

100 Year ARI Results

DRAINS Model Name and File Path:		F:\AA003210\D-Calculations\C-CivilStormwater\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											
											RESULTS 100 YEAR ARI
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	12.97	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	8	0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CatchC1Ex	1.231	1.034	0.197	7	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	24	0 AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1				
CatchAEx	9.811	5.94	4.252	13.75	15	15	0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalB1_Prop	7.233	7.233	0	6	3	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	8.5	0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalB1Ex_Prop	0.465	0	0.465	5	8	8	0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalB2Ex_Prop	0.17	0	0.17	8.5	15.5	15.5	0 AR&R 100 year, 1 hour storm, average 59.7 mm/h, Zone 1				
CalA1_Prop	13.308	13.308	0	6	3	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	11	0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalA1Ex_Prop	2.808	1.335	1.531	13.2	8.3	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	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	0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCb_Prop	2.101	2.101	0	3	0	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	0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCd_Prop	2.166	2.166	0	3	0	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	0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCf_Prop	2.25	2.25	0	3	0	0	0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCg_Prop	8.029	8.029	0	3	0	0	0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalCEx1_Prop	1.231	1.034	0.197	7	7	7	0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CalCEx2_Prop	0.656	0.391	0.288	21.7	25	25	0 AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1				
Cal_A3_Prop	1.481	1.481	0	3	0	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	0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalC1_Prop	1.331	1.331	0	3	0	0	0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
CalB3Ext_Prop	0.208	0	0.208	0	8	8	0 AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1				
CatchCEx	10.963	7.698	3.592	25	30	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	0 AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
Outflow Volumes for Total Catchment (142 impervious + 66.3 pervious = 198 total ha)											
Storm	Total Rainfall (cu.m)	Total Runoff (cu.m)	Impervious Runoff (cu.m)	Pervious Runoff (cu.m)	Impervious Runoff %						
AR&R 100 year, 5 min	37008.53	29088.43 (78)	25074.09 (94)	4014.34 (38.2%)							
AR&R 100 year, 10 min	56834.63	47930.48 (84)	39266.84 (96)	8663.64 (63.7%)							
AR&R 100 year, 15 min	71373.59	61701.68 (86)	49874.88 (97)	12026.80 (59.3%)							
AR&R 100 year, 20 min	83269.2	72908.14 (87)	58190.62 (97)	14717.52 (62.2%)							
AR&R 100 year, 25 min	92521.33	81332.79 (87)	64814.00 (97)	16518.60 (62.8%)							
AR&R 100 year, 30 min	101112.6	89230.76 (88)	70964.27 (98)	18266.49 (63.6%)							
AR&R 100 year, 45 min	122078.59	108532.58 (88)	85973.19 (98)	22559.39 (65.0%)							
AR&R 100 year, 1 h	138187.2	123320.74 (89)	97504.91 (98)	25815.83 (65.8%)							
AR&R 100 year, 1.5 h	163267.09	146174.80 (89)	115458.91 (98)	30715.90 (66.2%)							
AR&R 100 year, 2 h	182785.72	163812.65 (89)	129438.98 (98)	34373.67 (66.2%)							
AR&R 100 year, 3 h	213526.02	191312.87 (89)	151437.14 (99)	39875.73 (65.7%)							
AR&R 100 year, 4.5 h	246023.27	221265.07 (89)	178132.27 (99)	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	15.886	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	12.48	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 DxV	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	1.572	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			
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	20.78	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	1.695	1.695	0.256	0.106	0.11	25.1	1.08	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1			

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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	13.81	0.64	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1
OF64	3.542	3.542	0.256	0.148	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	0.256	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	0.256	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	0.256	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	0.256	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	0.08	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

DETENTION BASIN DETAILS

Name	Max WL	Max Vol	Max Q	Max Q	Max Q
			Total	Low Level	High Level
DetBEx	14.74	13506.6	1.572	0	1.572
DetAEx	14.19	4587.1	8.334	0	8.334
DetB_Prop	15.87	16681.5	0.868	0	0.868
DetA_Prop	15.78	24691.2	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	592.6	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 Change (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	13909.84	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	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
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

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	7.668			1.66	0	None
N50	12.1		0				

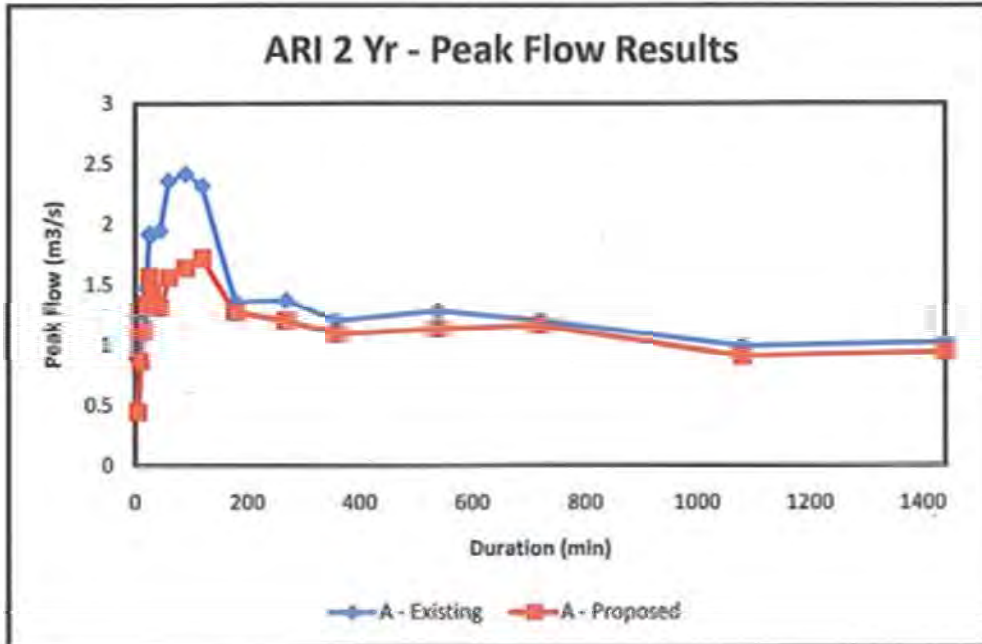
SUB-CATCHMENT DETAILS

Name	Max Flow Q	Paved Max Q	Grassed Max Q	Paved Tc	Grassed Tc	Supp. Tc	Due to Storm
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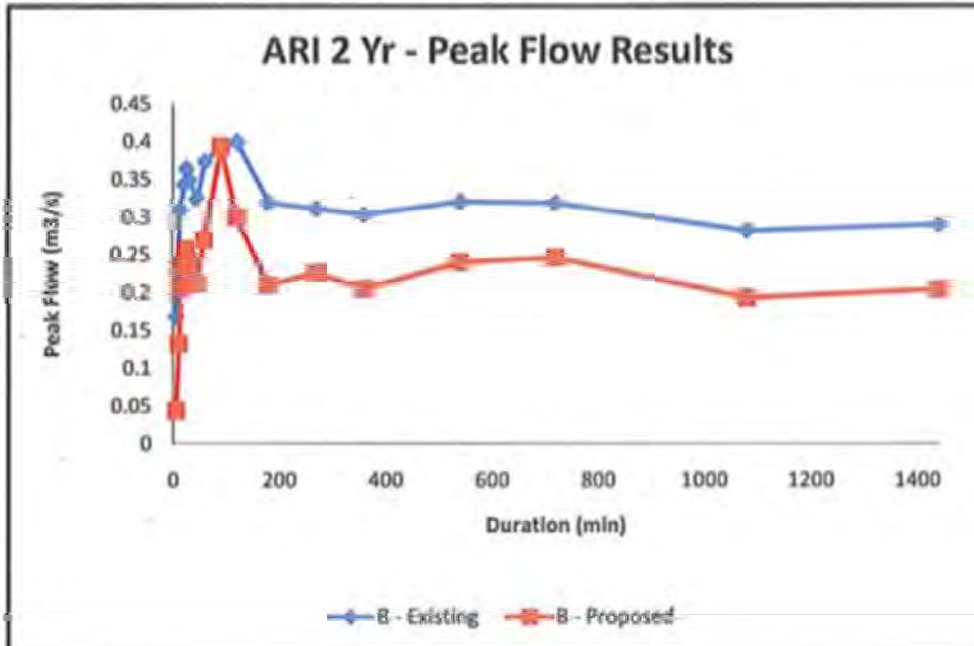
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)			
CatchB1Ex	0.173	0	0.173	3	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1		
CatchC1Ex	0.431	0.38	0.071	7	7	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1		
CatchBEx	4.356	1.575	2.782	14.6	24	0	AR&R 100 year, 6 hours storm, average 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	6.5	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	6.5	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		
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	0.38	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	6.899	4.393	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 Rf	Pervious Runoff					
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)					
AR&R 100 year, 6 h	277167.5	248007.27 (89.49%)	196995.98 (99.49%)	49011.29 (62.2%)					
AR&R 100 year, 9 h	324749.88	284506.63 (87.63%)	231049.34 (98.34%)	53457.29 (57.9%)					
AR&R 100 year, 12 h	364005.34	318045.67 (87.37%)	259161.44 (98.66%)	58884.23 (56.9%)					
AR&R 100 year, 18 h	431810.28	371191.56 (86.00%)	307692.44 (99.23%)	63499.13 (51.8%)					
AR&R 100 year, 24 h	490098.66	414839.37 (84.65%)	349419.16 (99.65%)	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	15.566	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	15.558	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1				
P22	0.623	0.6	15.584	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	2.826	2.626	7.665	0.13	0.16	29.85	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	0.69	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	29.59	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	1.847	1.847	7.665	0.112	0.13	26.38	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	0.06	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	0.69	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	0.89	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	
OF84	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	8.735	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	10.36	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	2.637	0	2.637				
DetAEx	14.1	3395.6	4.585	0	4.585				
DetB_Prop	15.91	17055.5	1.847	0	1.847				

Outlet A



ARI 2 Yr - Peak Flow Results				
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

