665	0.052	0.03	14.33	0.67	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF46	0.07	0.07	7.665	0.031	0.01	10.2	0.44	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF47	0.035	0.035	7.665	0.024	0.01	7.93	0.37	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF51	0.24	0.24	7.665	0.049	0.03	13.79	0.64	AR&R 2 year, 12 hours storm, average 6.92 mm/h, Zone 1
OF58	2.281	2.281	7.665	0.123	0.14	28.52	1.18	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF59	0.316	0.316	7.665	0.054	0.04	14.87	0.7	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF60	0.507	0.507	7.665	0.066	0.05	17.2	0.79	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF61	0.048	0.048	7.665	0.026	0.01	8.83	0.41	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1
OF64	1.156	1.156	7.665	0.092	0.09	22.41	1	AR&R 2 year, 12 hours storm, average 6.92 mm/h, Zone 1
StageDischarge_A	0.705	0.705	7.665	0.076	0.07	19.18	0.86	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1
OF549	0	0	7.665	0	0	0	0	
StageDischarge_D	2.42	2.42	7.665	0.125	0.15	29.06	1.2	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF550	0	0	7.665	0	0	0	0	
OF551	0	0	7.665	0	0	0	0	
OF552	0	0	7.665	0	0	0	0	
OF553	0	0	7.665	0	0	0	0	
OF554	0	0	7.665	0	0	0	0	
OF102	2.718	2.718	7.665	0.132	0.16	30.31	1.24	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF101	1.161	1.161	7.665	0.093	0.09	22.59	0.99	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF131	0.208	0.208	7.665	0.046	0.03	13.25	0.61	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF104	0.163	0.163	7.665	0.042	0.02	12.35	0.58	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1
OF205	0.214	0.214	7.665	0.046	0.03	13.25	0.63	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF485	0.188	0.188	7.665	0.044	0.03	12.89	0.59	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF305	0.193	0.193	7.665	0.044	0.03	12.89	0.61	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF340	0.031	0.031	7.665	0.023	0.01	7.63	0.36	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF28	0	0	7.665	0	0	0	0	
OF30	3.217	3.217	7.665	0.141	0.18	32.11	1.3	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1
OF487	0.188	0.188	7.665	0.044	0.03	12.89	0.59	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF594	1.572	1.572	7.665	0.105	0.11	24.92	1.08	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF593	1.084	1.084	7.665	0.09	0.09	22.05	0.97	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF590	0.532	0.532	7.665	0.067	0.05	17.38	0.81	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
OF600	0.401	0.401	7.665	0.06	0.04	15.94	0.75	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1
DETENTION BASIN DETAILS								
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level			
DetBEx	14.44	5477.2	0.286	0	0.286			
DetAEx	13.95	1865.5	1.28	0	1.28			
DetB_Prop	15.08	9649.6	0.176	0	0.176			
DetA_Prop	14.95	12952.5	0.705	0	0.705			
DetC1	15.18	73.4	0.321	0.321	0			
DetD_Prop	15	5388.2	2.42	0	2.42			
DetC2	15.18	70.8	0.304	0.304	0			
DetC3	15.18	70.7	0.303	0.303	0			
DetC4	15.18	72.7	0.316	0.316	0			
DetC5	15.17	68.8	0.291	0.291	0			
DetC6	15.19	74.1	0.325	0.325	0			
CONTINUITY CHECK for AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1								
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %				
N4	5908.61	5908.6	0	0				
N5	192.6	192.6	0	0				
N8	1348.14	1348.14	0	0				
DetBEx	8645.3	5719.75	2927.56	0				
OutBEx	5904.86	5904.86	0	0				
DetAEx	11214.22	11214.25	0	0				
N40	11214.25	11214.25	0	0				
OutAEx	11214.25	11214.25	0	0				
OutCEX	20919.38	20919.38	0	0				
DetB_Prop	10286.31	2947.99	7339.47	0				
N62	8248.66	8248.73	0	0				
N63	1951.65	1951.65	0	0				
N64	192.6	192.6	0	0				
N65	98.42	98.42	0	0				
N69	3236.75	3236.75	0	0				
OutB_Prop	3234.5	3234.5	0	0				
N75	16168.73	16168.84	0	0				
N76	2236.83	2236.83	0	0				
N77	2580.85	2580.85	0	0				
N78	140.32	140.32	0	0				
N79	14733.7	14733.74	0	0				
OutA_Prop	14726.05	14726.05	0	0				
DetA_Prop	19924.3	12020.24	7907.71	0				
DetC1	2272.56	2271.95	0.61	0				
DetD_Prop	24129.7	23534.2	597.04	0				
DetC2	2154.49	2153.92	0.6	0				
DetC3	2150.67	2150.09	0.6	0				
DetC4	2241.27	2240.69	0.61	0				
DetC5	2062.03	2061.42	0.6	0				
DetC6	2307.02	2306.4	0.61	0				
N92	25808.08	25808.09	0	0				
OutC_Prop	25805.72	25805.72	0	0				
N95	8232.74	8232.74	0	0				
N96	1348.14	1348.14	0	0				
N97	946.02	946.02	0	0				
N169	1518.43	1518.43	0	0				

2 Year ARI Results

N177	1330.24	1330.24	0	0								
N224	1364.68	1364.68	0	0								
N232	85.98	85.98	0	0								
HW2	20919.36	20919.38	0	0								
N50	20919.38	20919.38	0	0								
N294	1330.24	1330.24	0	0								
N320	567.13	567.13	0	0								
N321	2021.12	2021.12	0	0								
N322	213.78	213.78	0	0								
N323	7107.89	7107.89	0	0								
N324	239.53	239.53	0	0								
N325	83.38	83.38	0	0								
N326	11147.16	11147.2	0	0								
N327	7682.77	7682.86	0	0								
N328	3769.31	3769.31	0	0								
N329	2843.54	2843.54	0	0								
Run Log for Moorebank_REV02 run at 10:31:48 on 9/8/2011												
The following detention basins have little effect (less than 2%) in reducing peak discharge: DetC6, DetC5, DetC4, DetC3, DetC2, DetC1 You might consider upsizing these, or removing them												

20 Year ARI Results

DRAINS Model Name and File Path:		F:\AA003210\ID-Calculations\IC-Civil\Stormwater\DRAINS\Post PEA\Moorebank_REV02-20110713.drn									
DRAINS Version:		2010.09 - 5 August 2010									
Modeller's Name:		Chris McClelland									
Description:		Moorebank OSD									
DRAINS results prepared 09 August, 2011 from Version 2010.09											
PIT / NODE DETAILS				Version 8		RESULTS 20 YEAR ARI					
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min						
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)					
			(cu.m/s)	(cu.m)	(m)						
HW2	12.76	10.166			1.44	0	None				
N50	12.25		0								
SUB-CATCHMENT DETAILS											
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm				
	Flow Q	Max Q	Max Q	Tc	Tc	Tc					
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)					
CatchB1Ex	0.381		0.381	3	8	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatchC1Ex	1.032	0.87	0.163	7	7	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatchBEx	5.832	2.538	3.35	14.5	24	0	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1				
CatchAEx	7.717	4.854	3.112	13.75	15	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatB1_Prop	3.84	3.84	0	6	3	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatB2(Swale)_Prop	1.26	1.26	0	9.5	8.5	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatB1Ext_Prop	0.381	0	0.381	5	8	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatB2Ext_Prop	0.132	0	0.132	8.5	15.5	0	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1				
CatA1_Prop	3.567	3.567	0	6	3	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatA2(Swale)_Prop	1.315	1.315	0	12	11	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatA1Ex_Prop	2.342	1.094	1.248	13.2	8.3	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatA2Ex_Prop	0.179	0	0.179	0	18	0	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1				
CatCa_Prop	1.732	1.732	0	3	0	0	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCb_Prop	1.642	1.642	0	3	0	0	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCc_Prop	1.639	1.639	0	3	0	0	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCd_Prop	1.708	1.708	0	3	0	0	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCe_Prop	1.571	1.571	0	3	0	0	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCf_Prop	1.758	1.758	0	3	0	0	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatC2_Prop	6.273	6.273	0	3	0	0	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCEx1_Prop	1.032	0.87	0.163	7	7	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatCEx2_Prop	0.511	0.32	0.211	21.7	25	0	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1				
Cat A3_Prop	1.157	1.157	0	3	0	0	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
Cat Carpark_Ext	0.992	0.992	0	5	0	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatC1_Prop	1.04	1.04	0	3	0	0	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatB3Ext_Prop	0.17	0	0.17	0	8	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatchCEX	8.567	6.236	2.563	25	30	0	AR&R 20 year, 1 hour storm, average 54.4 mm/h, Zone 1				
Cat Carpark_Prop	0.992	0.992	0	5	0	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
Cat1	0.511	0.33	0.189	5	12	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
Cat2	1.538	1.167	0.403	7	15	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
Cat3	0.217	0.124	0.093	4	8	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
Cat4	5.457	5.017	0.478	5	15	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
Cat5	0.237	0.133	0.104	6	8	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
Cat6	0.082	0.046	0.036	6	8	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatA4_Prop	2.461	2.461	0	6	3	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatA5_Prop	2.78	2.78	0	6	3	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatA6_Prop	2.678	2.678	0	6	3	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatB3_Prop	2.02	2.02	0	6	3	0	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)											
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff							
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)							
AR&R 20 year, 5 m	31801.12	23349.77 (73.1%)	21257.06 (66.8%)	2092.71 (23.3%)							
AR&R 20 year, 10 m	48701.14	39129.66 (80.4%)	33385.34 (68.6%)	5744.31 (41.8%)							
AR&R 20 year, 15 m	61058.14	50683.12 (83.0%)	42253.21 (69.2%)	8429.90 (48.9%)							
AR&R 20 year, 20 m	71379.88	60285.51 (84.5%)	49660.72 (69.6%)	10624.79 (52.7%)							
AR&R 20 year, 25 m	79775.38	67927.40 (85.2%)	55685.65 (69.7%)	12241.75 (54.3%)							
AR&R 20 year, 30 m	87116.89	74393.13 (85.4%)	60954.32 (69.7%)	13438.81 (54.6%)							
AR&R 20 year, 45 m	104834.66	90285.41 (86.2%)	73669.27 (69.7%)	16616.13 (56.1%)							
AR&R 20 year, 1 h	118627.25	102699.03 (86.6%)	83567.49 (69.7%)	19131.53 (57.1%)							
AR&R 20 year, 1.5 h	139670.52	121238.64 (86.9%)	98669.28 (69.7%)	22569.36 (57.2%)							
AR&R 20 year, 2 h	156134.39	135577.38 (86.8%)	110484.45 (69.7%)	25092.93 (56.9%)							
AR&R 20 year, 3 h	181866.03	158100.23 (87.0%)	128950.34 (69.7%)	29149.89 (56.8%)							
AR&R 20 year, 4.5 h	210977.67	182255.05 (86.4%)	149844.19 (69.7%)	32410.87 (54.4%)							
PIPE DETAILS											
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm						
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)							
Pipe13	1.549	1.4	15.728	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1						
P18	1.489	1.4	15.716	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1						
P20	1.487	1.4	15.716	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1						
P22	1.533	1.4	15.724	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1						
P24	1.449	1.3	15.707	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1						
P26	1.567	1.5	15.731	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1						
P10	10.166	3	12.303	12.253	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1						
CHANNEL DETAILS											
Name	Max Q	Max V	Chainage	Max	Due to Storm						
	(cu.m/s)	(m/s)	(m)	HGL (m)							
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			
OF9	0.652	0.652	0.256	0.073	0.06	18.64	0.85	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1			
OF12	0.381	0.381	0.256	0.059	0.04	15.76	0.73	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF26	1.032	1.032	0.256	0.088	0.08	21.69	0.96	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF1	0.633	0.633	0.256	0.072	0.06	18.46	0.84	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1			
OF19	6.244	6.244	0.256	0.185	0.28	40.91	1.53	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1			
OF17	6.244	6.244	0.256	0.185	0.28	40.91	1.53	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1			
StageDischarge_B	0.21	0.21	0.256	0.046	0.03	13.25	0.62	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1			
OF43	5.835	5.835	0.256	0.179	0.27	39.83	1.51	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF44	1.26	1.26	0.256	0.096	0.1	23.13	1.02	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF46	0.381	0.381	0.256	0.059	0.04	15.76	0.73	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF47	0.132	0.132	0.256	0.039	0.02	11.81	0.53	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1			

