LEGEND

Project Site Boundary

Lot

Notes:

TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (fc_orig_PMFTO_01.tcf – TUFLOW Version (SEP-07-BT). Adjustments were made to represent existing and proposed flood planning conditions.

The mapping on this drawing represents flood depths above the PMF 1 hour storm duration.

Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2009) and ground survey of the site by Hyder and Forester (August 2010).

This figure does not represent local flow regimes and effects associated with the Anzac Creek corridor.

TUFLOW Inputs: (TUFLOW Version: 2009-07-03b)
F:\AM\2121\GIS Calculations\C Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOW\runs\Client\ST\Sydney Intermodal Terminal\
ap_fp_RegPMFTo_01.tcf
ap_fp_ProjPMFTo_01.tcf

Figure Workspace:
F:\AM\2121\GIS Calculations\C Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FILES\Workspaces\PMF_Affect_Areas_Ex_Flood_Maps.wor

Aerial Image (c) Nearmap 2011

Client: SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)	Project: MOOREBANK INTERMODAL TERMINAL FACILITY
Scale: 1:2000 @ A1	Title: ANZAC CREEK MODEL CHANGE IN PMF FLOW REGIMES BETWEEN EXISTING AND PROPOSED CONDITION
TUFLOW mod Base Ex	
Datum: AHD	
Projection: MGA56	

HYDER CONSULTING PTY LTD
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North Sydney NSW 2060
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Fax +61 (0)2 8907 8001
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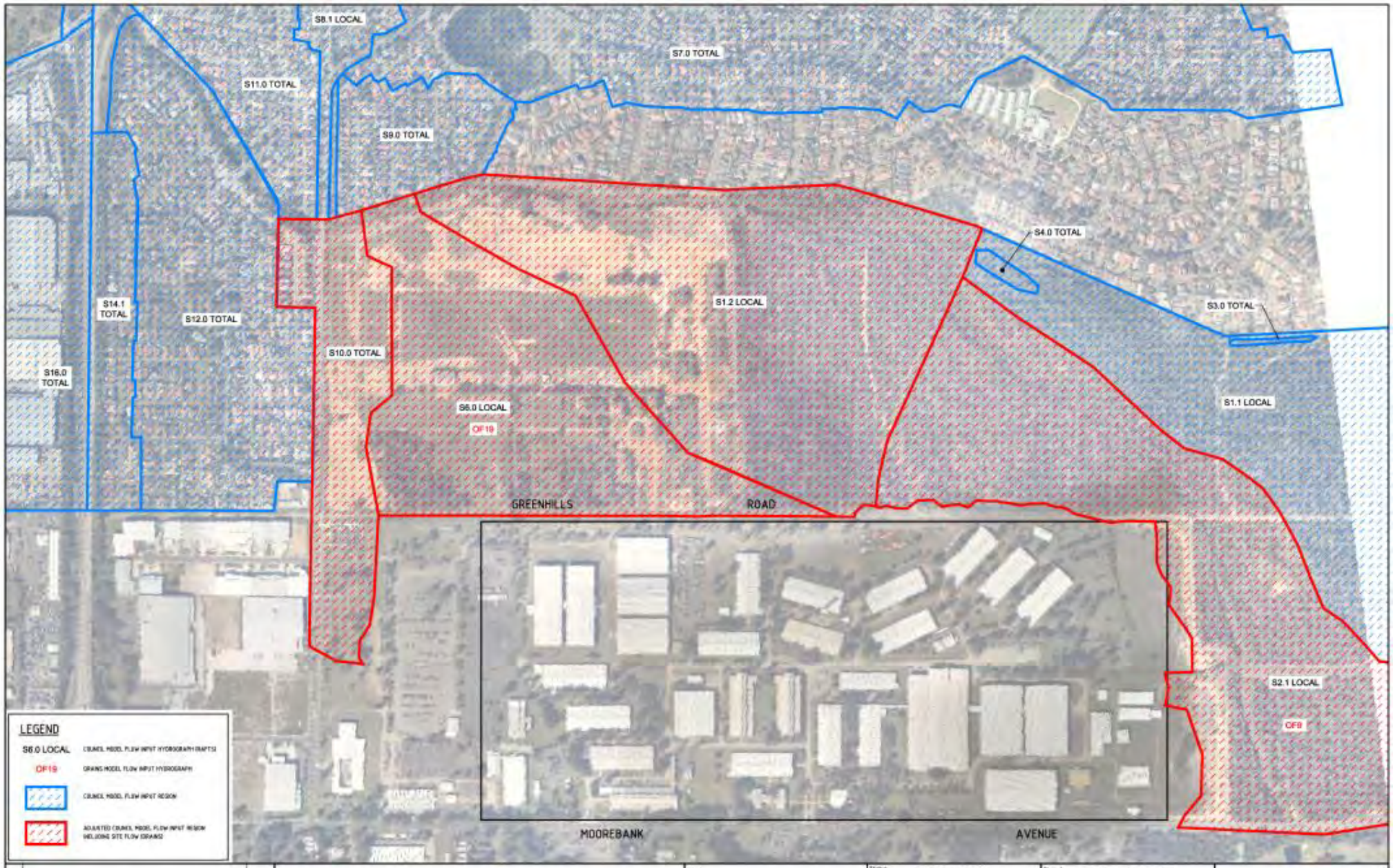
Figure No	Project No	N	Issue
11	NA002316		01