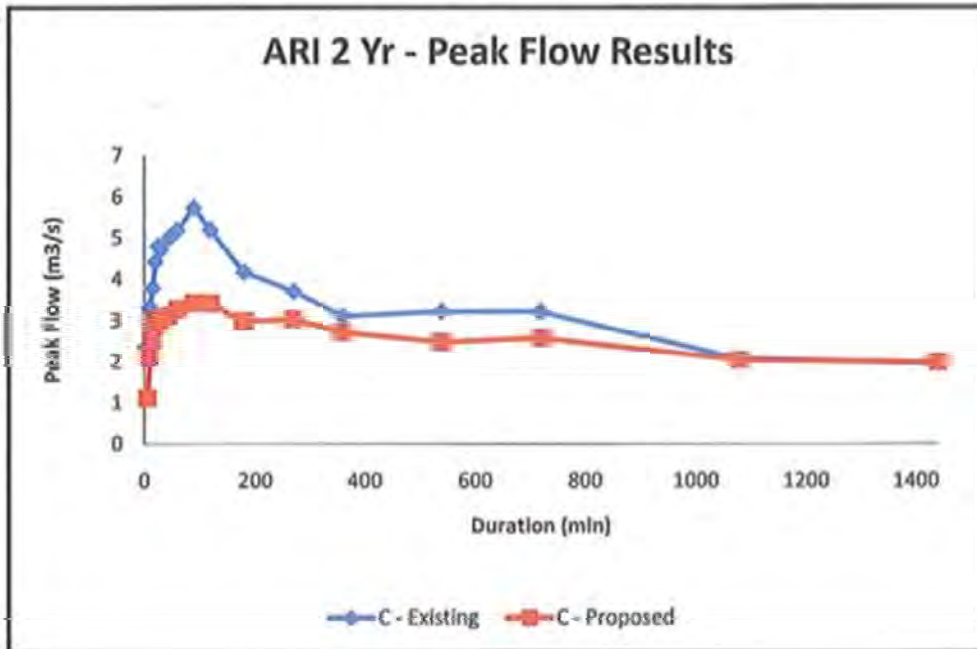
Outlet B



ARI 2 Yr - Peak Flow Results

Duration (min)	B - Existing	B - Proposed	Basin 3 Outlet	B - WL(mAND)
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

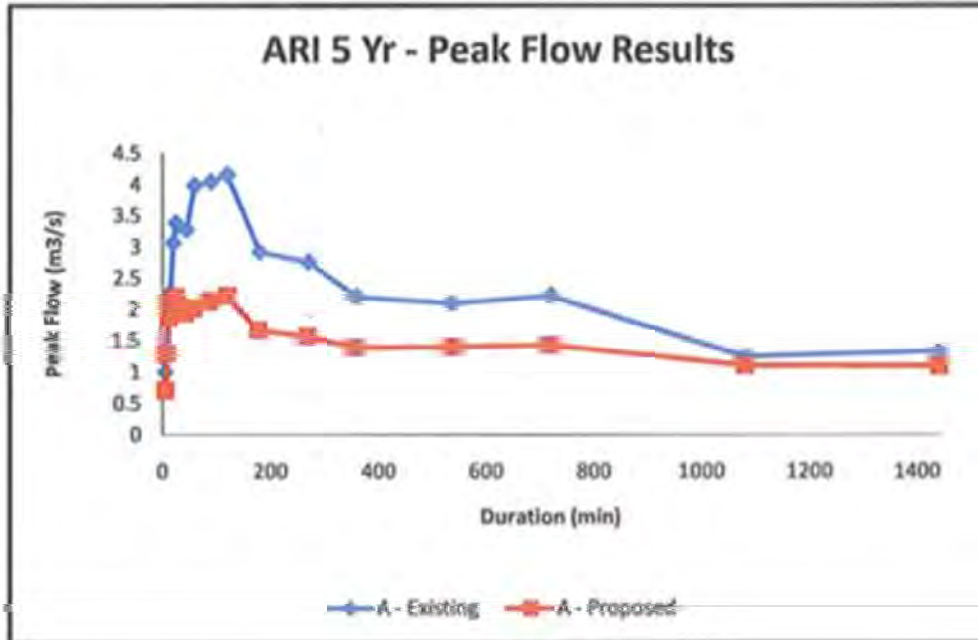
Outlet C



ARI 2 Yr - Peak Flow Results

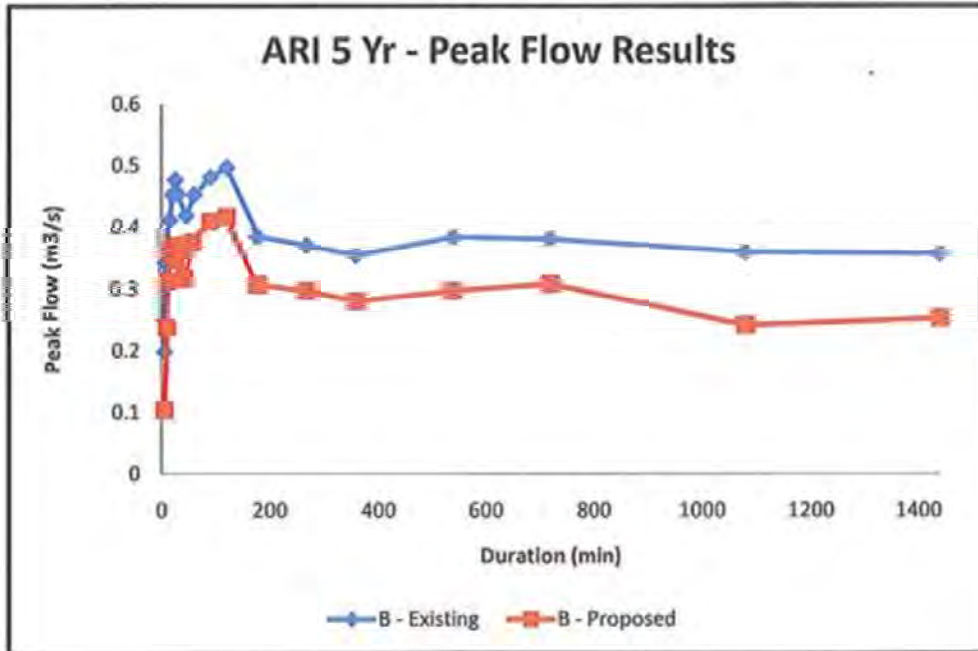
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL (mAFD)
5	2.38	1.12	0.963	14.47
10	3.33	2.12	1.8	14.72
15	3.79	2.53	2.2	14.89
20	4.43	2.86	2.44	15.01
25	4.81	3.02	2.56	15.07
30	4.73	3	2.59	15.09
45	5.01	3.12	2.71	15.16
60	5.2	3.28	2.83	15.23
90	5.74	3.43	2.84	15.24
120	5.2	3.42	2.89	15.27
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



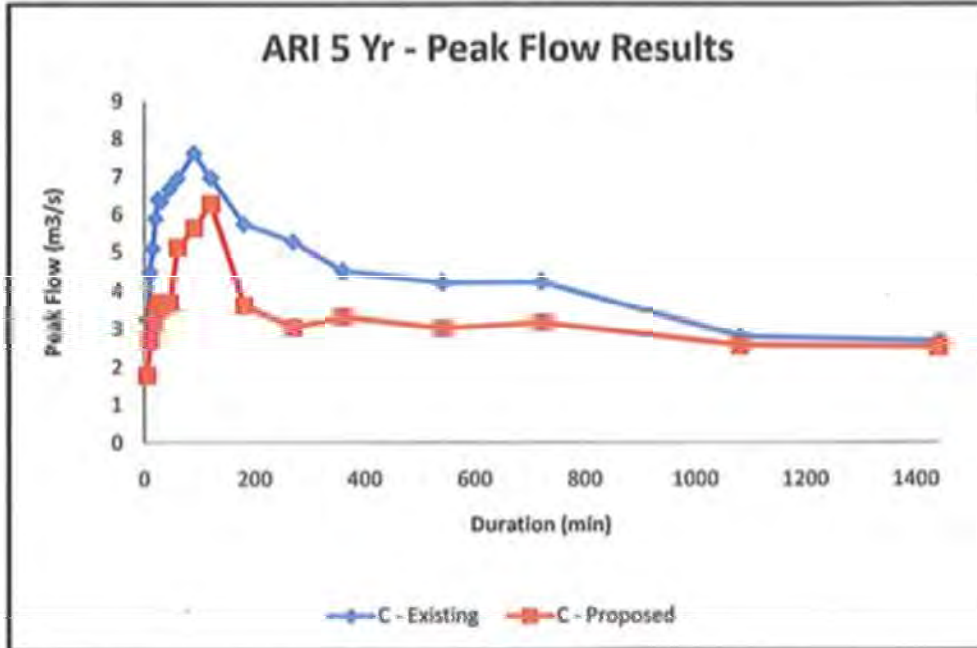
ARI 5 Yr - Peak Flow Results				
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAMD)
5	1.01	0.72	0.074	14.29
10	1.29	1.3	0.298	14.43
15	2.27	1.87	0.46	14.53
20	3.07	2.15	0.512	14.6
25	3.39	2.2	0.549	14.66
30	3.35	2.08	0.577	14.71
45	3.28	1.94	0.637	14.81
60	3.99	2.02	0.674	14.89
90	4.05	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



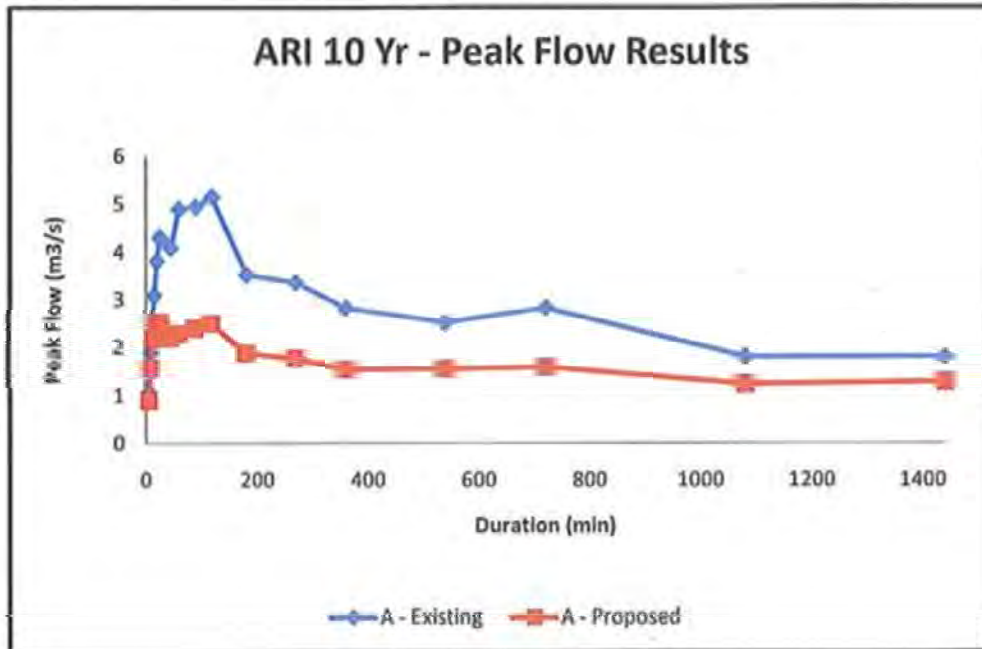
ARI 5 Yr - Peak Flow Results				
Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WL(mAHD)
5	0.199	0.104	0.048	14.19
10	0.343	0.239	0.071	14.3
15	0.412	0.313	0.088	14.39
20	0.453	0.357	0.101	14.45
25	0.477	0.371	0.111	14.51
30	0.454	0.347	0.12	14.55
45	0.419	0.317	0.132	14.66
60	0.453	0.376	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