20 Year ARI Results

OF51	0.561	0.561	0.256	0.069	0.06	17.74	0.82	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1				
OF58	11.31	11.31	0.256	0.23	0.42	49.99	1.84	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF59	1.315	1.315	0.256	0.097	0.1	23.49	1.03	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF60	2.342	2.342	0.256	0.123	0.15	28.7	1.2	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF61	0.179	0.179	0.256	0.044	0.03	12.71	0.59	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1				
OF64	2.89	2.89	0.256	0.134	0.17	30.85	1.27	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
StageDischarge_A	0.886	0.886	0.256	0.083	0.08	20.61	0.92	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1				
OF549	0	0	0.256	0	0	0	0					
StageDischarge_D	7.154	7.154	0.256	0.194	0.31	42.89	1.59	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1				
OF550	0	0	0.256	0	0	0	0					
OF551	0	0	0.256	0	0	0	0					
OF552	0	0	0.256	0	0	0	0					
OF553	0	0	0.256	0	0	0	0					
OF554	0	0	0.256	0	0	0	0					
OF102	8.354	8.354	0.256	0.207	0.34	45.4	1.65	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1				
OF101	6.273	6.273	0.256	0.185	0.28	40.91	1.54	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
OF131	1.032	1.032	0.256	0.088	0.08	21.69	0.96	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF104	0.511	0.511	0.256	0.066	0.05	17.2	0.8	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1				
OF205	1.157	1.157	0.256	0.092	0.09	22.41	1	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
OF485	0.992	0.992	0.256	0.087	0.08	21.33	0.96	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF305	1.04	1.04	0.256	0.088	0.09	21.69	0.97	AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
OF340	0.17	0.17	0.256	0.043	0.02	12.53	0.58	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF28	0	0	0.256	0	0	0	0					
OF30	10.166	10.166	0.256	0.224	0.39	48.81	1.74	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1				
OF487	0.992	0.992	0.256	0.087	0.08	21.33	0.96	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF594	7.833	7.833	0.256	0.202	0.33	44.32	1.63	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF593	5.425	5.425	0.256	0.174	0.26	38.75	1.48	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF590	2.678	2.678	0.256	0.131	0.16	30.13	1.23	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
OF600	2.02	2.02	0.256	0.116	0.13	27.26	1.15	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
DETENTION BASIN DETAILS												
Name	Max WL	MaxVol	Max Q	Max Q	Max Q							
			Total	Low Level	High Level							
DetBEx	14.69	11800.3	0.633	0	0.633							
DetAEx	14.14	3976	6.244	0	6.244							
DetB_Prop	15.47	13109.1	0.21	0	0.21							
DetA_Prop	15.38	19864.6	0.886	0	0.886							
DetC1	15.75	397.6	1.549	1.549	0							
DetD_Prop	15.65	8894.7	7.154	0	7.154							
DetC2	15.73	385.7	1.489	1.489	0							
DetC3	15.73	385.3	1.487	1.487	0							
DetC4	15.74	394.4	1.533	1.533	0							
DetC5	15.72	376.9	1.449	1.449	0							
DetC6	15.75	401.2	1.567	1.567	0							
CONTINUITY CHECK for AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1												
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Change (cu.m)	Difference %								
N4	4022.48	4022.48	0	0								
N5	440.09	440.09	0	0								
N8	1585.5	1585.5	0	0								
DetBEx	13202.29	3587.97	9617.2	0								
OutBEx	4016.91	4016.91	0	0								
DetAEx	15299.77	15299.78	0	0								
N40	15299.78	15299.78	0	0								
OutAEx	15299.78	15299.78	0	0								
OutCEX	26519.06	26519.06	0	0								
DetB_Prop	11483.98	1615.29	9870.06	0								
N62	9127.87	9127.87	0	0								
N63	2159.65	2159.65	0	0								
N64	440.09	440.09	0	0								
N65	224.69	224.69	0	0								
N69	2277.36	2277.35	0	0								
OutB_Prop	2274.65	2274.65	0	0								
N75	17892.16	17892.16	0	0								
N76	2475.24	2475.24	0	0								
N77	3610.76	3610.76	0	0								
N78	320.31	320.31	0	0								
N79	11221.93	11221.93	0	0								
OutA_Prop	11210.53	11210.53	0	0								
DetA_Prop	22047.68	7302.25	14751.15	0								
DetC1	2514.77	2514.02	0.75	0								
DetD_Prop	26795.02	25435.83	1357.83	0								
DetC2	2384.16	2383.42	0.75	0								
DetC3	2379.93	2379.18	0.75	0								
DetC4	2480.18	2479.43	0.75	0								
DetC5	2281.79	2281.05	0.74	0								
DetC6	2552.89	2552.15	0.75	0								
N92	28192.02	28192.02	0	0								
OutC_Prop	28186.63	28186.63	0	0								
N95	9110.22	9110.22	0	0								
N96	1585.5	1585.5	0	0								
N97	1289.56	1289.56	0	0								
N169	1680.28	1680.28	0	0								
N177	1472.01	1472.01	0	0								
N224	1510.13	1510.13	0	0								
N232	196.46	196.46	0	0								
HW2	26519.04	26519.06	0	0								
N50	26519.06	26519.06	0	0								
N294	1472.01	1472.01	0	0								
N320	773.96	773.96	0	0								
N321	2611.18	2611.18	0	0								
N322	291.87	291.87	0	0								
N323	8309.69	8309.69	0	0								
N324	327.03	327.03	0	0								
N325	113.85	113.85	0	0								
N326	12335.22	12335.23	0	0								
N327	8501.64	8501.65	0	0								
N328	4171.05	4171.05	0	0								
N329	3146.64	3146.64	0	0								

20 Year ARI Results

Run Log for Moorebank_REV02 run at 10:32:58 on 9/8/2011											
The maximum flow exceeded the safe value in the following overflow routes: OF600, OF594, OF593, OF590, OF487, OF485, OF305, OF205, OF131, OF104, OF102, OF101, StageDischarge_D, O											
DRAINS results prepared 09 August, 2011 from Version 2010.09											
PIT / NODE DETAILS											
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint				
HW2	12.4	6.295			1.8	0	None				
N50	12		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				
CatchB1Ex	0.139	0	0.139	3	8	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatchC1Ex	0.355	0.298	0.057	7	7	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatchBEx	3.523	1.305	2.218	14.5	24	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatchAEx	3.825	2.059	1.766	13.75	15	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatB1_Prop	1.271	1.271	0	6	3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatB2(Swale)_Prop	0.459	0.459	0	9.5	8.5	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatB1Ext_Prop	0.139	0	0.139	5	8	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatB2Ext_Prop	0.071	0	0.071	8.5	15.5	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatA1_Prop	1.181	1.181	0	6	3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatA2(Swale)_Prop	0.526	0.526	0	12	11	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatA1Ex_Prop	0.917	0.456	0.461	13.2	8.3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatA2Ex_Prop	0.101	0	0.101	0	18	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatCa_Prop	0.534	0.534	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatCb_Prop	0.507	0.507	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatCc_Prop	0.506	0.506	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatCd_Prop	0.527	0.527	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatCe_Prop	0.485	0.485	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatCf_Prop	0.542	0.542	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatC2_Prop	1.936	1.936	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatCEX1_Prop	0.355	0.298	0.057	7	7	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatCEX2_Prop	0.322	0.174	0.148	21.7	25	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Cat_A3_Prop	0.357	0.357	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Cat Carpark_Ext	0.313	0.313	0	5	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatC1_Prop	0.321	0.321	0	3	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatB3Ext_Prop	0.062	0	0.062	0	8	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatchCEX	5.627	3.633	1.994	25	30	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Cat Carpark_Prop	0.313	0.313	0	5	0	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Cat1	0.194	0.104	0.089	5	12	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Cat2	0.629	0.4	0.229	7	15	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Cat3	0.073	0.039	0.034	4	8	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Cat4	1.854	1.582	0.271	5	15	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Cat5	0.082	0.044	0.038	6	8	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Cat6	0.028	0.015	0.013	6	8	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatA4_Prop	0.815	0.815	0	6	3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatA5_Prop	0.92	0.92	0	6	3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatA6_Prop	0.886	0.886	0	6	3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
CatB3_Prop	0.669	0.669	0	6	3	0	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1				
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)											
Storm	Total Rainfall cu.m	Total Runoff cu.m (Runoff %)	Impervious Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)							
AR&R 20 year, 6 hours	235509.98	202773.54 (86.1%)	167447.16 (99.3%)	35326.39 (53.1%)							
AR&R 20 year, 9 hours	274761.66	232965.29 (84.8%)	195623.38 (99.3%)	37341.92 (48.1%)							
AR&R 20 year, 12 hours	306162.97	260278.61 (84.9%)	218148.44 (99.3%)	42130.17 (48.7%)							
AR&R 20 year, 18 hours	360722.78	301060.31 (83.5%)	257317.38 (99.3%)	43742.93 (42.9%)							
AR&R 20 year, 24 hours	405077.25	331860.18 (81.9%)	289138.53 (99.3%)	42721.65 (37.4%)							
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						
Pipe13	0.534	0.5	15.518	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1						
P18	0.506	0.5	15.514	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1						
P20	0.505	0.5	15.514	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1						
P22	0.526	0.5	15.517	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1						
P24	0.484	0.4	15.512	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1						
P26	0.542	0.5	15.519	15.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1						
P10	6.295	2.6	12.055	12.005	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1						
CHANNEL DETAILS											
Name	Max Q (cu.m/s)	Max V (m/s)	Chainage (m)	Max HGL (m)	Due to Storm						
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			
OF9	1.109	1.109	7.665	0.091	0.09	22.23	0.98	AR&R 20 year, 12 hours storm, average 11.7 mm/h, Zone 1			
OF12	0.139	0.139	7.665	0.039	0.02	11.81	0.56	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF26	0.355	0.355	7.665	0.057	0.04	15.41	0.72	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF1	1.075	1.075	7.665	0.089	0.09	21.87	0.98	AR&R 20 year, 12 hours storm, average 11.7 mm/h, Zone 1			
OF19	3.46	3.46	7.665	0.145	0.19	33.01	1.32	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF17	3.46	3.46	7.665	0.145	0.19	33.01	1.32	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
StageDischarge_B	0.753	0.753	7.665	0.078	0.07	19.54	0.88	AR&R 20 year, 18 hours storm, average 9.19 mm/h, Zone 1			
OF43	1.939	1.939	7.665	0.115	0.13	26.9	1.13	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF44	0.459	0.459	7.665	0.063	0.05	16.66	0.77	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF46	0.139	0.139	7.665	0.039	0.02	11.81	0.56	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF47	0.071	0.071	7.665	0.031	0.01	10.2	0.44	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF51	0.802	0.802	7.665	0.079	0.07	19.9	0.9	AR&R 20 year, 18 hours storm, average 9.19 mm/h, Zone 1			
OF58	3.801	3.801	7.665	0.15	0.2	34.08	1.36	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF59	0.526	0.526	7.665	0.067	0.05	17.38	0.8	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF60	0.917	0.917	7.665	0.084	0.08	20.79	0.94	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF61	0.101	0.101	7.665	0.035	0.02	10.91	0.51	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF64	1.766	1.766	7.665	0.11	0.12	26	1.11	AR&R 20 year, 12 hours storm, average 11.7 mm/h, Zone 1			
StageDischarge_A	0.96	0.96	7.665	0.086	0.08	21.15	0.94	AR&R 20 year, 12 hours storm, average 11.7 mm/h, Zone 1			
OF549	0	0	7.665	0	0	0	0				