Issue	Description	Date
01	ISSUE FOR REVIEW	10/08/11

1 : 3500

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	1 : 3500	Current Issue Signatures: Drawn	S. MORRISON
Original Size	A1	Designed	C. McLELLAND
Height Datum	AHD	Checked	G. IVES
Grid	MGA	Approved	N. HOWLAN
Filename:			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: EXISTING ANZAC CREEK MODEL FLOW INPUT PLAN

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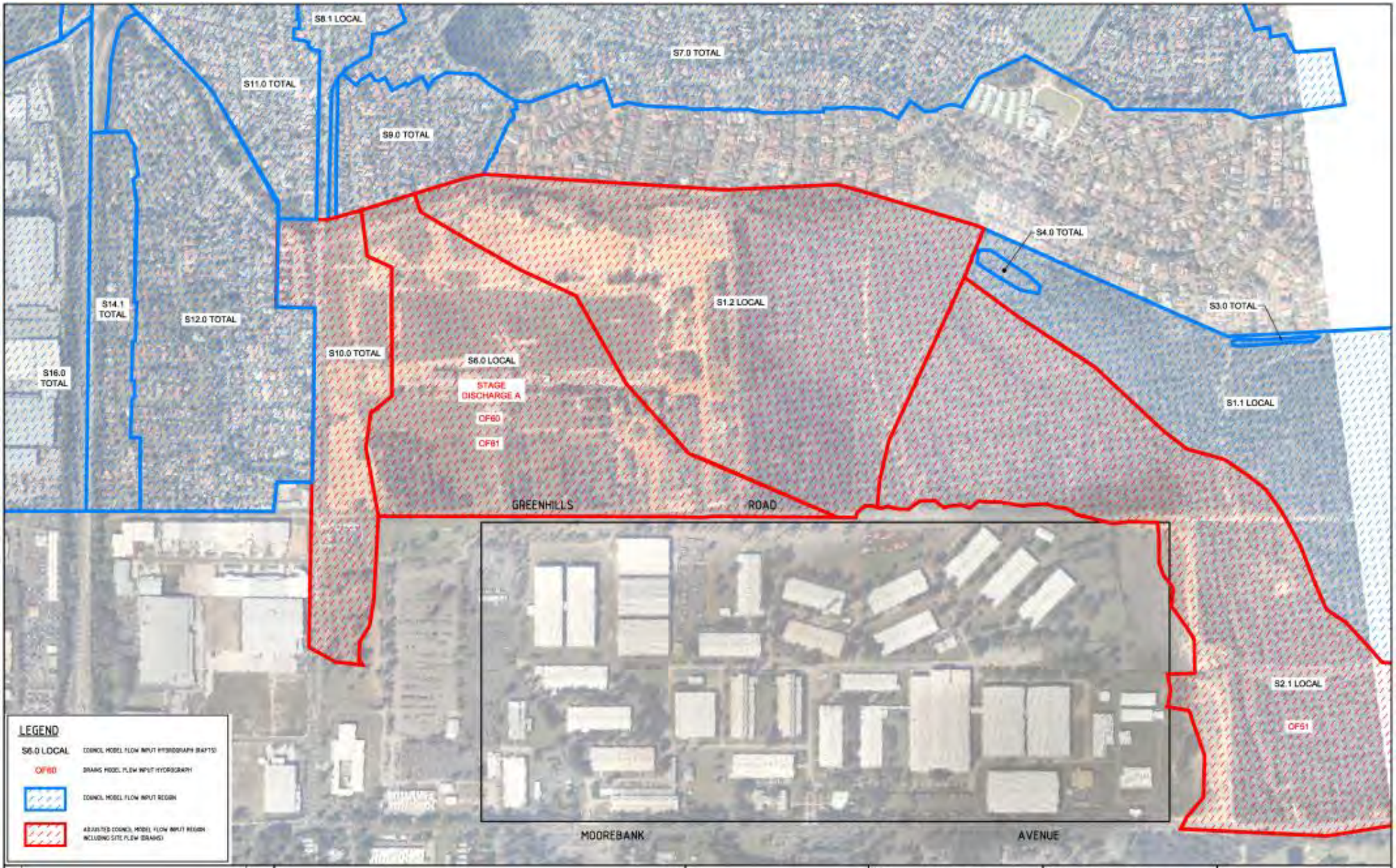
Drawing No. FIG-E6 | Project No. AA003210 | Issue 01