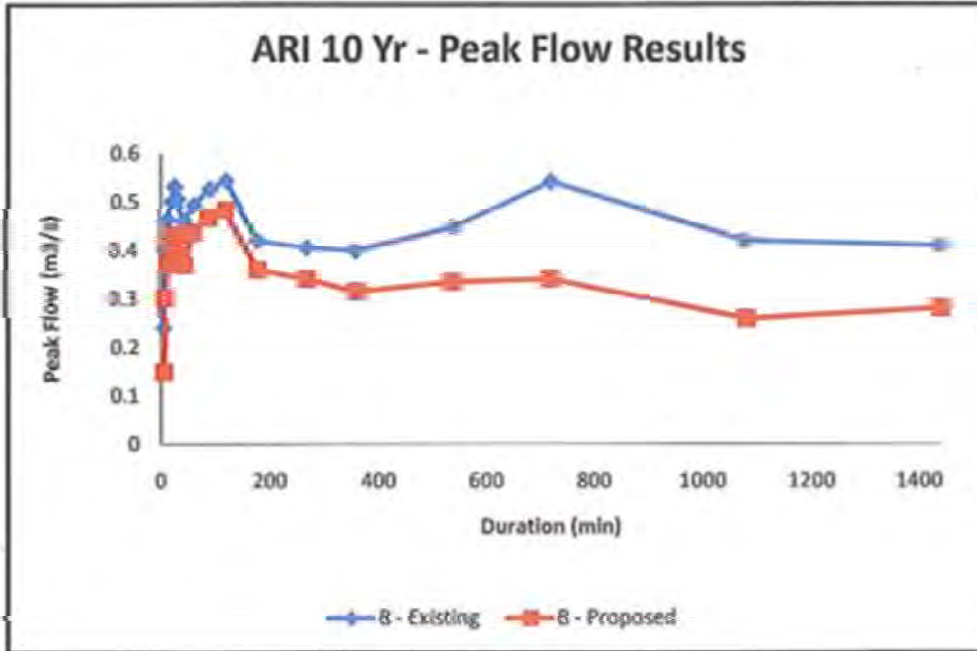
ARI 5 Yr - Peak Flow Results					
Duration (min)	C - Existing	C - Proposed	Basin C-Outlet	D - WQ(mMHD)	
5	3.26	1.79	1.46	14.6	
10	4.48	2.71	2.26	14.92	
15	5.1	3.14	2.68	15.14	
20	5.9	3.51	2.88	15.26	
25	6.41	3.7	2.97	15.32	
30	6.35	3.58	3	15.34	
45	6.68	3.69	3.11	15.42	
60	6.96	5.12	4.52	15.47	
90	7.63	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



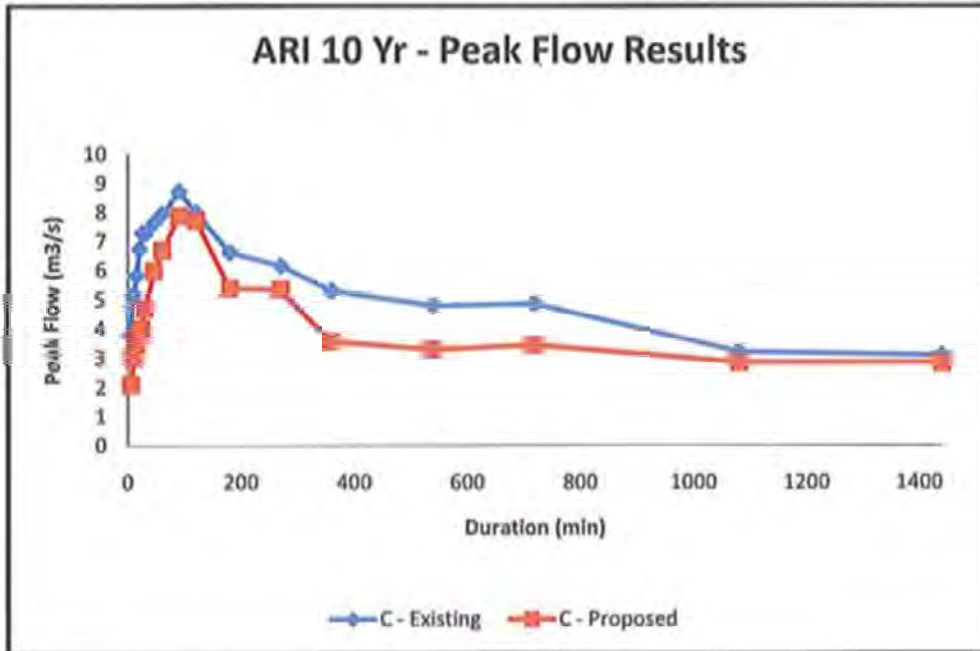
ARI 10 Yr - Peak Flow Results				
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - IRI (mMHD)
5	1.08	0.887	0.81	14.33
10	1.9	1.57	0.421	14.48
15	3.1	2.18	0.499	14.58
20	3.82	2.44	0.552	14.67
25	4.32	2.53	0.59	14.73
30	4.25	2.4	0.619	14.78
45	4.09	2.2	0.682	14.9
60	4.9	2.28	0.721	14.99
90	4.95	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 E-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

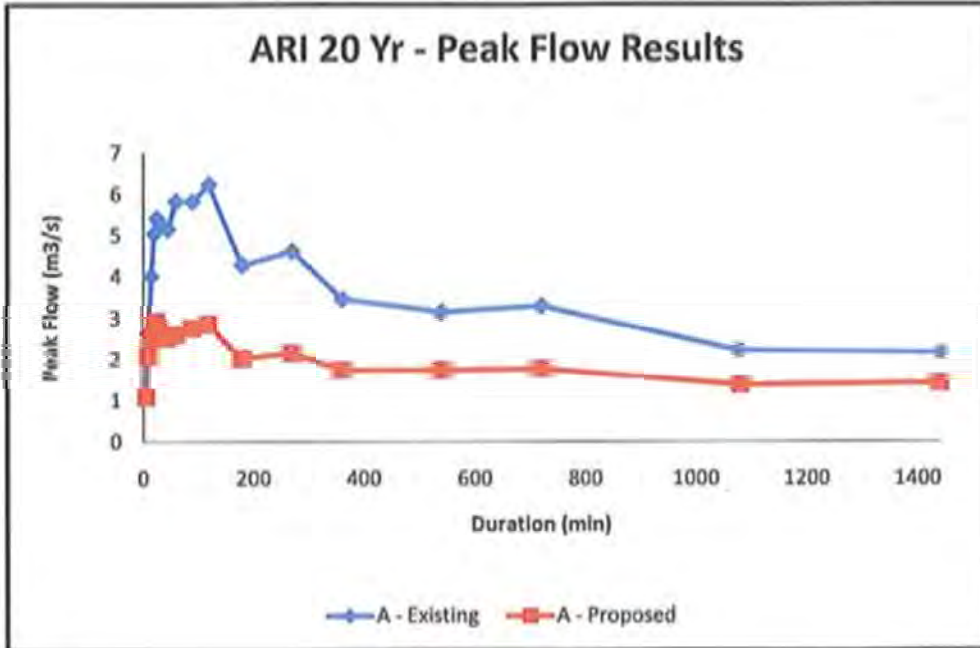
Outlet C



ARI 10 Yr - Peak Flow Results

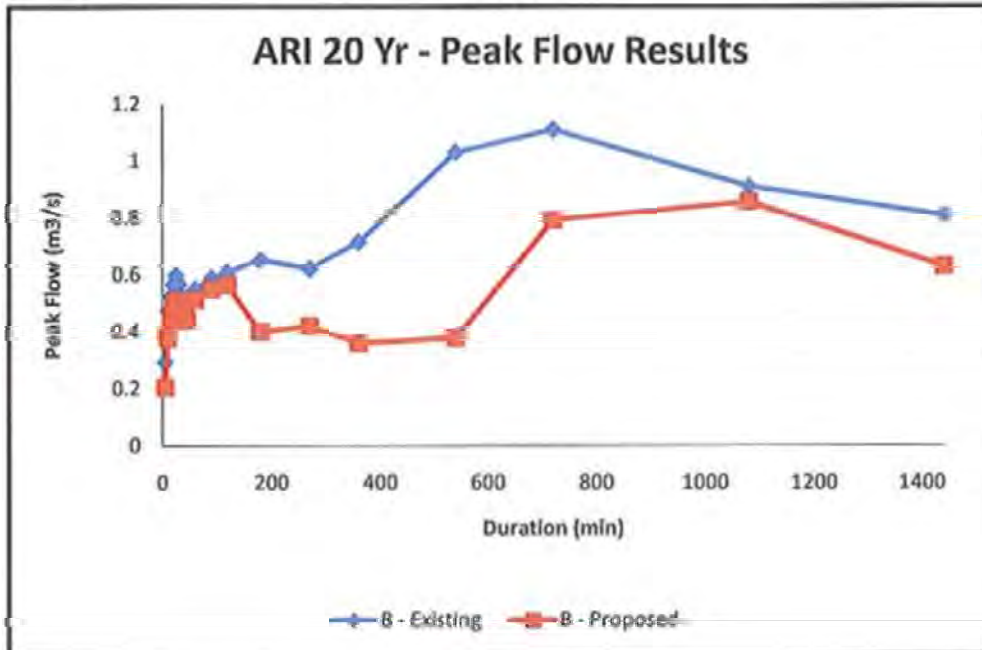
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL (m AHD)
5	3.79	2.11	1.7	14.68
10	5.18	3.03	2.5	15.04
15	5.83	3.47	2.88	15.26
20	6.74	3.81	3.07	15.38
25	7.29	4.01	3.16	15.45
30	7.27	4.7	4.08	15.46
45	7.64	5.98	5.27	15.48
60	7.95	6.69	5.94	15.49
90	8.73	7.88	6.82	15.53
120	8.01	7.71	6.82	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