20 Year ARI Results

StageDischarge_D	5.301	5.301	7.665	0.172	0.25	38.4	1.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF550	0	0	7.665	0	0	0	0				
OF551	0	0	7.665	0	0	0	0				
OF552	0	0	7.665	0	0	0	0				
OF553	0	0	7.665	0	0	0	0				
OF554	0	0	7.665	0	0	0	0				
OF102	5.916	5.916	7.665	0.18	0.27	40.01	1.52	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF101	1.936	1.936	7.665	0.115	0.13	26.9	1.13	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF131	0.355	0.355	7.665	0.057	0.04	15.41	0.72	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF104	0.322	0.322	7.665	0.055	0.04	15.05	0.69	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF205	0.357	0.357	7.665	0.057	0.04	15.41	0.72	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF485	0.313	0.313	7.665	0.054	0.04	14.87	0.69	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF305	0.321	0.321	7.665	0.054	0.04	14.87	0.71	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF340	0.062	0.062	7.665	0.029	0.01	9.73	0.44	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF28	0	0	7.665	0	0	0	0				
OF30	6.295	6.295	7.665	0.185	0.28	40.91	1.54	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF487	0.313	0.313	7.665	0.054	0.04	14.87	0.69	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF594	2.621	2.621	7.665	0.13	0.16	29.95	1.22	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF593	1.806	1.806	7.665	0.111	0.12	26.18	1.12	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF590	0.886	0.886	7.665	0.083	0.08	20.61	0.92	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF600	0.669	0.669	7.665	0.074	0.06	18.82	0.85	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
DETENTION BASIN DETAILS											
Name	Max WL	MaxVol	Max Q	Max Q	Max Q						
			Total	Low Level	High Level						
DetBEx	14.72	12778.5	1.075	0	1.075						
DetAEx	14.07	3022.5	3.46	0	3.46						
DetB_Prop	15.87	16649.8	0.753	0	0.753						
DetA_Prop	15.58	23523.9	0.96	0	0.96						
DetC1	15.53	220.8	0.534	0.534	0						
DetD_Prop	15.48	7982.5	5.301	0	5.301						
DetC2	15.52	217.3	0.506	0.506	0						
DetC3	15.52	217.2	0.505	0.505	0						
DetC4	15.52	219.9	0.526	0.526	0						
DetC5	15.52	214.7	0.484	0.484	0						
DetC6	15.53	221.9	0.542	0.542	0						
CONTINUITY CHECK for AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1											
Node	Inflow	Outflow	Storage Change	Difference							
	(cu.m)	(cu.m)	(cu.m)	%							
N4	10685.45	10685.45	0	0							
N5	615.82	615.82	0	0							
N8	2381.69	2381.69	0	0							
DetBEx	19264.64	10075.07	9192.23	0							
OutBEx	10680.01	10680.01	0	0							
DetAEx	22564.03	22564	0	0							
N40	22564	22564	0	0							
OutAEx	22564	22564	0	0							
OutCEX	39522.07	39522.07	0	0							
DetB_Prop	17382.14	4089.73	13293.93	0							
N62	13833.99	13834.22	0	0							
N63	3273.11	3273.11	0	0							
N64	615.82	615.82	0	0							
N65	315.6	315.6	0	0							
N69	5018	5017.98	0	0							
OutB_Prop	5014.83	5014.83	0	0							
N75	27116.88	27116.9	0	0							
N76	3751.43	3751.43	0	0							
N77	5302.78	5302.78	0	0							
N78	450.42	450.42	0	0							
N79	23086.73	23086.71	0	0							
OutA_Prop	23074.75	23074.75	0	0							
DetA_Prop	33415.02	17345.45	16075.57	0							
DetC1	3811.34	3810.68	0.65	0							
DetD_Prop	40591.9	39837.63	752.57	0							
DetC2	3613.4	3612.74	0.65	0							
DetC3	3606.96	3606.32	0.65	0							
DetC4	3758.89	3758.25	0.65	0							
DetC5	3458.23	3457.6	0.65	0							
DetC6	3869.14	3868.47	0.66	0							
N92	43970.65	43970.64	0	0							
OutC_Prop	43967.65	43967.65	0	0							
N95	13807.34	13807.34	0	0							
N96	2381.69	2381.69	0	0							
N97	1905.04	1905.04	0	0							
N169	2546.6	2546.6	0	0							
N177	2230.95	2230.95	0	0							
N224	2288.74	2288.74	0	0							
N232	274.91	274.91	0	0							
HW2	39522.06	39522.07	0	0							
N50	39522.07	39522.07	0	0							
N294	2230.95	2230.95	0	0							
N320	1140.85	1140.85	0	0							
N321	3876.56	3876.56	0	0							
N322	429.89	429.89	0	0							
N323	12498.13	12498.13	0	0							
N324	481.67	481.67	0	0							
N325	167.68	167.68	0	0							
N326	18694.93	18695.02	0	0							
N327	12884.85	12884.95	0	0							
N328	6321.49	6321.49	0	0							
N329	4768.99	4768.99	0	0							
Run Log for Moorebank_REV02 run at 10:33:19 on 9/8/2011											
The following detention basins have little effect (less than 2%) in reducing peak discharge: DetC6, DetC5, DetC4, DetC3, DetC2, DetC1 You might consider upsizing these, or removing them											

100 Year ARI Results

DRAINS Model Name and File Path:		F:\AA003210\D-Calculations\C-Civil\Stormwater\DRAINS\Post PEA\Moorebank_REV02-20110713.drn											
DRAINS Version:		2010.09 - 5 August 2010											
Modeller's Name:		Chris McClelland											
Description:		Moorebank OSD											
DRAINS results prepared 09 August, 2011 from Version 2010.09												RESULTS 100 YEAR ARI	
PIT / NODE DETAILS				Version 8									
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint						
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)							
			(cu.m/s)	(cu.m)	(m)								
HW2	13.38	12.746			0.82	0	None						
N50	13.28		0										
SUB-CATCHMENT DETAILS													
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm						
	Flow Q	Max Q	Max Q	Tc	Tc	Tc							
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)							
CatchB1Ex	0.465	0	0.465	3	8	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatchC1Ex	1.231	1.034	0.197	7	7	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatchBEx	7.538	3.077	4.462	14.5	24	0	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1						
CatchAEx	9.881	5.94	4.252	13.75	15	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatB1_Prop	4.547	4.547	0	6	3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatB2(Swale)_Prop	1.51	1.51	0	9.5	8.5	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatB1Ext_Prop	0.465	0	0.465	5	8	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatB2Ext_Prop	0.17	0	0.17	8.5	15.5	0	AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1						
CatA1_Prop	4.224	4.224	0	6	3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatA2(Swale)_Prop	1.595	1.595	0	12	11	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatA1Ex_Prop	2.808	1.335	1.531	13.2	8.3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatA2Ex_Prop	0.231	0	0.231	0	18	0	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1						
CatCa_Prop	2.216	2.216	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCb_Prop	2.101	2.101	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCc_Prop	2.098	2.098	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCd_Prop	2.186	2.186	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCe_Prop	2.011	2.011	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCf_Prop	2.25	2.25	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatC2_Prop	8.029	8.029	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCEx1_Prop	1.231	1.034	0.197	7	7	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatCEx2_Prop	0.656	0.391	0.288	21.7	25	0	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1						
Cat_A3_Prop	1.481	1.481	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
Cat Carpark_Ext	1.228	1.228	0	5	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatC1_Prop	1.331	1.331	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatB3Ext_Prop	0.208	0	0.208	0	8	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatchCEX	10.983	7.698	3.592	25	30	0	AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1						
Cat Carpark_Prop	1.228	1.228	0	5	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
Cat1	0.618	0.378	0.248	5	12	0	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1						
Cat2	1.839	1.346	0.548	7	15	0	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1						
Cat3	0.253	0.142	0.11	4	8	0	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1						
Cat4	6.471	6.212	0.259	5	15	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
Cat5	0.276	0.153	0.124	6	8	0	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1						
Cat6	0.096	0.053	0.043	6	8	0	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1						
CatA4_Prop	2.914	2.914	0	6	3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatA5_Prop	3.292	3.292	0	6	3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatA6_Prop	3.171	3.171	0	6	3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatB3_Prop	2.392	2.392	0	6	3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)													
Storm	Total Rainfall	Total Runoff	Impervious Ru	Pervious Runoff									
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)									
AR&R 100 year, 5 min	40705.43	32100.10 (78.7%)	27647.31 (94.4%)	4452.79 (38.7%)									
AR&R 100 year, 10 min	62511.91	52822.48 (84.5%)	43296.53 (96.1%)	9525.95 (54.0%)									
AR&R 100 year, 15 min	78503.32	67964.89 (86.6%)	54772.67 (97.1%)	13192.22 (59.5%)									
AR&R 100 year, 20 min	91587.23	80290.73 (87.7%)	64162.38 (97.4%)	16128.35 (62.4%)									
AR&R 100 year, 25 min	101763.58	89556.05 (88.0%)	71465.52 (97.4%)	18090.52 (63.0%)									
AR&R 100 year, 30 min	111213.05	98245.21 (88.3%)	78246.95 (98.1%)	19998.26 (63.7%)									
AR&R 100 year, 45 min	134273.41	119478.42 (88.9%)	94796.08 (98.2%)	24682.35 (65.1%)									
AR&R 100 year, 1 h	151991.16	135745.67 (89.2%)	107511.19 (98.3%)	28234.48 (65.8%)									
AR&R 100 year, 1.5 h	179576.36	160892.24 (89.6%)	127307.49 (98.8%)	33584.75 (66.2%)									
AR&R 100 year, 2 h	201055.77	180304.16 (89.7%)	142721.55 (98.8%)	37582.62 (66.2%)									
AR&R 100 year, 3 h	234855.8	210569.45 (90.0%)	166978.94 (98.9%)	43590.51 (65.7%)									
AR&R 100 year, 4.5 h	272799.09	243546.58 (89.3%)	194210.94 (98.3%)	49335.64 (64.1%)									
PIPE DETAILS													
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm								
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)									
Pipe13	1.77	1.6	15.986	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P18	1.693	1.6	15.972	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P20	1.69	1.6	15.972	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P22	1.749	1.6	15.982	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P24	1.634	1.5	15.963	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P26	1.793	1.7	15.99	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P10	12.746	1.8	13.294	13.28	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1								
CHANNEL DETAILS													
Name	Max Q	Max V	Chainage	Max	Due to Storm								
	(cu.m/s)	(m/s)	(m)	HGL (m)									
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					
OF9	1.626	1.626	0.256	0.106	0.12	25.28	1.09	AR&R 100 year, 3 hours storm, average 35.9 mm/h, Zone 1					
OF12	0.465	0.465	0.256	0.063	0.05	16.66	0.78	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF26	1.231	1.231	0.256	0.095	0.1	22.95	1.01	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF1	1.572	1.572	0.256	0.105	0.11	24.92	1.08	AR&R 100 year, 3 hours storm, average 35.9 mm/h, Zone 1					
OF19	8.334	8.334	0.256	0.207	0.34	45.4	1.65	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1					