Date Plotted: 12 Aug 2011 - 10:09AM File Name: P:\AA003210\E-CADViz-Civil3D-Sketches\FIGURE-E6-Roughness_Plan-Regional-Existing.dwg



Issue	Description	Date
01	ISSUE FOR REVIEW	12/08/11

0 1000 14000 21000 28000 35000m

1 : 3500

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	1 : 3500	Current Issue Signatures	
		Drawn	S. MORRISON
Original Size	A1	Designed	C. McLELLAND
Height Datum	AHD	Checked	G. IVES
Grid	MGA	Approved	H. McMILLAN
Filename:			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: PROPOSED ANZAC CREEK MODEL FLOW INPUT PLAN

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Drawing No.	Project No.	Issue
FIG-E7	AA003210	01

Date Plotted: 12 Aug 2011 - 10:02AM File Name: F:\AA003210\2-CAD\2-Civil\B-Sketches\FIGURE-E7-Roughness_Plan-Regional-Proposed.dwg

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Appendix F

‘Site only’ DRAINS model inputs and results – existing and proposed conditions

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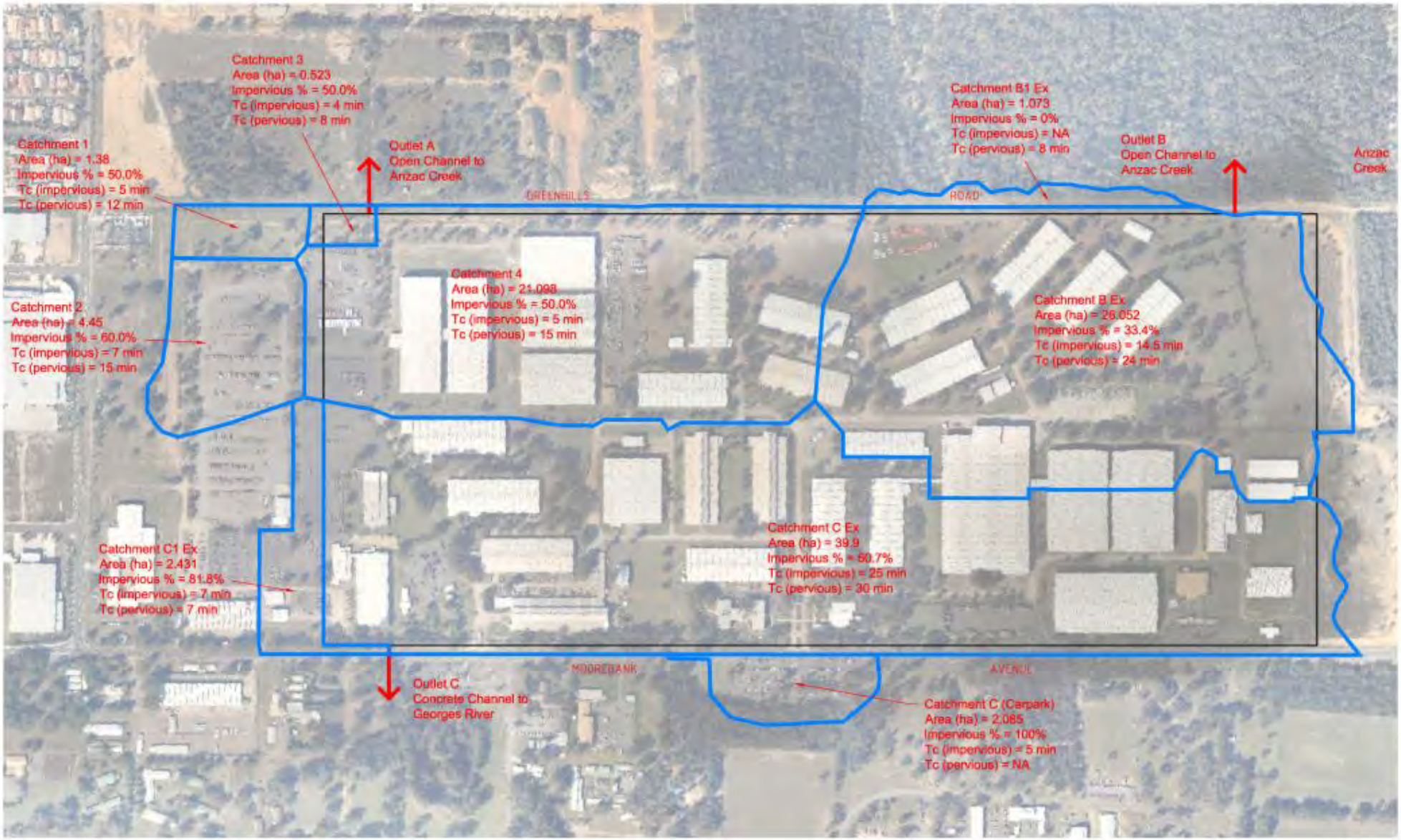

Issue	Description	Date
01	ISSUE FOR REVIEW	12/08/11

0 50 100 150 200 250m

1 : 2500

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	1 : 2500	Current Issue Signatures	
		Drawn	B. BALL
Original Size	A1	Designed	I. McCLELLAND
Height Datum	AHD	Checked	G. WES
Grid	MGA	Approved	N. McMILLAN
Filename			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: EXISTING STORMWATER CATCHMENT PLAN