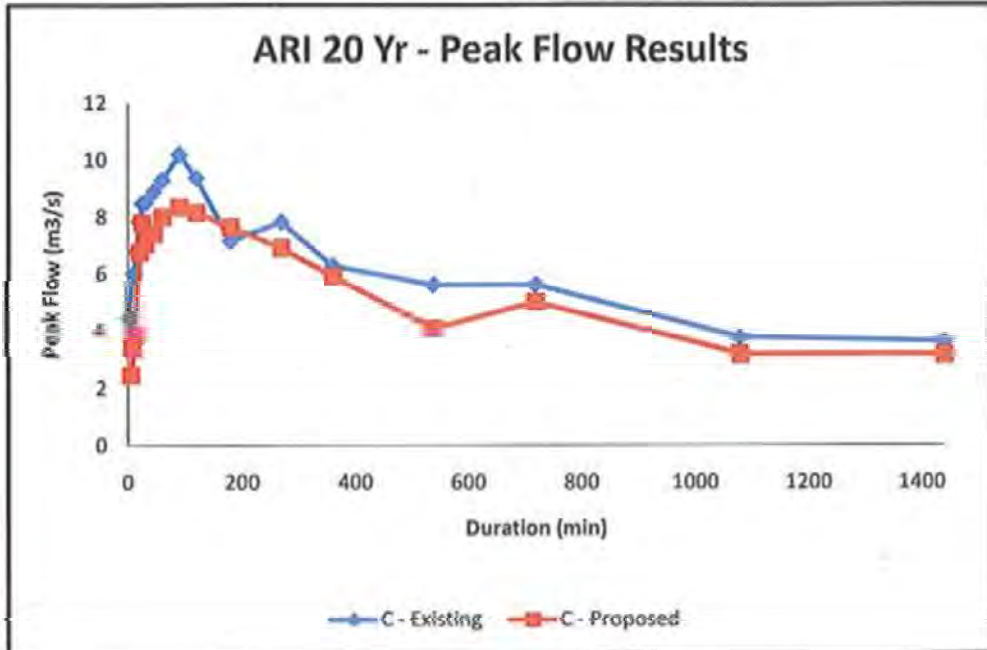
ARI 20 Yr - Peak Flow Results				
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WQ (m3/s)
5	1.17	1.09	0.088	14.37
10	2.65	2.09	0.465	14.54
15	4.02	2.51	0.545	14.65
20	5.06	2.81	0.601	14.75
25	5.43	2.93	0.641	14.82
30	5.33	2.78	0.671	14.88
45	5.16	2.54	0.737	15.02
60	5.83	2.62	0.779	15.11
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 (mAH2)
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

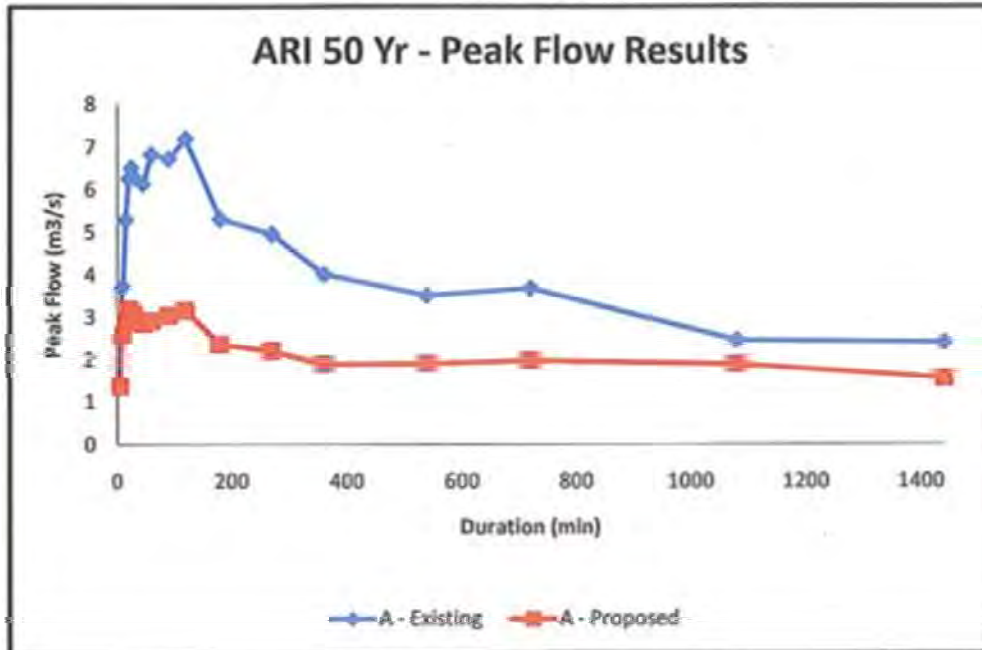
Outlet C



ARI 20 Yr - Peak Flow Results

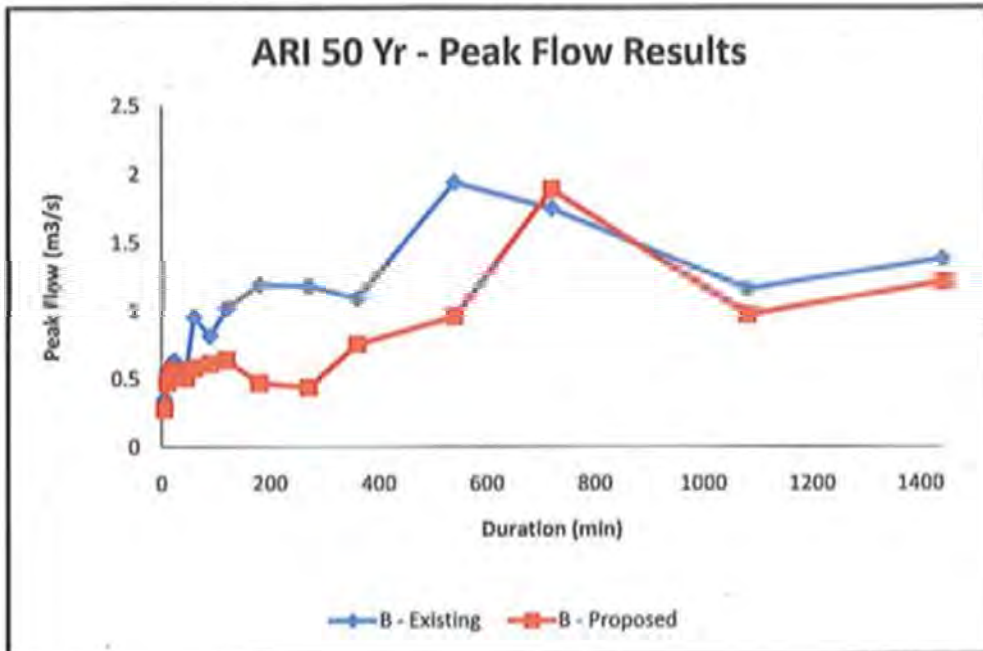
Duration (min)	C - Existing	C - Proposed	Basin 2 Outlet	D - WL (mAHD)
5	4.45	2.47	1.96	14.78
10	6.03	3.4	2.78	15.2
15	6.78	3.84	3.1	15.4
20	7.86	6.77	5.93	15.49
25	8.49	7.8	6.75	15.51
30	8.51	7.05	6.14	15.49
45	8.9	7.41	6.57	15.5
60	9.3	8	6.93	15.57
90	10.2	8.35	7.15	15.65
120	9.38	8.16	7.15	15.65
180	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



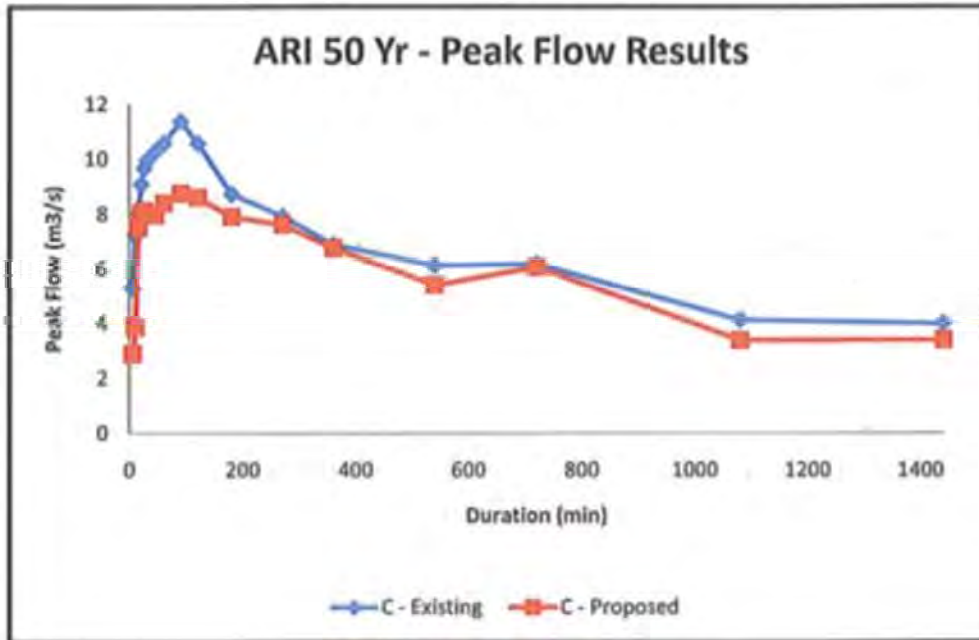
ARI 50 Yr - Peak Flow Results				
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WQ(mAHD)
5	1.43	1.37	0.235	14.42
10	3.72	2.6	0.519	14.61
15	5.3	2.91	0.601	14.75
20	6.27	3.19	0.66	14.86
25	6.52	3.16	0.701	14.94
30	6.3	3.04	0.732	15.01
45	6.14	2.85	0.803	15.17
60	6.83	2.92	0.847	15.28
90	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