100 Year ARI Results

OF17	8.334	8.334	0.256	0.207	0.34	45.4	1.65	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1					
StageDischarge_B	0.744	0.744	0.256	0.077	0.07	19.36	0.89	AR&R 100 year, 4.5 hours storm, average 27.8 mm/h, Zone 1					
OF43	6.913	6.913	0.256	0.192	0.3	42.35	1.58	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF44	1.51	1.51	0.256	0.103	0.11	24.57	1.07	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF46	0.465	0.465	0.256	0.063	0.05	16.66	0.78	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF47	0.17	0.17	0.256	0.043	0.02	12.53	0.58	AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1					
OF51	0.795	0.795	0.256	0.079	0.07	19.9	0.89	AR&R 100 year, 4.5 hours storm, average 27.8 mm/h, Zone 1					
OF58	13.45	13.45	0.256	0.23	0.5	49.99	2.19	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF59	1.595	1.595	0.256	0.106	0.11	25.1	1.08	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF60	2.808	2.808	0.256	0.133	0.17	30.67	1.25	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF61	0.231	0.231	0.256	0.048	0.03	13.61	0.64	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1					
OF64	3.507	3.507	0.256	0.146	0.19	33.19	1.32	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
StageDischarge_A	1.127	1.127	0.256	0.091	0.09	22.23	0.99	AR&R 100 year, 4.5 hours storm, average 27.8 mm/h, Zone 1					
OF549	0	0	0.256	0	0	0	0						
StageDischarge_D	7.816	7.816	0.256	0.202	0.33	44.32	1.62	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1					
OF550	0	0	0.256	0	0	0	0						
OF551	0	0	0.256	0	0	0	0						
OF552	0	0	0.256	0	0	0	0						
OF553	0	0	0.256	0	0	0	0						
OF554	0	0	0.256	0	0	0	0						
OF102	9.195	9.195	0.256	0.215	0.36	47.02	1.69	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1					
OF101	8.029	8.029	0.256	0.203	0.33	44.68	1.64	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1					
OF131	1.231	1.231	0.256	0.095	0.1	22.95	1.01	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF104	0.656	0.656	0.256	0.073	0.06	18.64	0.85	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1					
OF205	1.481	1.481	0.256	0.103	0.11	24.57	1.05	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1					
OF485	1.228	1.228	0.256	0.095	0.1	22.95	1.01	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1					
OF305	1.331	1.331	0.256	0.098	0.1	23.67	1.02	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1					
OF340	0.208	0.208	0.256	0.046	0.03	13.25	0.61	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF28	0	0	0.256	0	0	0	0						
OF30	12.746	12.746	0.256	0.23	0.48	49.99	2.07	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1					
OF487	1.228	1.228	0.256	0.095	0.1	22.95	1.01	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1					
OF594	9.311	9.311	0.256	0.216	0.37	47.2	1.7	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF593	6.428	6.428	0.256	0.186	0.29	41.27	1.55	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF590	3.171	3.171	0.256	0.14	0.18	31.93	1.29	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF600	2.392	2.392	0.256	0.124	0.15	28.88	1.21	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
DETENTION BASIN DETAILS													
Name	Max WL	MaxVol	Max Q	Max Q	Max Q								
			Total	Low Level	High Level								
DetBEx	14.74	13507.4	1.572	0	1.572								
DetAEx	14.19	4567.1	8.334	0	8.334								
DetB_Prop	15.87	16647.1	0.744	0	0.744								
DetA_Prop	15.76	26773.9	1.127	0	1.127								
DetC1	16.01	606.6	1.77	1.77	0								
DetD_Prop	15.9	10227.8	7.816	0	7.816								
DetC2	15.99	592.8	1.693	1.693	0								
DetC3	15.99	592.4	1.69	1.69	0								
DetC4	16	602.8	1.749	1.749	0								
DetC5	15.98	582.8	1.634	1.634	0								
DetC6	16.01	610.9	1.793	1.793	0								
CONTINUITY CHECK for AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1													
Node	Inflow	Outflow	Storage Change	Difference									
	(cu.m)	(cu.m)	(cu.m)	%									
N4	3835.19	3835.18	0	0									
N5	497.8	497.8	0	0									
N8	1571.57	1571.57	0	0									
DetBEx	13909.94	3343.26	10569.69	0									
OutBEx	3829.31	3829.31	0	0									
DetAEx	15759.35	15759.39	0	0									
N40	15759.39	15759.39	0	0									
OutAEx	15759.39	15759.39	0	0									
OutCEx	26769.13	26769.13	0	0									
DetB_Prop	11205.98	1108.41	10098.94	0									
N62	8882.22	8882.22	0	0									
N63	2101.53	2101.53	0	0									
N64	497.8	497.8	0	0									
N65	253.49	253.49	0	0									
N69	1856.99	1856.99	0	0									
OutB_Prop	1854.29	1854.29	0	0									
N75	17410.64	17410.64	0	0									
N76	2408.62	2408.62	0	0									
N77	3744.73	3744.73	0	0									
N78	360.94	360.94	0	0									
N79	9257.3	9257.31	0	0									
OutA_Prop	9245.25	9245.25	0	0									
DetA_Prop	21454.32	5163.68	16296.67	0									
DetC1	2447.09	2445.91	1.19	0									
DetD_Prop	26100.04	24155.4	1946.41	0									
DetC2	2320	2318.81	1.19	0									
DetC3	2315.88	2314.69	1.19	0									
DetC4	2413.43	2412.24	1.19	0									
DetC5	2220.38	2219.2	1.19	0									
DetC6	2484.19	2483	1.19	0									
N92	26905.66	26905.66	0	0									
OutC_Prop	26897.93	26897.93	0	0									
N95	8865.05	8865.05	0	0									
N96	1571.57	1571.57	0	0									
N97	1325.57	1325.57	0	0									
N169	1635.06	1635.06	0	0									
N177	1432.39	1432.39	0	0									
N224	1469.49	1469.49	0	0									
N232	222.22	222.22	0	0									
HW2	26769.13	26769.13	0	0									

100 Year ARI Results

N50	26769.13	26769.13	0	0									
N294	1432.39	1432.39	0	0									
N320	797.66	797.66	0	0									
N321	2653.85	2653.85	0	0									
N322	300.97	300.97	0	0									
N323	8219.99	8219.99	0	0									
N324	337.22	337.22	0	0									
N325	117.4	117.4	0	0									
N326	12003.26	12003.26	0	0									
N327	8272.85	8272.86	0	0									
N328	4058.79	4058.79	0	0									
N329	3061.96	3061.96	0	0									
Run Log for Moorebank_REV02 run at 10:34:38 on 9/8/2011													
The maximum flow exceeded the safe value in the following overflow routes: OF600, OF594, OF593, OF590, OF487, OF485, OF305, OF205, OF131, OF104, OF102, OF101, StageDischarge_D, C													
DRAINS results prepared 09 August, 2011 from Version 2010.09													
PIT / NODE DETAILS													
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint						
	HGL		Flow Arriving	Volume	Freeboard	(cu.m/s)							
			(cu.m/s)	(cu.m)	(m)								
HW2	13.32	7.698			0.88	0	None						
N50	13.28		0										
SUB-CATCHMENT DETAILS													
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm						
	Flow Q	Max Q	Max Q	Tc	Tc	Tc							
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)							
CatchB1Ex	0.173	0	0.173	3	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatchC1Ex	0.431	0.36	0.071	7	7	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatchBEx	4.356	1.575	2.782	14.5	24	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatchAEx	4.693	2.484	2.209	13.75	15	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB1_Prop	1.533	1.533	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB2(Swale)_Prop	0.554	0.554	0	9.5	8.5	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB1Ext_Prop	0.173	0	0.173	5	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB2Ext_Prop	0.088	0	0.088	8.5	15.5	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA1_Prop	1.424	1.424	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA2(Swale)_Prop	0.634	0.634	0	12	11	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA1Ex_Prop	1.126	0.55	0.576	13.2	8.3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA2Ex_Prop	0.126	0	0.126	0	18	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCa_Prop	0.645	0.645	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCb_Prop	0.611	0.611	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCc_Prop	0.61	0.61	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCd_Prop	0.636	0.636	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCe_Prop	0.585	0.585	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCf_Prop	0.654	0.654	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatC2_Prop	2.335	2.335	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCEx1_Prop	0.431	0.36	0.071	7	7	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCEx2_Prop	0.395	0.21	0.186	21.7	25	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat_A3_Prop	0.431	0.431	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat Carpark_Ext	0.377	0.377	0	5	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatC1_Prop	0.387	0.387	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB3Ext_Prop	0.077	0	0.077	0	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatchCEx	6.889	4.383	2.506	25	30	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat Carpark_Prop	0.377	0.377	0	5	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat1	0.237	0.126	0.112	5	12	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat2	0.769	0.483	0.286	7	15	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat3	0.09	0.047	0.042	4	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat4	2.249	1.909	0.34	5	15	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat5	0.1	0.053	0.047	6	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat6	0.035	0.018	0.016	6	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA4_Prop	0.983	0.983	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA5_Prop	1.11	1.11	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA6_Prop	1.069	1.069	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB3_Prop	0.807	0.807	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)													
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff									
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)									
AR&R 100 year, 6 h	304854.63	270784.28 (88.86%)	217212.31 (71.28%)	53571.97 (17.58%)									
AR&R 100 year, 9 h	3307316	313204.46 (9.47%)	254771.72 (7.70%)	58432.74 (1.77%)									
AR&R 100 year, 12 h	400367	350135.02 (87.46%)	285758.69 (71.40%)	64376.34 (16.06%)									
AR&R 100 year, 18 h	474945.16	408699.81 (85.84%)	339291.97 (71.43%)	69407.84 (14.62%)									
AR&R 100 year, 24 h	539056.13	456777.45 (84.73%)	385271.72 (71.46%)	71505.73 (13.26%)									
PIPE DETAILS													
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm								
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)									
Pipe13	0.631	0.6	15.566	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P18	0.598	0.6	15.56	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P20	0.597	0.6	15.559	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P22	0.623	0.6	15.564	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P24	0.572	0.5	15.555	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P26	0.641	0.6	15.568	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P10	7.698	1.1	13.285	13.28	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
CHANNEL DETAILS													
Name	Max Q	Max V	Chainage	Max	Due to Storm								
	(cu.m/s)	(m/s)	(m)	HGL (m)									
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					
OF9	2.626	2.626	7.665	0.13	0.16	29.95	1.23	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1					