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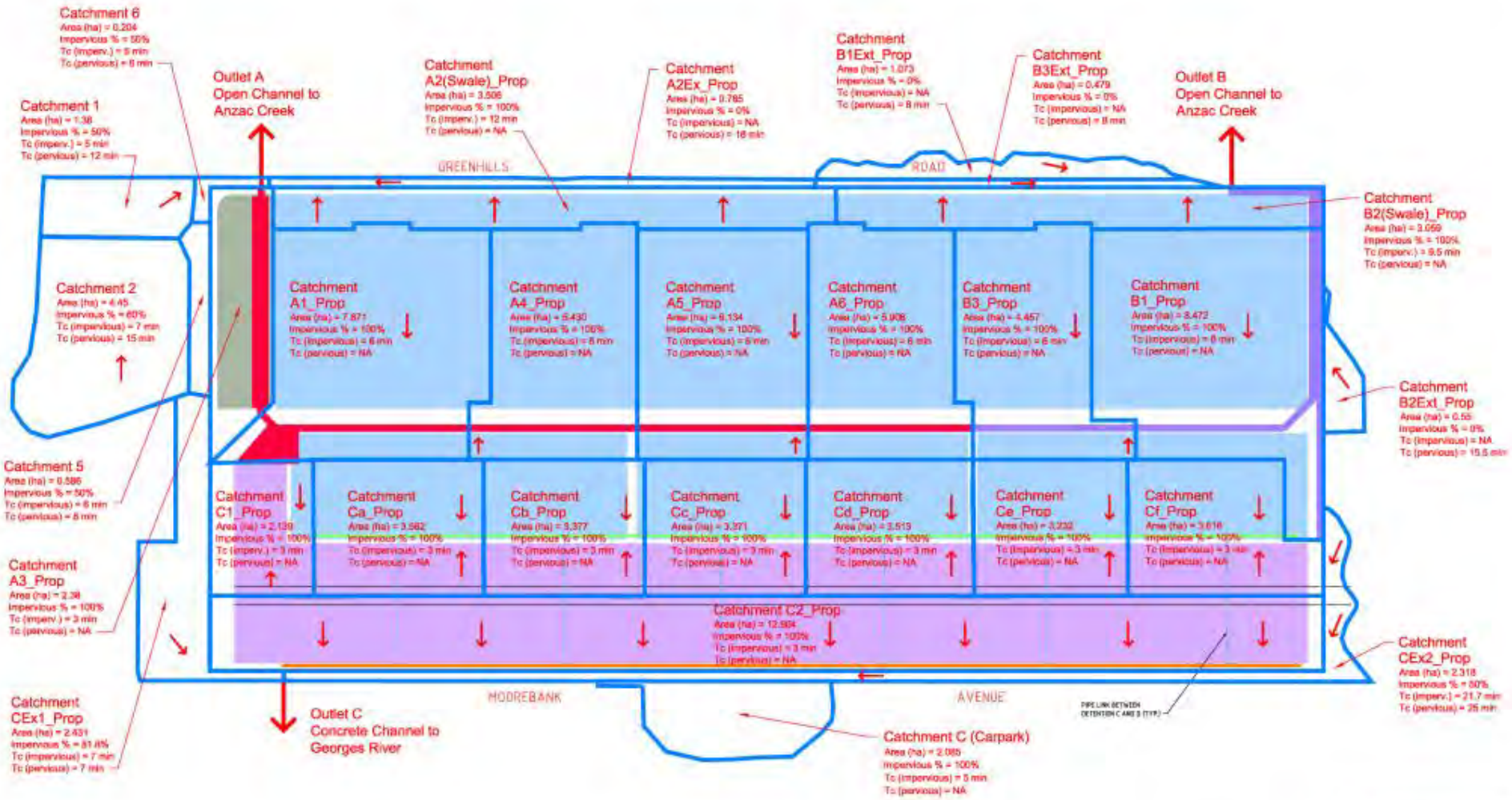
Drawing No	Project No	Issue
FIG-F1	AA003210	01

Date Plotted: 11 Aug 2011 - 09:55AM File Name: F:\AA003210\C-CAD\C-Civil\B-Sketches\FIGURE-F1-Existing_Catchment_Plan.dwg



01	ISSUE FOR REVIEW	12/09/11
Issue	Description	Date

1 : 2500

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	1 : 2500	Current Issue Signatures	
		Drawn	D. BALL
Original Size	A1	Designed	C. MULLELLAND
Height Datum	AHD	Checked	G. IVES
Grid	MGA	Approved	N. MyMILLAN
Filename:			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: PROPOSED STORMWATER CATCHMENT PLAN