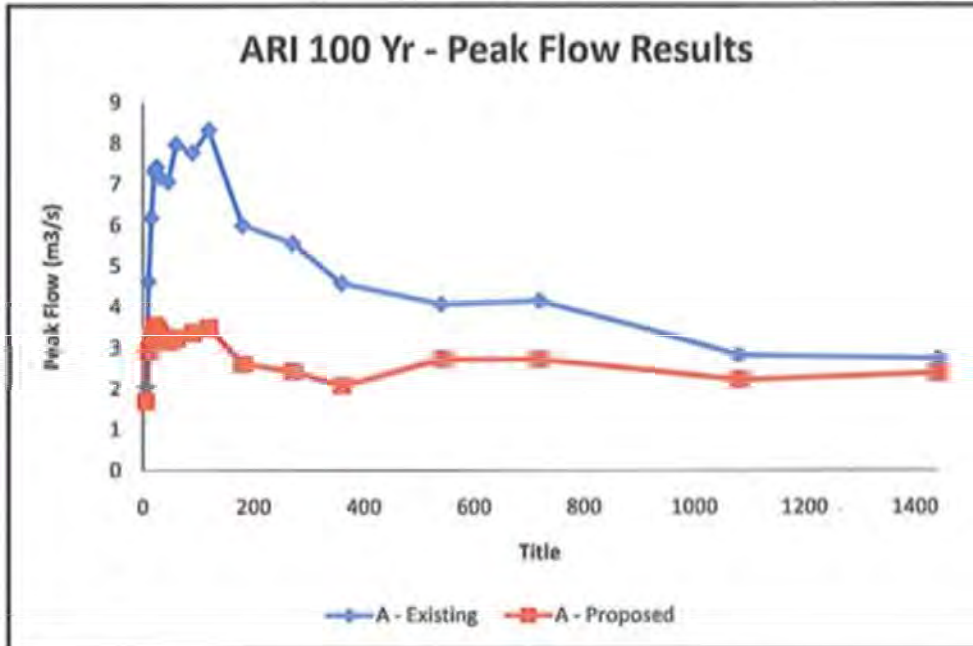
ARI 50 Yr - Peak Flow Results				
Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WQ (mMDD)
5	0.358	0.279	0.069	14.3
10	0.565	0.474	0.103	14.46
15	0.588	0.514	0.12	14.58
20	0.628	0.568	0.137	14.68
25	0.632	0.558	0.143	14.76
30	0.609	0.533	0.15	14.83
45	0.572	0.507	0.17	15
60	0.957	0.581	0.18	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



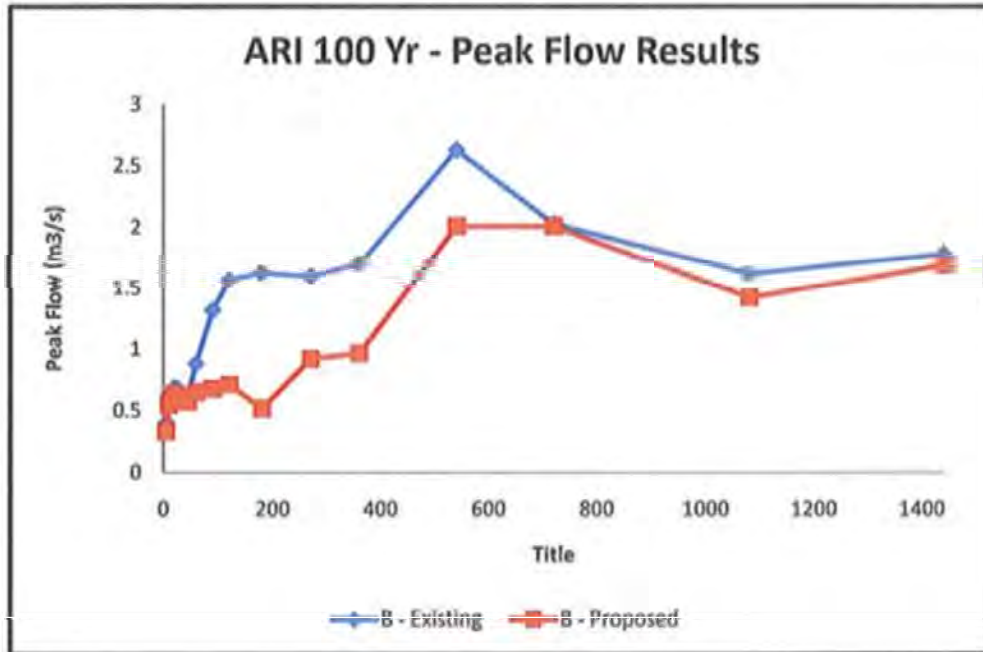
ARI 50 Yr - Peak Flow Results				
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL (mAWD)
5	5.33	2.9	2.26	14.92
10	7.26	3.88	3.04	15.37
15	8.08	7.54	6.72	15.5
20	9.11	8.02	6.95	15.58
25	9.69	8.14	6.98	15.59
30	9.98	8	6.89	15.56
45	10.3	7.97	6.98	15.59
60	10.6	8.41	7.26	15.69
90	11.4	8.76	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 - 100% AHD
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

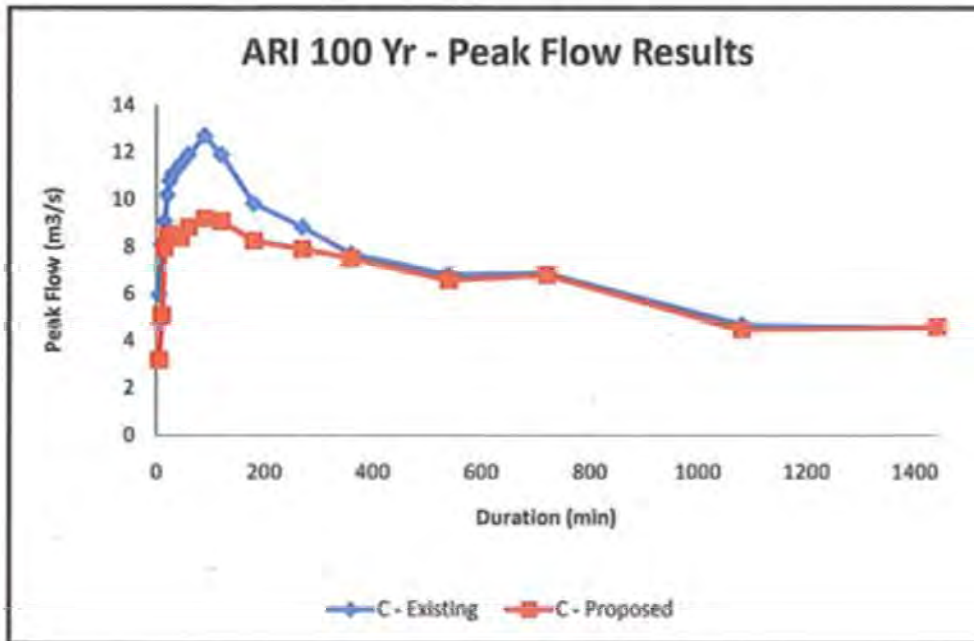
Outlet B



ARI 100 Yr - Peak Flow Results

Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - MI (mAHQ)
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

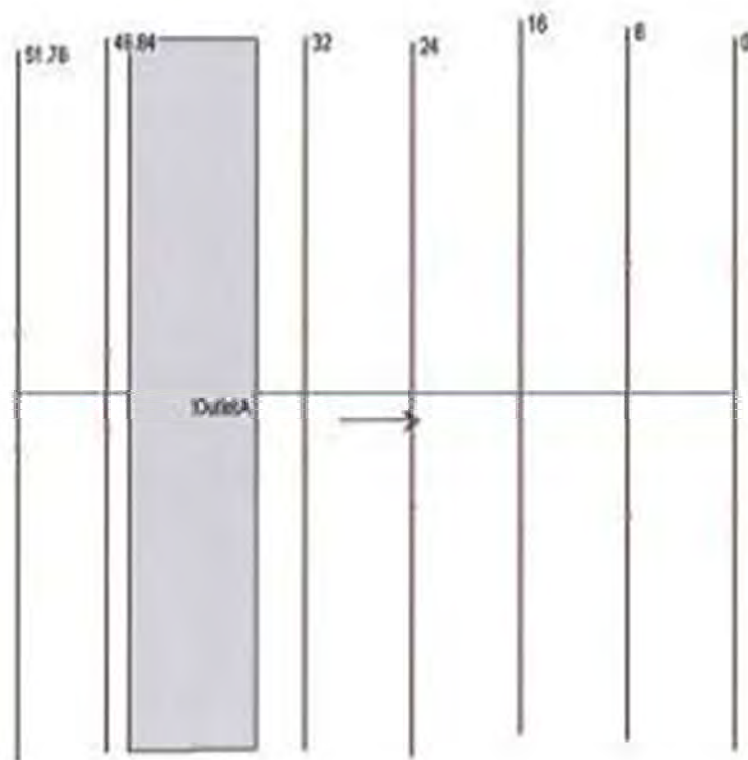
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	5.98	3.18	2.47	15.02
10	8.12	5.08	4.33	15.47
15	9.09	7.97	6.93	15.57
20	10.2	8.4	7.22	15.67
25	10.8	8.52	7.24	15.68
30	11.1	8.37	7.16	15.65
45	11.5	8.39	7.3	15.7
60	11.9	8.83	7.6	15.81
90	12.7	9.2	7.74	15.87
120	11.9	9.07	7.82	15.9
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