100 Year ARI Results

OF12	0.173	0.173	7.665	0.043	0.03	12.53	0.59	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF26	0.431	0.431	7.665	0.062	0.05	16.3	0.76	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF1	2.537	2.537	7.665	0.128	0.16	29.59	1.21	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1
OF19	4.585	4.585	7.665	0.162	0.23	36.42	1.43	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF17	4.585	4.585	7.665	0.162	0.23	36.42	1.43	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
StageDischarge_B	1.842	1.842	7.665	0.112	0.13	26.36	1.13	AR&R 100 year, 12 hours storm, average 15.3 mm/h, Zone 1
OF43	2.34	2.34	7.665	0.123	0.15	28.7	1.19	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF44	0.554	0.554	7.665	0.069	0.06	17.74	0.81	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF46	0.173	0.173	7.665	0.043	0.03	12.53	0.59	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF47	0.088	0.088	7.665	0.034	0.02	10.74	0.47	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF51	2.002	2.002	7.665	0.116	0.13	27.26	1.14	AR&R 100 year, 12 hours storm, average 15.3 mm/h, Zone 1
OF58	4.586	4.586	7.665	0.162	0.23	36.42	1.43	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF59	0.634	0.634	7.665	0.072	0.06	18.46	0.84	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF60	1.126	1.126	7.665	0.091	0.09	22.23	0.99	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF61	0.126	0.126	7.665	0.038	0.02	11.63	0.53	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF64	2.7	2.7	7.665	0.131	0.16	30.13	1.24	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1
StageDischarge_A	1.925	1.925	7.665	0.114	0.13	26.72	1.14	AR&R 100 year, 12 hours storm, average 15.3 mm/h, Zone 1
OF549	0	0	7.665	0	0	0	0	
StageDischarge_D	6.735	6.735	7.665	0.19	0.3	41.99	1.56	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF550	0	0	7.665	0	0	0	0	
OF551	0	0	7.665	0	0	0	0	
OF552	0	0	7.665	0	0	0	0	
OF553	0	0	7.665	0	0	0	0	
OF554	0	0	7.665	0	0	0	0	
OF102	7.507	7.507	7.665	0.198	0.32	43.6	1.61	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF101	2.335	2.335	7.665	0.123	0.15	28.7	1.19	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF131	0.431	0.431	7.665	0.062	0.05	16.3	0.76	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF104	0.395	0.395	7.665	0.06	0.04	15.94	0.74	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF205	0.431	0.431	7.665	0.062	0.05	16.3	0.76	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF485	0.377	0.377	7.665	0.059	0.04	15.76	0.72	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF305	0.387	0.387	7.665	0.059	0.04	15.76	0.74	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF340	0.077	0.077	7.665	0.032	0.01	10.38	0.46	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF28	0	0	7.665	0	0	0	0	
OF30	7.698	7.698	7.665	0.201	0.32	44.14	1.61	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF487	0.377	0.377	7.665	0.059	0.04	15.76	0.72	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF594	3.162	3.162	7.665	0.14	0.18	31.93	1.29	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF593	2.179	2.179	7.665	0.12	0.14	27.98	1.17	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF590	1.069	1.069	7.665	0.089	0.09	21.87	0.98	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
OF600	0.807	0.807	7.665	0.079	0.07	19.9	0.91	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1
DETENTION BASIN DETAILS								
Name	Max WL	MaxVol	Max Q	Max Q	Max Q			
			Total	Low Level	High Level			
DetBEx	14.77	14734	2.537	0	2.537			
DetAEx	14.1	3385.6	4.585	0	4.585			
DetB_Prop	15.9	16986.2	1.842	0	1.842			
DetA_Prop	15.86	28749	1.925	0	1.925			
DetC1	15.58	264.1	0.631	0.631	0			
DetD_Prop	15.5	8112.2	6.735	0	6.735			
DetC2	15.57	258	0.598	0.598	0			
DetC3	15.57	257.8	0.597	0.597	0			
DetC4	15.58	262.5	0.623	0.623	0			
DetC5	15.57	253.4	0.572	0.572	0			
DetC6	15.58	266	0.641	0.641	0			
CONTINUITY CHECK for AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %				
N4	18364.09	18364.06	0	0				
N5	934.22	934.22	0	0				
N8	3145.34	3145.34	0	0				
DetBEx	27171.37	17435.48	9738.29	0				
OutBEx	18358.44	18358.44	0	0				
DetAEx	30999.18	30999.08	0	0				
N40	30999.08	30999.08	0	0				
OutAEx	30999.08	30999.08	0	0				
OutCEX	53292.53	53292.53	0	0				
DetB_Prop	22608.23	6945.49	15664.28	0				
N62	17945.34	17945.38	0	0				
N63	4245.87	4245.87	0	0				
N64	934.22	934.22	0	0				
N65	478.68	478.68	0	0				
N69	8354.83	8354.83	0	0				
OutB_Prop	8351.38	8351.38	0	0				
N75	35175.95	35176.05	0	0				
N76	4866.35	4866.35	0	0				
N77	7329.11	7329.11	0	0				
N78	683.11	683.11	0	0				
N79	29406.41	29406.47	0	0				
OutA_Prop	29392.53	29392.53	0	0				
DetA_Prop	43346.28	21408.19	21944.58	0				
DetC1	4944.05	4943.38	0.69	0				
DetD_Prop	52711.73	51825.04	885.07	0				
DetC2	4687.28	4686.58	0.69	0				
DetC3	4678.94	4678.26	0.69	0				
DetC4	4876.12	4875.35	0.69	0				
DetC5	4486.04	4485.33	0.69	0				
DetC6	5019.05	5018.32	0.7	0				
N92	57332.42	57332.39	0	0				
OutC_Prop	57328.88	57328.88	0	0				
N95	17910.6	17910.6	0	0				
N96	3145.34	3145.34	0	0				
N97	2616.88	2616.88	0	0				
N169	3303.44	3303.44	0	0				

100 Year ARI Results

N177	2893.97	2893.97	0	0								
N224	2968.94	2968.94	0	0								
N232	417.05	417.05	0	0								
HW2	53292.54	53292.53	0	0								
N50	53292.53	53292.53	0	0								
N294	2893.97	2893.97	0	0								
N320	1567.38	1567.38	0	0								
N321	5252.78	5252.78	0	0								
N322	590.64	590.64	0	0								
N323	16478.26	16478.26	0	0								
N324	661.79	661.79	0	0								
N325	230.38	230.38	0	0								
N326	24250.82	24251.12	0	0								
N327	16714.37	16714.35	0	0								
N328	8200.33	8200.33	0	0								
N329	6186.29	6186.29	0	0								
Run Log for Moorebank_REV02 run at 10:35:07 on 9/8/2011												
The maximum flow exceeded the safe value in the following overflow routes: OF30												
The following detention basins have little effect (less than 2%) in reducing peak discharge: DetD_Prop					You might consider upsizing these, or removing them from the model.							