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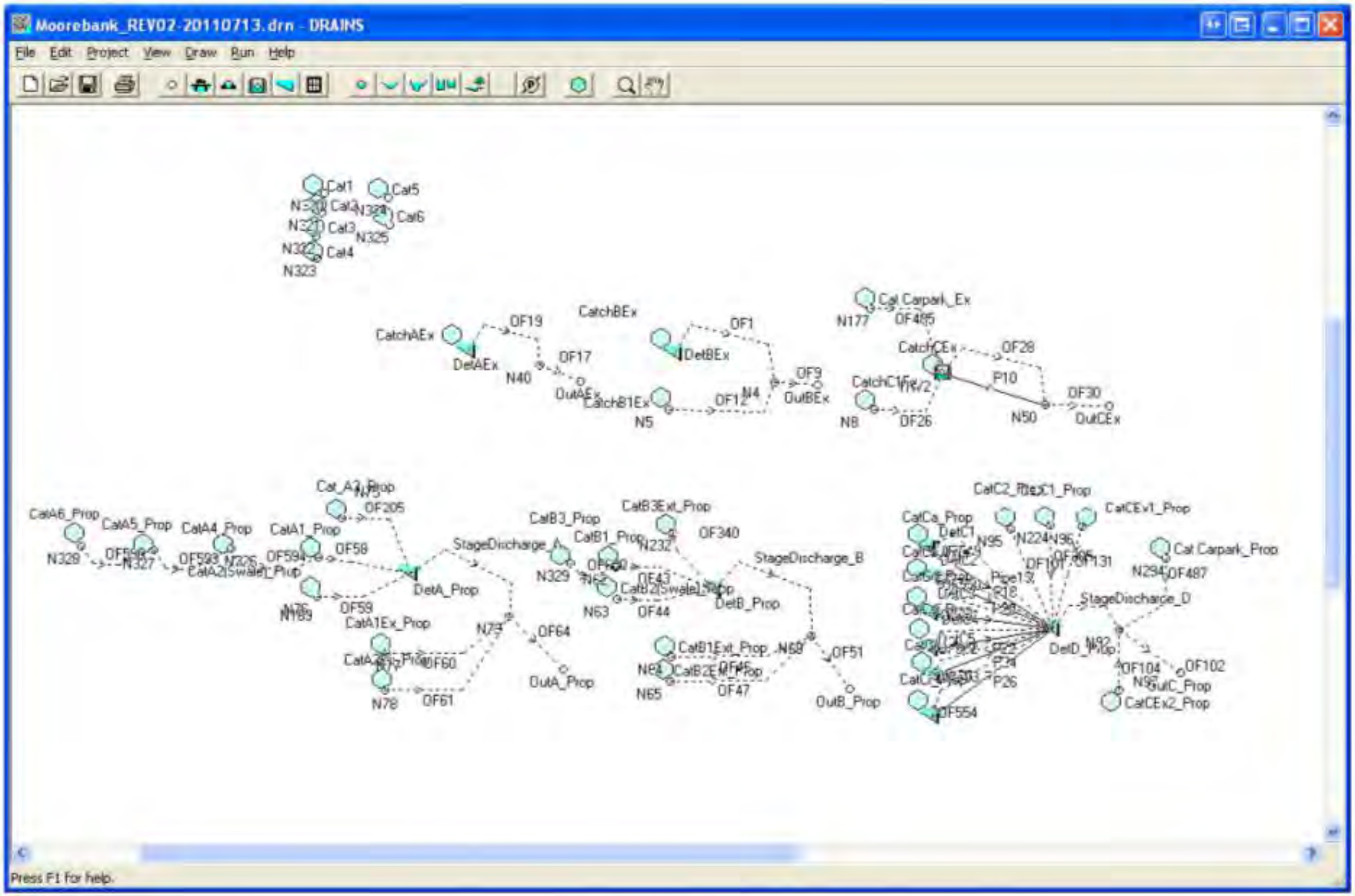
Drawing No.	Project No.	Issue
FIG-F2	AA003210	01

Date Plotted: 9 Aug 2011 – 9:49AM File Name: T:\AA003210\C-CADD-Civil\00-Sketches\100\SKC-F2-Proposed_Catchment_Plan.dwg


Moorebank_REV02-20110713.drn - DRAINS
File Edit Project View Draw Run Help
Cat1
Cat5
Cat6
Cat3
Cat4
N325
N323
CatchAEx
DetAEx
OF19
OF17
N40
OutAEx
CatchBEx
DetBEx
OF1
OF9
OutBEx
CatchB1Ex
N5
N4
Cat Carpark_Ex
N177
OF485
CatchCEx
OF28
P10
OF30
N50
OutCEx
N8
OF26
CatA6_Prop
CatA5_Prop
CatA4_Prop
CatA1_Prop
OF205
OF58
N328
N327
DetA_Prop
OF59
CatA1Ex_Prop
N78
OF61
OF60
OF64
OutA_Prop
StageDischarge_A
CatB3_Prop
CatB3Ext_Prop
CatB1_Prop
OF340
N329
N63
OF44
DetB_Prop
StageDischarge_B
CatB1Ext_Prop
N65
OF47
OF51
OutB_Prop
CatCa_Prop
CatCEx1_Prop
Cat Carpark_Prop
N294
OF487
StageDischarge_D
OF104
OF102
OutC_Prop
CatCEx2_Prop
OF554
Press F1 for help.