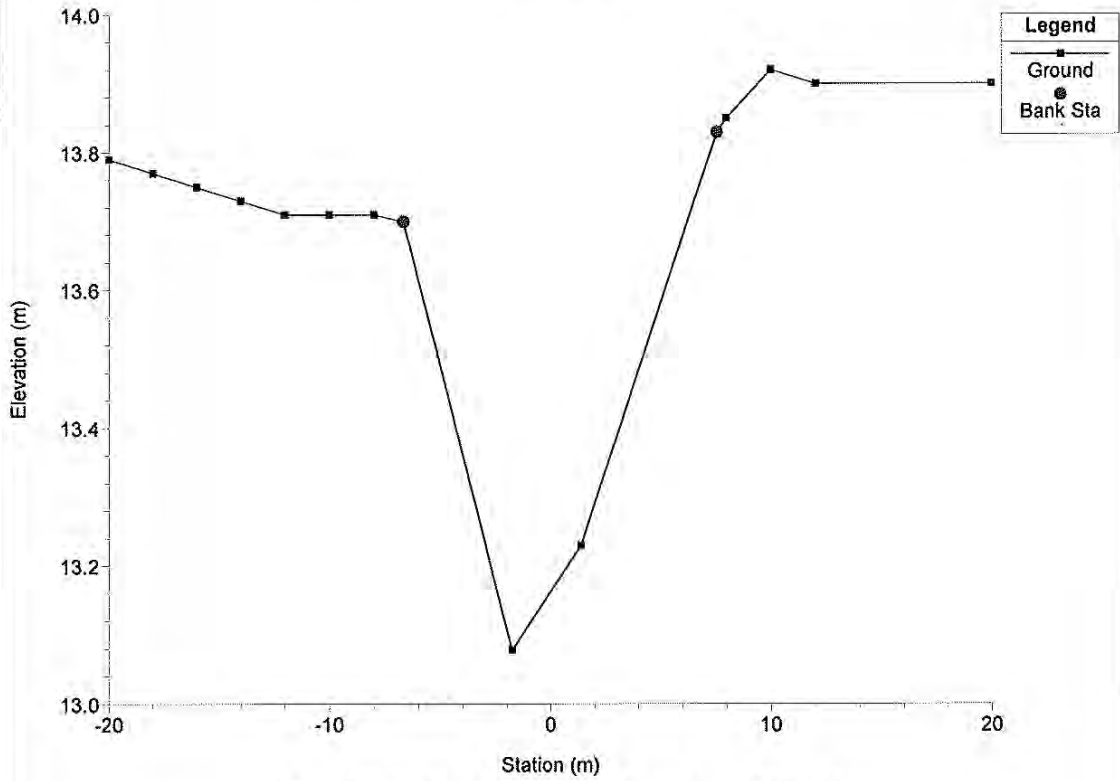
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OUTLET A EXISTING CASE – HEC-RAS MODEL FILES

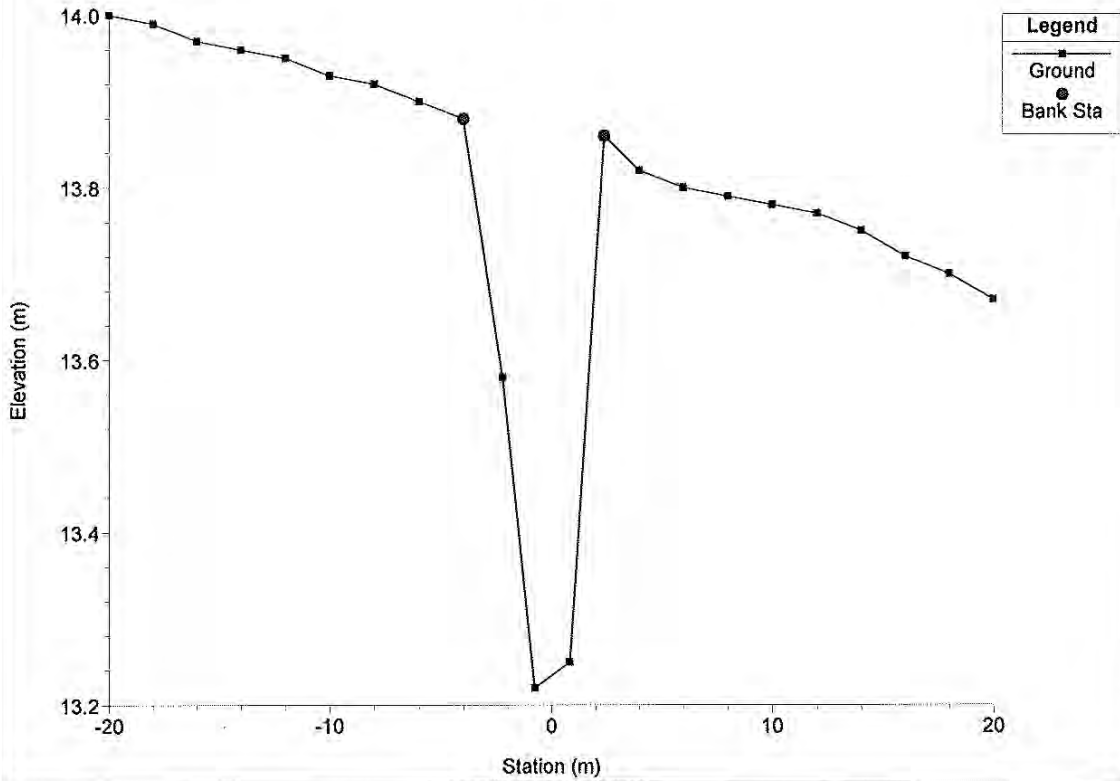


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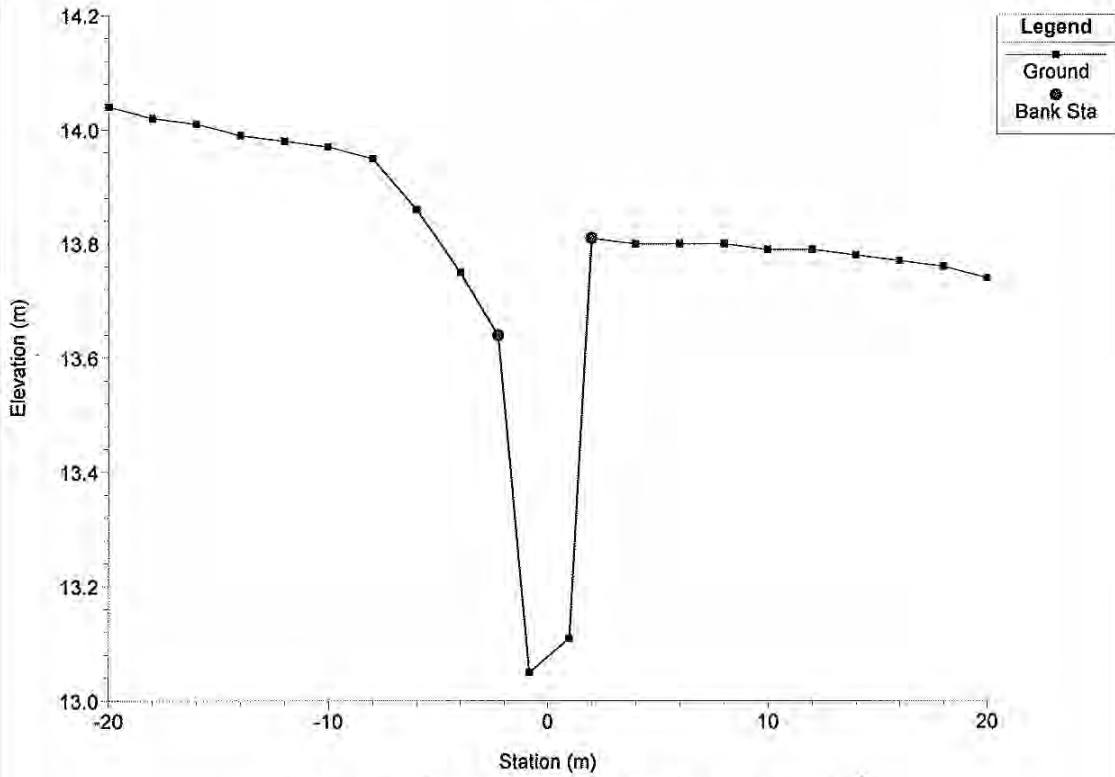
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 8



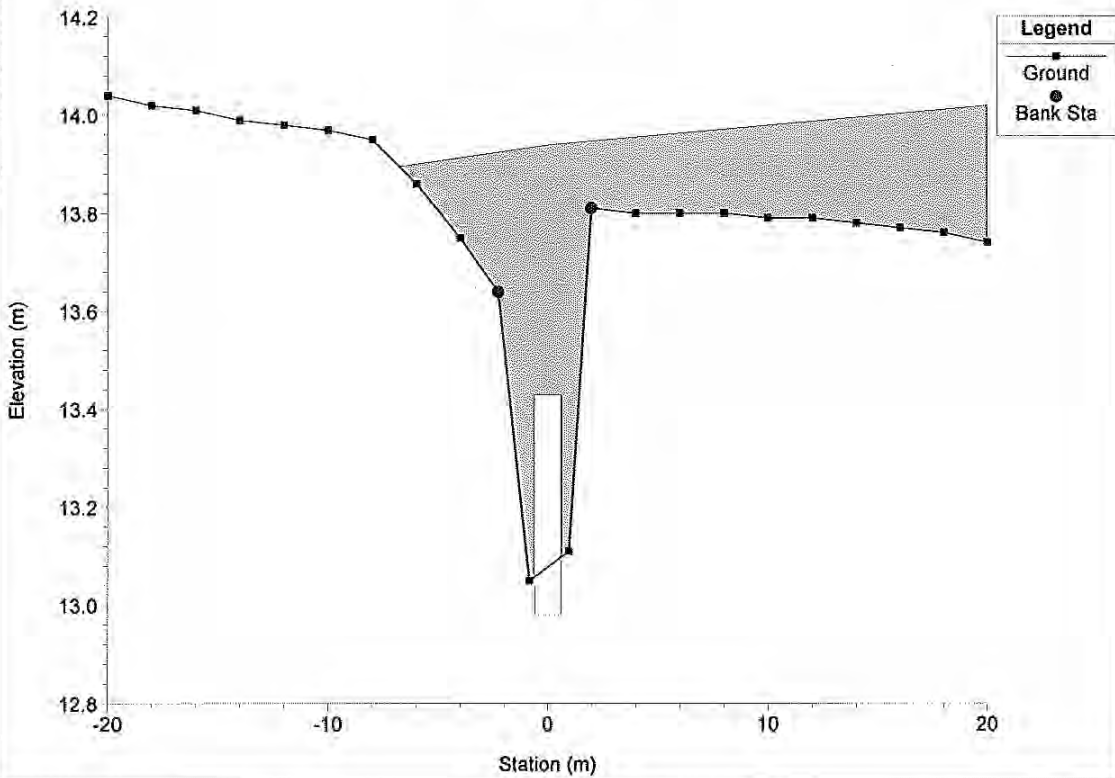
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 51.76