100 Year ARI (Climate Change)

DRAINS Model Name and File Path:		F:\AA003210\D-Calculations\C-Civil\Stormwater\DRAINS\Post PEA\Moorebank_REV02-20110713.drn											
DRAINS Version:		2010.09 - 5 August 2010											
Modeller's Name:		Chris McClelland											
Description:		Moorebank OSD											
DRAINS results prepared 09 August, 2011 from Version 2010.09													
PIT / NODE DETAILS				Version 8		RESULTS Climate Change							
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min							Overflow	Constraint
		HGL	Flow Arriving	Volume	Freeboard							(cu.m/s)	
			(cu.m/s)	(cu.m)	(m)								
HW2	13.19	15.598			1.01	0	None						
N50	12.56		0										
SUB-CATCHMENT DETAILS													
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm						
	Flow Q	Max Q	Max Q	Tc	Tc	Tc							
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)							
CatchB1Ex	0.573	0	0.573	3	8	0	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1						
CatchC1Ex	1.482	1.239	0.243	7	7	0	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1						
CatchBEx	9.21	3.691	5.519	14.5	24	0	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1						
CatchAEx	12.204	7.118	5.403	13.75	15	0	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1						
CatB1_Prop	5.455	5.455	0	6	3	0	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1						
CatB2(Swale)_Prop	1.81	1.81	0	9.5	8.5	0	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1						
CatB1Ext_Prop	0.573	0	0.573	5	8	0	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1						
CatB2Ext_Prop	0.215	0	0.215	8.5	15.5	0	AR&R 102 year, 1 hour storm, average 83.6 mm/h, Zone 1						
CatA1_Prop	5.068	5.068	0	6	3	0	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1						
CatA2(Swale)_Prop	1.912	1.912	0	12	11	0	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1						
CatA1Ex_Prop	3.423	1.6	1.887	13.2	8.3	0	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1						
CatA2Ex_Prop	0.289	0	0.289	0	18	0	AR&R 102 year, 1 hour storm, average 83.6 mm/h, Zone 1						
CatCa_Prop	2.662	2.662	0	3	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
CatCb_Prop	2.523	2.523	0	3	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
CatCc_Prop	2.519	2.519	0	3	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
CatCd_Prop	2.625	2.625	0	3	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
CatCe_Prop	2.415	2.415	0	3	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
CatCf_Prop	2.702	2.702	0	3	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
CatC2_Prop	9.642	9.642	0	3	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
CatCEx1_Prop	1.482	1.239	0.243	7	7	0	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1						
CatCEx2_Prop	0.814	0.47	0.369	21.7	25	0	AR&R 102 year, 1.5 hours storm, average 65.9 mm/h, Zone 1						
Cat_A3_Prop	1.778	1.778	0	3	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
Cat Carpark_Ext	1.488	1.488	0	5	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
CatC1_Prop	1.598	1.598	0	3	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
CatB3Ext_Prop	0.256	0	0.256	0	8	0	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1						
CatchCEX	13.487	9.233	4.589	25	30	0	AR&R 102 year, 1 hour storm, average 83.6 mm/h, Zone 1						
Cat Carpark_Prop	1.488	1.488	0	5	0	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
Cat1	0.762	0.452	0.312	5	12	0	AR&R 102 year, 25 minutes storm, average 134 mm/h, Zone 1						
Cat2	2.246	1.611	0.692	7	15	0	AR&R 102 year, 25 minutes storm, average 134 mm/h, Zone 1						
Cat3	0.312	0.177	0.135	4	8	0	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1						
Cat4	7.877	7.531	0.347	5	15	0	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
Cat5	0.339	0.189	0.151	6	8	0	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1						
Cat6	0.118	0.066	0.053	6	8	0	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1						
CatA4_Prop	3.497	3.497	0	6	3	0	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1						
CatA5_Prop	3.95	3.95	0	6	3	0	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1						
CatA6_Prop	3.804	3.804	0	6	3	0	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1						
CatB3_Prop	2.87	2.87	0	6	3	0	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1						
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)													
Storm	Total Rainfall	Total Runoff	Impervious Ru	Pervious Runoff									
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)									
AR&R 102 year, 5 min	48882.86	40233.50 (82.3%)	33515.75 (68.7%)	6717.75 (13.6%)									
AR&R 102 year, 10 min	74868.91	65129.53 (87.0%)	52164.57 (69.6%)	12964.96 (17.3%)									
AR&R 102 year, 15 min	94313.03	83699.96 (88.7%)	66118.59 (70.1%)	17581.36 (18.6%)									
AR&R 102 year, 20 min	109759.3	98384.88 (89.6%)	77203.63 (70.5%)	21181.25 (19.3%)									
AR&R 102 year, 25 min	121752.85	109465.23 (89.9%)	85810.67 (70.6%)	23654.56 (19.4%)									
AR&R 102 year, 30 min	133019.53	119984.68 (89.8%)	93896.34 (70.6%)	26088.34 (19.6%)									
AR&R 102 year, 45 min	161095.38	146237.80 (90.8%)	114044.66 (70.8%)	32193.14 (20.0%)									
AR&R 102 year, 1 h	182302.19	165987.45 (91.1%)	129263.70 (70.9%)	36723.75 (20.1%)									
AR&R 102 year, 1.5 h	215557.06	196809.39 (91.3%)	153129.33 (70.9%)	43680.06 (20.3%)									
AR&R 102 year, 2 h	241179.64	220327.19 (91.3%)	171517.27 (71.1%)	48809.93 (20.3%)									
AR&R 102 year, 3 h	281957.75	257485.74 (91.3%)	200779.45 (71.2%)	56706.29 (20.1%)									
AR&R 102 year, 4.5 h	327751.44	298350.03 (91.3%)	233645.61 (71.3%)	64704.42 (20.0%)									
PIPE DETAILS													
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm								
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)									
Pipe13	1.988	1.8	16.202	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1								
P18	1.942	1.8	16.182	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1								
P20	1.94	1.8	16.181	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1								
P22	1.975	1.8	16.198	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1								
P24	1.916	1.8	16.167	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1								
P26	2.001	1.9	16.205	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1								
P10	15.598	3.4	12.82	12.558	AR&R 102 year, 1.5 hours storm, average 65.9 mm/h, Zone 1								
CHANNEL DETAILS													
Name	Max Q	Max V	Chainage	Max	Due to Storm								
	(cu.m/s)	(m/s)	(m)	HGL (m)									
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					
OF9	2.679	2.679	0.256	0.131	0.16	30.13	1.23	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1					
OF12	0.573	0.573	0.256	0.07	0.06	17.92	0.82	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1					
OF26	1.482	1.482	0.256	0.103	0.11	24.57	1.05	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1					
OF1	2.585	2.585	0.256	0.129	0.16	29.77	1.22	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1					
OF19	11.119	11.119	0.256	0.23	0.42	49.99	1.81	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1					

100 Year ARI (Climate Change)

OF17	11.119	11.119	0.256	0.23	0.42	49.99	1.81	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1				
StageDischarge_B	1.27	1.27	0.256	0.097	0.1	23.31	1.01	AR&R 102 year, 4.5 hours storm, average 33.4 mm/h, Zone 1				
OF43	8.288	8.288	0.256	0.206	0.34	45.22	1.65	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1				
OF44	1.81	1.81	0.256	0.111	0.12	26.18	1.12	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
OF46	0.573	0.573	0.256	0.07	0.06	17.92	0.82	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
OF47	0.215	0.215	0.256	0.046	0.03	13.25	0.63	AR&R 102 year, 1 hour storm, average 83.6 mm/h, Zone 1				
OF51	1.379	1.379	0.256	0.099	0.1	23.85	1.04	AR&R 102 year, 4.5 hours storm, average 33.4 mm/h, Zone 1				
OF58	16.119	16.119	0.256	0.23	0.6	49.99	2.62	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
OF59	1.912	1.912	0.256	0.114	0.13	26.72	1.13	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
OF60	3.423	3.423	0.256	0.144	0.19	32.83	1.32	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
OF61	0.289	0.289	0.256	0.053	0.04	14.51	0.68	AR&R 102 year, 1 hour storm, average 83.6 mm/h, Zone 1				
OF64	4.235	4.235	0.256	0.158	0.22	35.52	1.39	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
StageDischarge_A	1.928	1.928	0.256	0.115	0.13	26.9	1.13	AR&R 102 year, 4.5 hours storm, average 33.4 mm/h, Zone 1				
OF549	0.056	0.056	0.256	0.028	0.01	9.43	0.42	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1				
StageDischarge_D	14.48	14.48	0.256	0.23	0.54	49.99	2.36	AR&R 102 year, 1.5 hours storm, average 65.9 mm/h, Zone 1				
OF550	0	0	0.256	0	0	0	0					
OF551	0	0	0.256	0	0	0	0					
OF552	0	0	0.256	0	0	0	0					
OF553	0	0	0.256	0	0	0	0					
OF554	0.159	0.159	0.256	0.042	0.02	12.35	0.56	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1				
OF102	16.437	16.437	0.256	0.23	0.61	49.99	2.67	AR&R 102 year, 1.5 hours storm, average 65.9 mm/h, Zone 1				
OF101	9.642	9.642	0.256	0.22	0.38	47.91	1.71	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
OF131	1.482	1.482	0.256	0.103	0.11	24.57	1.05	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
OF104	0.814	0.814	0.256	0.08	0.07	20.08	0.9	AR&R 102 year, 1.5 hours storm, average 65.9 mm/h, Zone 1				
OF205	1.778	1.778	0.256	0.11	0.12	26	1.12	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
OF485	1.488	1.488	0.256	0.103	0.11	24.57	1.06	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
OF305	1.598	1.598	0.256	0.106	0.11	25.1	1.08	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
OF340	0.256	0.256	0.256	0.05	0.03	13.97	0.66	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
OF28	0	0	0.256	0	0	0	0					
OF30	15.598	15.598	0.256	0.23	0.58	49.99	2.54	AR&R 102 year, 1.5 hours storm, average 65.9 mm/h, Zone 1				
OF487	1.488	1.488	0.256	0.103	0.11	24.57	1.06	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
OF594	11.159	11.159	0.256	0.23	0.42	49.99	1.82	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1				
OF593	7.706	7.706	0.256	0.201	0.32	44.14	1.62	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1				
OF590	3.804	3.804	0.256	0.15	0.2	34.08	1.36	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1				
OF600	2.87	2.87	0.256	0.134	0.17	30.85	1.26	AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1				
DETENTION BASIN DETAILS												
Name	Max WL	MaxVol	Max Q	Max Q	Max Q							
			Total	Low Level	High Level							
DetBEx	14.77	14785.6	2.585	0	2.585							
DetAEx	14.22	5059.9	11.119	0	11.119							
DetB_Prop	15.88	16793	1.27	0	1.27							
DetA_Prop	15.87	28837.3	1.928	0	1.928							
DetC1	16.25	802.5	2.044	1.988	0.056							
DetD_Prop	16.01	10835.7	14.48	0	14.48							
DetC2	16.23	781.9	1.942	1.942	0							
DetC3	16.23	781.2	1.94	1.94	0							
DetC4	16.25	797.8	1.975	1.975	0							
DetC5	16.21	765.9	1.916	1.916	0							
DetC6	16.26	805	2.16	2.001	0.159							
CONTINUITY CHECK for AR&R 102 year, 1 hour storm, average 83.6 mm/h, Zone 1												
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %								
N4	7070.92	7070.92	0	0								
N5	646.36	646.36	0	0								
N8	1909.27	1909.27	0	0								
DetBEx	17508.87	6431.15	11081.07	0								
OutBEx	7064.28	7064.28	0	0								
DetAEx	19563	19563.11	0	0								
N40	19563.11	19563.11	0	0								
OutAEx	19563.11	19563.11	0	0								
OutCEx	32919.43	32919.43	0	0								
DetB_Prop	13494.63	1250.8	12245.35	0								
N62	10679.35	10679.35	0	0								
N63	2526.73	2526.73	0	0								
N64	646.36	646.36	0	0								
N65	329.43	329.43	0	0								
N69	2223.59	2223.59	0	0								
OutB_Prop	2220.59	2220.59	0	0								
N75	20933.32	20933.32	0	0								
N76	2895.96	2895.96	0	0								
N77	4661.59	4661.59	0	0								
N78	469.25	469.25	0	0								
N79	10841.75	10841.74	0	0								
OutA_Prop	10828.37	10828.37	0	0								
DetA_Prop	25795.15	5724.26	20077.59	0								
DetC1	2942.22	2940.83	1.39	0								
DetD_Prop	31400.79	29295.13	2080.25	0.1								
DetC2	2789.4	2788.02	1.39	0								
DetC3	2784.45	2783.07	1.39	0								
DetC4	2901.74	2900.36	1.39	0								
DetC5	2669.64	2668.25	1.39	0								
DetC6	2986.82	2985.44	1.39	0								
N92	32655.34	32655.34	0	0								
OutC_Prop	32647.08	32647.08	0	0								
N95	10658.71	10658.71	0	0								
N96	1909.27	1909.27	0	0								
N97	1646.24	1646.24	0	0								
N169	1965.88	1965.88	0	0								
N177	1722.21	1722.21	0	0								
N224	1766.81	1766.81	0	0								
N232	288.54	288.54	0	0								
HW2	32919.44	32919.43	0	0								