DRAINS Model Name and File Path:	F:\AA003210\D-Calculations\C-Civil\Stormwater\DRAINS\Post PEA\Moorebank_REV03.2(1).drn
DRAINS Version:	2010.04 - 5 August 2010
Modeller's Name:	Chris McClelland
Description:	Moorebank QSD

DATA

PIT / NODE DETAILS			Version 9																			
Name	Type	Family	Size	Ponding Volume	Pressure Change	Surface Elev (m)	Max Pond Depth (m)		Base Inflow	Blocking Factor	x	y	Bolt-down lid	id	Part Full Shock Loss							
				(cu.m)	Coeff. Ku				(cu.m/s)													
N4	Node					14			0		755.938	215.845		33								
N5	Node								0		500	150		34								
N8	Node								0		1000	150		37								
OutBEx	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	-451.163		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		-356.894	-306.011		14111582								
N77	Node								0		-189.278	-442.523		14111583								
N78	Node								0		-192.734	-532.379		14111584								
N79	Node								0		111.394	-354.395		14111585								
OutA_Prop	Node								0		242.722	-480.539		14111586								
N92	Node					16			0		1591.596	-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		1591.596	-533.112		15137091								
N169	Node								0		-296.422	-113.077		46653709								
N177	Node								0		990.6	397.15		51463360								
N224	Node								0		1425.586	-133.112		66906726								
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	-193.411		84402417								
N328	Node								0		-929.553	-183.043		84402418								
N329	Node								0		260.866	-226.898		84402439								
DETENTION BASIN DETAILS																						
Name	Elev	Volume	Init Vol. (cu.m)	Outlet Type	K	Dia(mm)	Centre RL		Pit Family	Pit Type	x	y	HED	Crest RL	Crest Length(m)	id						
DetBEx	13.34	0	0	None							514.018	289.421	No			88						
	13.3	0.015																				
	13.4	0.19																				
	13.5	4.388																				
	13.6	23.299																				
	13.7	70.52																				
	13.8	162.39																				
	13.9	326.236																				
	14	598.986																				
	14.1	1061.17																				
	14.2	1822.46																				
	14.3	2998.59																				
	14.4	4603.56																				
	14.5	6835.68																				
	14.6	9772.45																				
	14.7	12192.7																				
	14.8	15734.5																				
	14.82	16517.8																				
DetAEx	13	0	0	None							10.018	295.909	No			4370434						
	13.1	0.457																				
	13.2	7.16																				
	13.3	26.646																				
	13.4	71.296																				
	13.5	153.944																				
	13.6	282.6																				
	13.7	516.484																				
	13.8	880.951																				
	13.9	1439.4																				
	14	2241.32																				
	14.1	3343.31																				