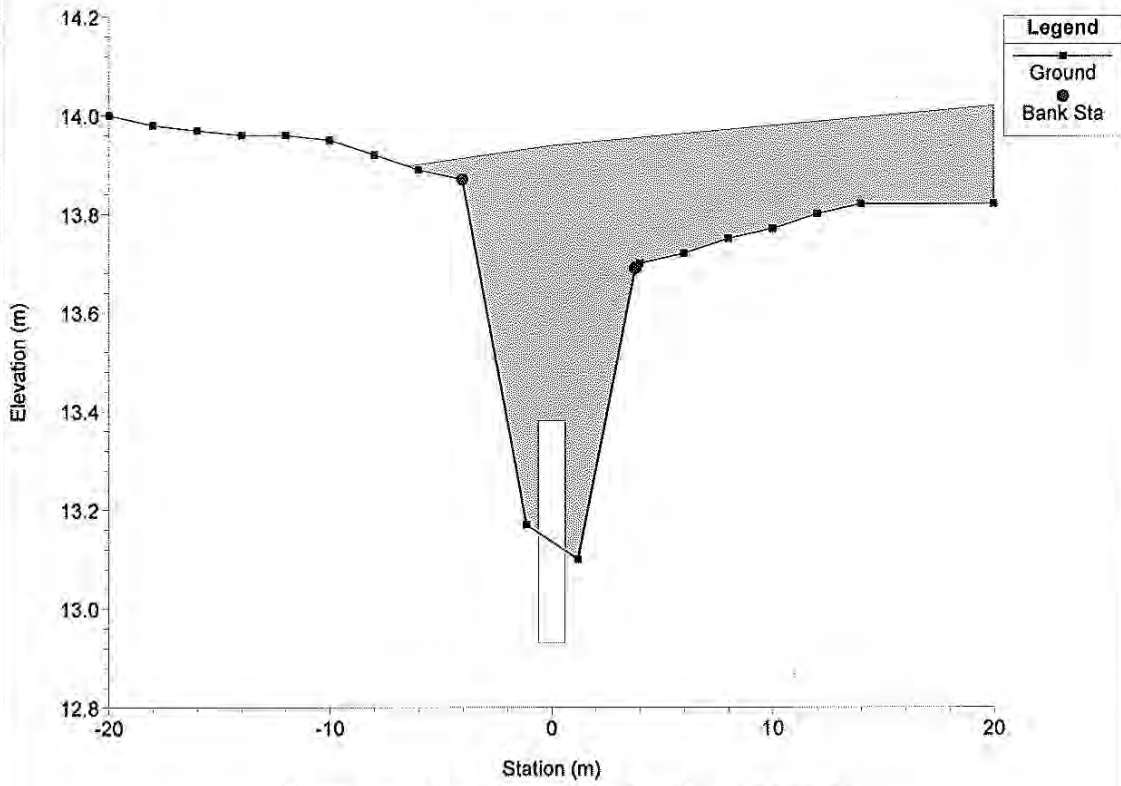
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 46.84



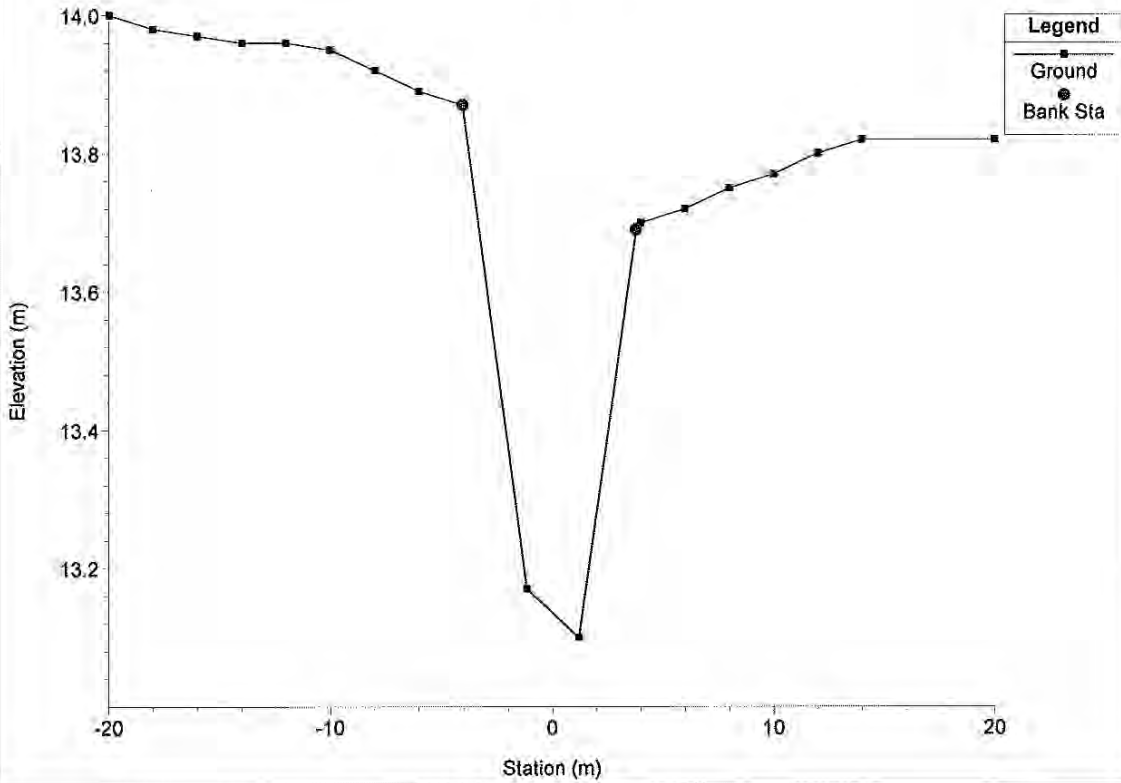
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 40 Culv



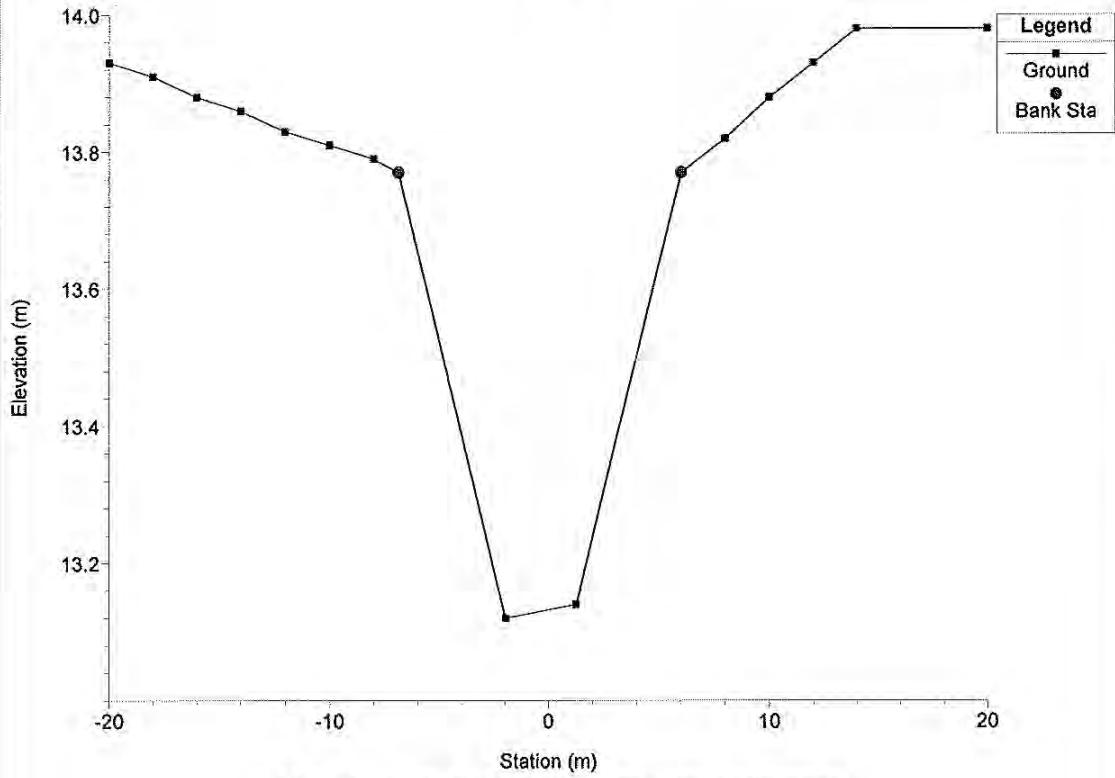
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 40 Culv



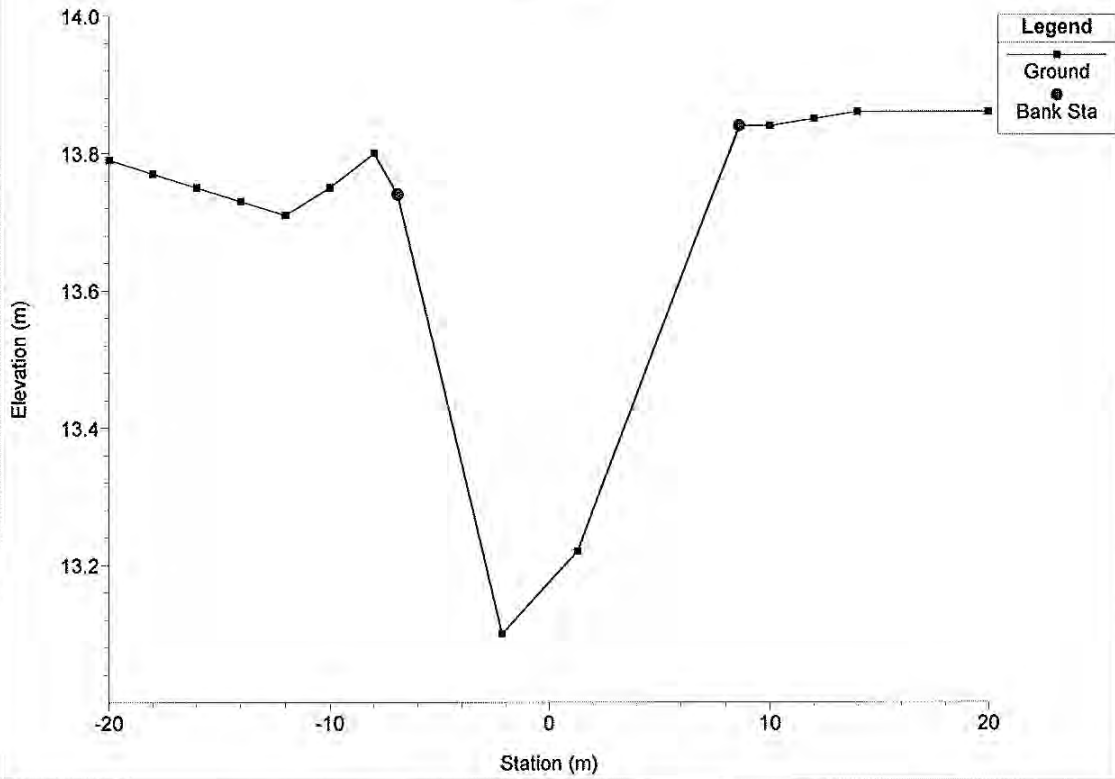
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 32