100 Year ARI (Climate Change)

N50	32919.43	32919.43	0	0									
N294	1722.21	1722.21	0	0									
N320	990.05	990.05	0	0									
N321	3270.52	3270.52	0	0									
N322	373.52	373.52	0	0									
N323	9977.67	9977.67	0	0									
N324	418.52	418.52	0	0									
N325	145.7	145.7	0	0									
N326	14431.86	14431.87	0	0									
N327	9946.69	9946.69	0	0									
N328	4880.01	4880.01	0	0									
N329	3681.48	3681.48	0	0									
Run Log for Moorebank_REV02 run at 14:08:29 on 9/8/2011													
The maximum flow exceeded the safe value in the following overflow routes: OF600, OF594, OF593, OF590, OF487, OF485, OF305, OF205, OF131, OF104, OF102, OF101, StageDischarge_D, C													
DRAINS results prepared 09 August, 2011 from Version 2010.09													
PIT / NODE DETAILS													
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint						
	HGL		Flow Arriving	Volume	Freeboard	(cu.m/s)							
			(cu.m/s)	(cu.m)	(m)								
HW2	12.68	9.326			1.52	0	None						
N50	12.2		0										
SUB-CATCHMENT DETAILS													
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm						
	Flow Q	Max Q	Max Q	Tc	Tc	Tc							
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)							
CatchB1Ex	0.213	0	0.213	3	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatchC1Ex	0.52	0.432	0.088	7	7	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatchBEx	5.314	1.892	3.422	14.5	24	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatchAEx	5.7	2.985	2.715	13.75	15	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB1_Prop	1.842	1.842	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB2(Swale)_Prop	0.665	0.665	0	9.5	8.5	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB1Ext_Prop	0.213	0	0.213	5	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB2Ext_Prop	0.109	0	0.109	8.5	15.5	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA1_Prop	1.712	1.712	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA2(Swale)_Prop	0.762	0.762	0	12	11	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA1Ex_Prop	1.369	0.661	0.707	13.2	8.3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA2Ex_Prop	0.155	0	0.155	0	18	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCa_Prop	0.775	0.775	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCb_Prop	0.734	0.734	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCc_Prop	0.733	0.733	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCd_Prop	0.764	0.764	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCe_Prop	0.703	0.703	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCf_Prop	0.786	0.786	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatC2_Prop	2.806	2.806	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCEx1_Prop	0.52	0.432	0.088	7	7	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCEx2_Prop	0.481	0.252	0.228	21.7	25	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat_A3_Prop	0.518	0.518	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat Carpark_Ext	0.453	0.453	0	5	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatC1_Prop	0.465	0.465	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB3Ext_Prop	0.095	0	0.095	0	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatchCEx	8.352	5.267	3.086	25	30	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat Carpark_Prop	0.453	0.453	0	5	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat1	0.288	0.151	0.137	5	12	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat2	0.932	0.58	0.352	7	15	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat3	0.109	0.057	0.052	4	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat4	2.711	2.294	0.417	5	15	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat5	0.122	0.064	0.058	6	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat6	0.042	0.022	0.02	6	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA4_Prop	1.181	1.181	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA5_Prop	1.334	1.334	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA6_Prop	1.285	1.285	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB3_Prop	0.969	0.969	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)													
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff									
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)									
AR&R 102 year, 6 h	366348.84	331903.44 (90.6%)	261351.63 (72.2%)	70551.81 (19.4%)									
AR&R 102 year, 9 h	427843.13	383158.98 (89.8%)	305481.31 (71.4%)	77677.67 (18.2%)									
AR&R 102 year, 12 h	481487.06	429691.20 (89.2%)	343953.34 (71.4%)	85737.85 (17.8%)									
AR&R 102 year, 18 h	569149.13	500128.20 (87.9%)	406857.28 (71.5%)	93270.92 (16.5%)									
AR&R 102 year, 24 h	648960.81	563771.91 (86.9%)	464126.28 (71.5%)	99645.63 (15.4%)									
PIPE DETAILS													
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm								
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)									
Pipe13	0.682	0.6	15.719	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P18	0.642	0.6	15.712	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P20	0.641	0.6	15.711	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P22	0.672	0.6	15.717	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P24	0.611	0.6	15.706	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P26	0.694	0.6	15.722	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P10	9.326	2.9	12.251	12.201	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
CHANNEL DETAILS													
Name	Max Q	Max V	Chainage	Max	Due to Storm								
	(cu.m/s)	(m/s)	(m)	HGL (m)									
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					
OF9	4.021	4.021	7.665	0.154	0.21	34.8	1.37	AR&R 102 year, 9 hours storm, average 21.8 mm/h, Zone 1					

100 Year ARI (Climate Change)

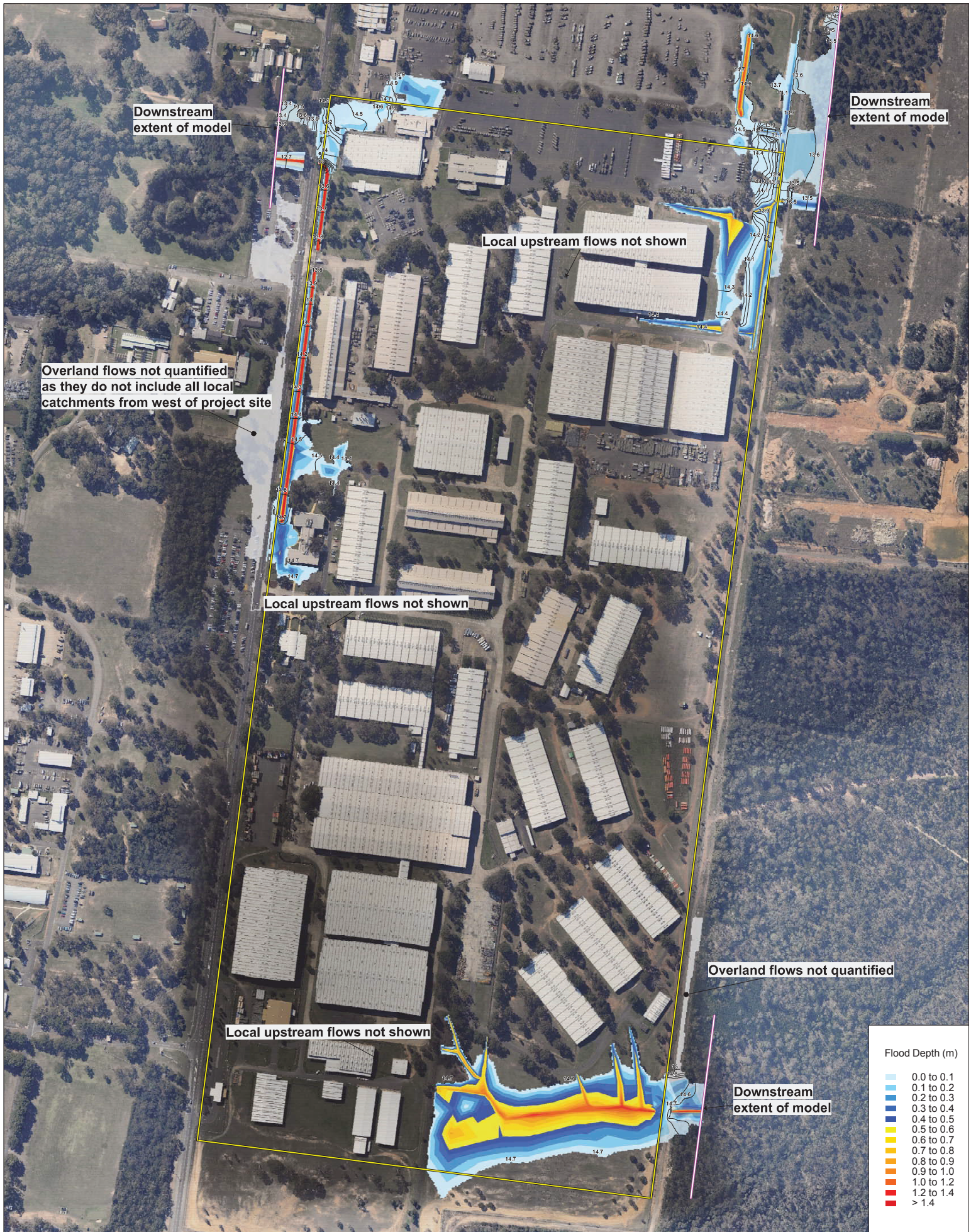
OF12	0.213	0.213	7.665	0.046	0.03	13.25	0.63	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF26	0.52	0.52	7.665	0.067	0.05	17.38	0.79	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF1	3.886	3.886	7.665	0.152	0.21	34.44	1.36	AR&R 102 year, 9 hours storm, average 21.8 mm/h, Zone 1
OF19	5.583	5.583	7.665	0.176	0.26	39.11	1.5	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF17	5.583	5.583	7.665	0.176	0.26	39.11	1.5	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
StageDischarge_B	2.1	2.1	7.665	0.118	0.14	27.62	1.16	AR&R 102 year, 9 hours storm, average 21.8 mm/h, Zone 1
OF43	2.812	2.812	7.665	0.133	0.17	30.67	1.25	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF44	0.665	0.665	7.665	0.074	0.06	18.82	0.85	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF46	0.213	0.213	7.665	0.046	0.03	13.25	0.63	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF47	0.109	0.109	7.665	0.036	0.02	11.27	0.5	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF51	2.292	2.292	7.665	0.123	0.15	28.52	1.19	AR&R 102 year, 9 hours storm, average 21.8 mm/h, Zone 1
OF58	5.511	5.511	7.665	0.175	0.26	38.93	1.49	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF59	0.762	0.762	7.665	0.078	0.07	19.54	0.89	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF60	1.369	1.369	7.665	0.099	0.1	23.85	1.04	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF61	0.155	0.155	7.665	0.041	0.02	12.17	0.57	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF64	3.487	3.487	7.665	0.145	0.19	33.01	1.33	AR&R 102 year, 9 hours storm, average 21.8 mm/h, Zone 1
StageDischarge_A	2.667	2.667	7.665	0.131	0.16	30.13	1.23	AR&R 102 year, 9 hours storm, average 21.8 mm/h, Zone 1
OF549	0	0	7.665	0	0	0	0	
StageDischarge_D	7.153	7.153	7.665	0.194	0.31	42.89	1.59	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF550	0	0	7.665	0	0	0	0	
OF551	0	0	7.665	0	0	0	0	
OF552	0	0	7.665	0	0	0	0	
OF553	0	0	7.665	0	0	0	0	
OF554	0	0	7.665	0	0	0	0	
OF102	8.069	8.069	7.665	0.204	0.33	44.86	1.64	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF101	2.806	2.806	7.665	0.133	0.17	30.67	1.25	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF131	0.52	0.52	7.665	0.067	0.05	17.38	0.79	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF104	0.481	0.481	7.665	0.064	0.05	16.84	0.79	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF205	0.518	0.518	7.665	0.066	0.05	17.2	0.81	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF485	0.453	0.453	7.665	0.063	0.05	16.66	0.76	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF305	0.465	0.465	7.665	0.063	0.05	16.66	0.78	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF340	0.095	0.095	7.665	0.035	0.02	10.91	0.48	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF28	0	0	7.665	0	0	0	0	
OF30	9.326	9.326	7.665	0.216	0.37	47.2	1.71	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF487	0.453	0.453	7.665	0.063	0.05	16.66	0.76	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF594	3.8	3.8	7.665	0.15	0.2	34.08	1.35	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF593	2.619	2.619	7.665	0.13	0.16	29.95	1.22	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF590	1.285	1.285	7.665	0.097	0.1	23.31	1.02	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF600	0.969	0.969	7.665	0.086	0.08	21.15	0.95	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
DETENTION BASIN DETAILS								
Name	Max WL	MaxVol	Max Q	Max Q	Max Q			
			Total	Low Level	High Level			
DetBEx	14.8	15697.3	3.886	0	3.886			
DetAEx	14.13	3736.5	5.583	0	5.583			
DetB_Prop	16.02	18015.7	2.1	0	2.1			
DetA_Prop	16.07	32685.6	2.667	0	2.667			
DetC1	15.74	388.9	0.682	0.682	0			
DetD_Prop	15.65	8890.8	7.153	0	7.153			
DetC2	15.73	381.1	0.642	0.642	0			
DetC3	15.73	380.8	0.641	0.641	0			
DetC4	15.73	386.8	0.672	0.672	0			
DetC5	15.72	375.3	0.611	0.611	0			
DetC6	15.74	391.3	0.694	0.694	0			
CONTINUITY CHECK for AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
Node	Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %				
N4	25661.3	25661.28	0	0				
N5	1229.91	1229.91	0	0				
N8	3828.05	3828.05	0	0				
DetBEx	34410.8	24437.07	9976.28	0				
OutBEx	25655.59	25655.59	0	0				
DetAEx	38654.02	38654.07	0	0				
N40	38654.07	38654.07	0	0				
OutAEx	38654.07	38654.07	0	0				
OutCEX	65719.52	65719.52	0	0				
DetB_Prop	27249.21	11570.66	15679.38	0				
N62	21591.53	21591.46	0	0				
N63	5108.56	5108.56	0	0				
N64	1229.91	1229.91	0	0				
N65	630.3	630.3	0	0				
N69	13427.41	13427.38	0	0				
OutB_Prop	13423.93	13423.93	0	0				
N75	42322.76	42322.71	0	0				
N76	5855.05	5855.05	0	0				
N77	9170.48	9170.48	0	0				
N78	899.55	899.55	0	0				
N79	39825.34	39825.25	0	0				
OutA_Prop	39811.16	39811.16	0	0				
DetA_Prop	52152.43	29769.29	22390.07	0				
DetC1	5948.57	5947.83	0.71	0				
DetD_Prop	63465.98	62510.88	953.46	0				
DetC2	5639.61	5638.89	0.7	0				
DetC3	5629.62	5628.87	0.7	0				
DetC4	5866.74	5866.01	0.71	0				
DetC5	5397.42	5396.74	0.7	0				
DetC6	6038.67	6038.01	0.71	0				
N92	69252.44	69252.52	0	0				
OutC_Prop	69248.73	69248.73	0	0				
N95	21549.71	21549.71	0	0				
N96	3828.05	3828.05	0	0				
N97	3263.42	3263.42	0	0				
N169	3974.55	3974.55	0	0				