	14.2	4761.79																					
DetB_Prop	14	0	0	None							609.058	-288.731	No			13986138							
	16	17843																					
DetA_Prop	14	0	0	None							-130.906	-249.09	No			14111587							
	14.1	1109.05																					
	14.2	2410.8																					
	14.3	3737.64																					
	14.4	5088.29																					
	14.5	6462.82																					
	14.6	7861.27																					
	14.7	9283.71																					
	14.8	10730.2																					
	14.9	12200.6																					
	15	13695.1																					
	15.1	15213.7																					
	15.2	16756.4																					
	15.3	18501.2																					
	15.4	20270.2																					
	15.5	22063.6																					
	15.6	23881.2																					
	15.7	25723.3																					
	15.8	27589.8																					
	15.9	29480.9																					
	16	31397																					
	16.1	33339.6																					
	16.2	35317.6																					
DetC1	15	0	0	Culvert	0.5						1129.186	-186.779	No			15137024							
	15.5	200																					
	16	600																					
DetD_Prop	14	0	0	None							1431.552	-382.039	No			15137030							
	16	10787																					
DetC2	15	0	0	Culvert	0.5						1141.282	-257.627	No			15137025							
	15.5	200																					
	16	600																					
DetC3	15	0	0	Culvert	0.5						1136.098	-344.027	No			15137026							
	15.5	200																					
	16	600																					
DetC4	15	0	0	Culvert	0.5						1138.088	-432.155	No			15137027							
	15.5	200																					
	16	600																					
DetC5	15	0	0	Culvert	0.5						1141.282	-496.091	No			15137028							
	15.5	200																					
	16	600																					
DetC6	15	0	0	Culvert	0.5						1137.826	-586.315	No			15137029							
	15.5	200																					
	16	600																					
SUB-CATCHMENT DETAILS																							
Name	Pit or	Total	Paved	Grass	Supp	Paved	Grass		Supp	Paved	Grass	Supp	Paved	Grass	Supp	Paved	Grass	Supp	Lag Time	Gutter	Gutter	Gutter	
	Node	Area	Area	Area	Area	Time	Time		Time	Length	Length	Length	Slope(%)	Slope	Slope	Rough	Rough	Rough	or Factor	Length	Slope	FlowFactor	
		(hs)	%	%	%	(min)	(min)		(min)	(m)	(m)	(m)	%	%	%					(m)	%		
CatchB1Ex	N5	1.073	0	100	0	3	8	0											0				