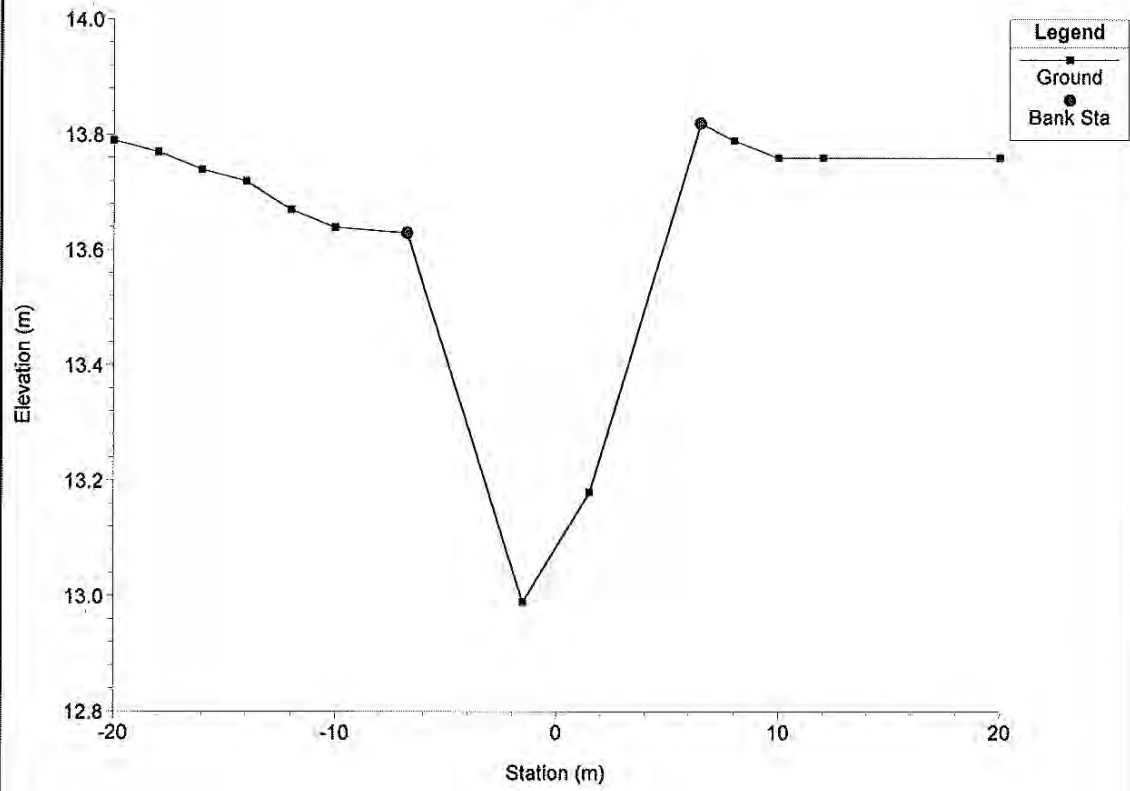
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 24



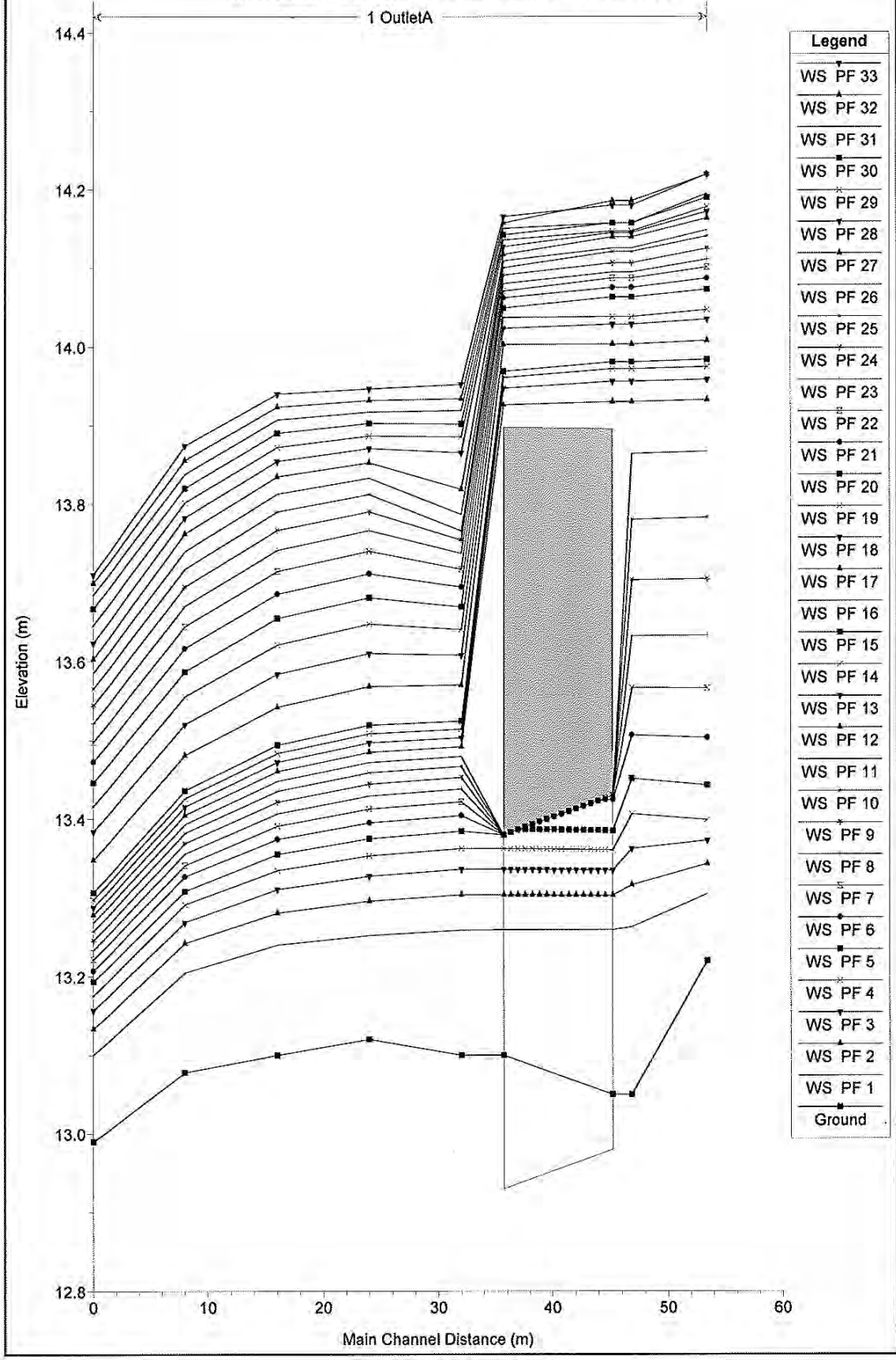
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 16



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



Moorebank_Outlet A Plan: Plan 01 1/09/2010



Legend	
WS PF 33	▼
WS PF 32	▲
WS PF 31	■
WS PF 30	□
WS PF 29	×
WS PF 28	▽
WS PF 27	△
WS PF 26	◇
WS PF 25	○
WS PF 24	⊙
WS PF 23	⊘
WS PF 22	⊚
WS PF 21	●
WS PF 20	■
WS PF 19	▼
WS PF 18	▲
WS PF 17	■
WS PF 16	□
WS PF 15	×
WS PF 14	▽
WS PF 13	△
WS PF 12	◇
WS PF 11	○
WS PF 10	⊙
WS PF 9	⊘
WS PF 8	⊚
WS PF 7	●
WS PF 6	■
WS PF 5	□
WS PF 4	×
WS PF 3	▽
WS PF 2	△
WS PF 1	■
Ground	—

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	0.018939	0.95	0.21	2.31	1.00
OutletA	51.76	PF 3	0.30	13.22	13.37	13.37	13.43	0.016971	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	13.44		13.50	0.01802	1.05	0.48	2.97	0.84
OutletA	51.76	PF 6	0.60	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	0.29
OutletA	51.76	PF 11	1.10	13.22	13.87		13.87	0.000528	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	1.50	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	9.88	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	0.000878	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		14.18	0.001158	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	0.38
OutletA	51.76	PF 28	7.50	13.22	14.17		14.20	0.001443	0.96	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	17.06	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	3.50	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	27.55	0.13
OutletA	46.84	PF 13	1.30	13.05	13.96	13.41	13.96	0.000194	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	7.85	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	38.89	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	0.000759	0.78	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	0.80	11.99	40.00	0.31
OutletA	46.84	PF 24	5.50	13.05	14.11	13.90	14.14	0.001140	0.86	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	0.001468	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	0.001818	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	15.84	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	0.48	0.65	4.06	0.37
OutletA	32	PF 4	0.40	13.10	13.36		13.38	0.002553	0.53	0.76	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	0.48
OutletA	32	PF 9	0.90	13.10	13.45		13.48	0.003700	0.76	1.16	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	0.004388	0.90	1.45	5.46	0.56