100 Year ARI (Climate Change)

N177	3481.95	3481.95	0	0								
N224	3572.18	3572.18	0	0								
N232	549.05	549.05	0	0								
HW2	65719.56	65719.52	0	0								
N50	65719.52	65719.52	0	0								
N294	3481.95	3481.95	0	0								
N320	1954.38	1954.38	0	0								
N321	6495.9	6495.9	0	0								
N322	736.45	736.45	0	0								
N323	20034.76	20034.76	0	0								
N324	825.15	825.15	0	0								
N325	287.25	287.25	0	0								
N326	29178	29178.14	0	0								
N327	20110.33	20110.08	0	0								
N328	9866.47	9866.47	0	0								
N329	7443.27	7443.27	0	0								
Run Log for Moorebank_REV02 run at 14:09:08 on 9/8/2011												
The maximum flow exceeded the safe value in the following overflow routes: OF102, OF30												

APPENDIX G

‘SITE ONLY’ TUFLOW MODEL INPUTS AND RESULTS – EXISTING AND PROPOSED CONDITIONS



LEGEND

Project Site Boundary
Line
Flood Level Contour (m AHD)
Line

Notes

The mapping on this drawing represents peak flood level and depth for the 100 year ARI 1, 2, 4, 6 and 9 hour duration storm events.
Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forester (August 2010).
This figure may not represent all local flow regimes.
TUFLOW run files (TUFLOW Version 2010-10-AD-SP-w32):
F:\AA03210\Calculations\Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW-Site Model\TUFLOW\runsl
MB_Ex5_100y1hh_01.tcf
MB_Ex5_100y2h_01.tcf
MB_Ex5_100y4h_01.tcf
MB_Ex5_100y6h_01.tcf
MB_Ex5_100y9h_01.tcf
Figure Workspace:
F:\AA03210\Calculations\Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\100yr_Ext_Site_Model_Flood_Map.wor
* Aerial Imagery by NearMap 2011 ©

Client
SYDNEY INTERMODAL
TERMINAL ALLIANCE (SIMTA)
Scale: 1:2500 @ A1
TUFLOW Grid Size: 2m
Datum: GDA94
Projection: MGA56

Project
MOOREBANK INTERMODAL
TERMINAL FACILITY
Title
SITE MODEL -
100 YEAR ARI FLOOD DEPTH
AND FLOOD LEVEL CONTOURS
FOR EXISTING CONDITION



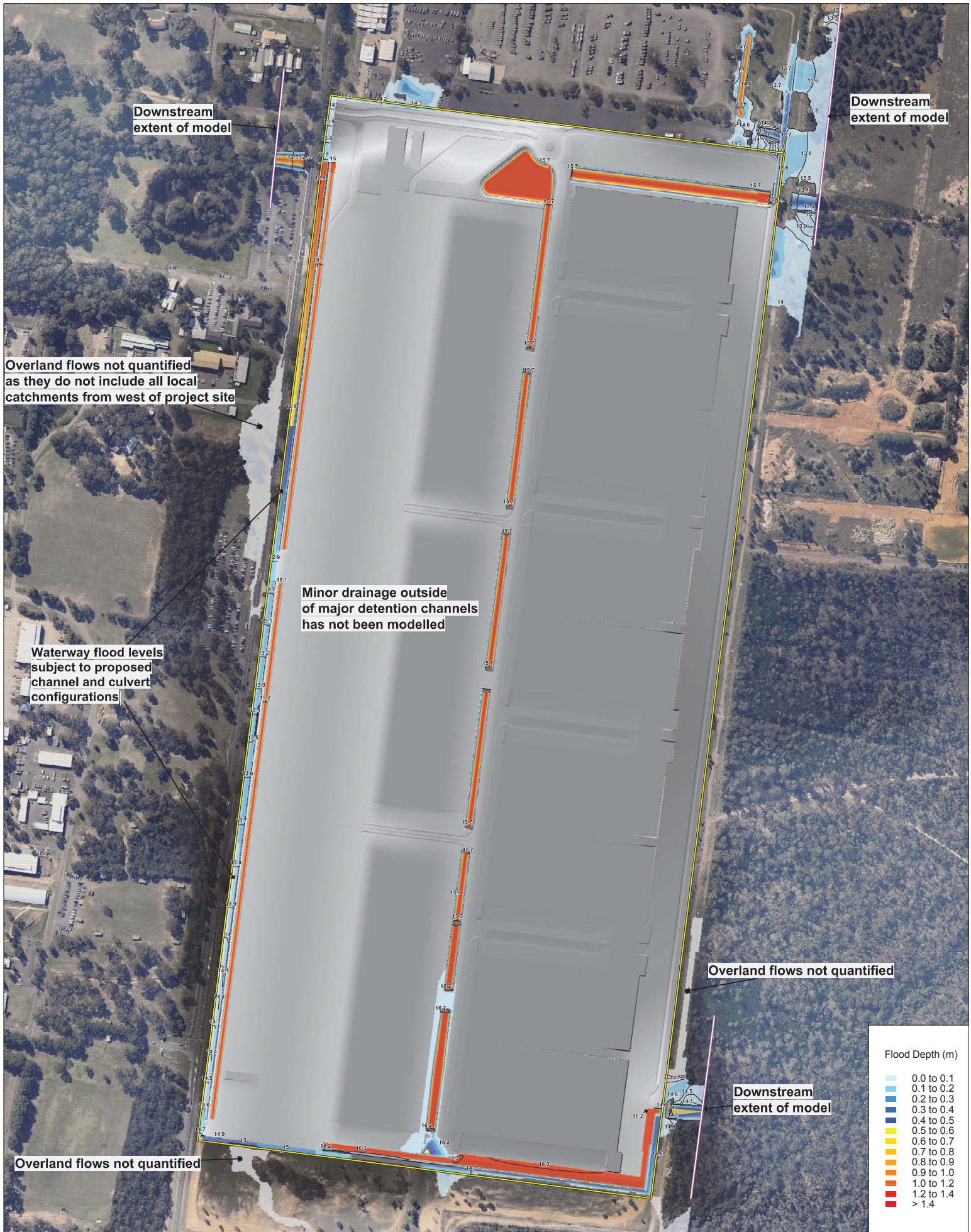
HYDER CONSULTING
PTY LTD
ABN 76 104 485 289
Level 5, 141 Walker Street
North Sydney NSW 2060
Tel: +61 (0)2 9907 9000
Fax: +61 (0)2 9907 9001
www.hyderconsulting.com
(c) Copyright reserved

Figure No
G1

Project No
AA003210

Issue
01





LEGEND Project Site Boundary Line Flood Level Contour (m AHD) Line		Notes The mapping on this drawing represents peak flood level and depth for the 100 year ARI 1, 2, 4, 5, 6 and 9 hour duration storm events. Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008), ground survey of the site by Hard and Forester (August 2010) and Hyder civil design surface. This figure may not represent all local flow regimes. TUFLOW run files (TUFLOW Version 2010-10-AD-ISP-w32): F:\AA03210-D-Calculations\Civil\Stormwater\Flooding2011 - Revised Modelling\TUFLOW-Site Model\TUFLOW\run\MB_P9_100y1h_01.tcf MB_P9_100y2h_01.tcf MB_P9_100y4h_01.tcf MB_P9_100y6h_01.tcf MB_P9_100y8h_01.tcf MB_P9_100y9h_01.tcf Figure Workspace: F:\AA03210-D-Calculations\Civil\Stormwater\Flooding2011 - Revised Modelling\PROJECT FIGURES\Workspace\100yr_Proj_Site_Model_Flood_Map.wor * Aerial Imagery by NearMap 2011 ©		Client SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)	Project MOOREBANK INTERMODAL TERMINAL FACILITY	Hyder HYDER CONSULTING PTY LTD ABN 76 104 485 289 Level 5, 141 Walker Street North Sydney NSW 2060 Tel: +61 (0)2 8907 9000 Fax: +61 (0)2 8907 9001 www.hyderconsulting.com (c) Copyright reserved
		Scale: 1:2500 @ A1	Title SITE MODEL - 100 YEAR ARI FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR CONCEPT CIVIL DESIGN OPTIONS CONDITION	Figure No G2	Project No AA003210	
		Datum: GDA94		Issue 01		
		Projection: MGA56				