CatchC1Ex	N9	2.431	81.8	18.2	0	7	7	0											0				
CatchBEx	DetBEx	26.052	33.4	66.6	0	14.5	24	0											0				
CatchAEx	DetAEx	27.453	50	50	0	13.75	15	0											0				
CatB1_Prop	N62	8.472	100	0	0	6	3	0											0				
CatB2(Swale)_Prop	N63	3.059	100	0	0	9.5	8.5	0											0				
CatB1Ext_Prop	N64	1.073	0	100	0	5	8	0											0				
CatB2Ext_Prop	N65	0.55	0	100	0	8.5	15.5	0											0				
CatA1_Prop	N75	7.871	100	0	0	6	3	0											0				
CatA2(Swale)_Prop	N76	3.506	100	0	0	12	11	0											0				
CatA1Ex_Prop	N77	6.611	46	54	0	13.2	8.3	0											0				
CatA2Ex_Prop	N78	0.785	0	100	0	0	18	0											0				
CatCa_Prop	DetC1	3.562	100	0	0	3	0	0											0				
CatCb_Prop	DetC2	3.377	100	0	0	3	0	0											0				
CatCc_Prop	DetC3	3.371	100	0	0	3	0	0											0				
CatCd_Prop	DetC4	3.513	100	0	0	3	0	0											0				
CatCe_Prop	DetC5	3.232	100	0	0	3	0	0											0				
CatCf_Prop	DetC6	3.616	100	0	0	3	0	0											0				
CatC2_Prop	N96	12.904	100	0	0	3	0	0											0				
CatCEx1_Prop	N96	2.431	81.8	18.2	0	7	7	0											0				
CatCEx2_Prop	N97	2.318	50	50	0	21.7	25	0											0				
Cat_A3_Prop	N169	2.38	100	0	0	3	0	0											0				
Cat Carpark_Ex	N177	2.085	100	0	0	5	0	0											0				
CatC1_Prop	N224	2.139	100	0	0	3	0	0											0				
CatB3Ext_Prop	N232	0.479	0	100	0	0	8	0											0				
CatchCEx	HW2	39.9	60.7	39.3	0	25	30	0											0				
Cat Carpark_Prop	N294	2.085	100	0	0	5	0	0											0				
Cat1	N320	1.388	50	50	0	5	12	0											0				
Cat2	N321	4.448	60	40	0	7	15	0											0				
Cat3	N322	0.523	50	50	0	4	8	0											0				
Cat4	N323	21.098	50	10	0	5	15	0											0				
Cat5	N324	0.586	50	50	0	6	8	0											0				

Cat6	N325	0.204	50	50	0	6		8	0											0		
CatA4_Prop	N326	5.43	100	0	0	6		3	0											0		
CatA5_Prop	N327	6.134	100	0	0	6		3	0											0		
CatA6_Prop	N328	5.906	100	0	0	6		3	0											0		
Cat83_Prop	N329	4.457	100	0	0	6		3	0											0		
PIPE DETAILS																						
Name	From	To	Length	U/S IL	D/S IL	Slope	Type	Dia	I.D.	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg	Ri	Chg	RL	etc			
			(m)	(m)	(m)	(%)		(mm)	(mm)						(m)	(m)	(m)	(m)	(m)			
Pipe13	DetC1	DetD_Prop	160	15	14	0.63	Box Culverts	1.2W x 0.45H		0.3	Existing	2	DetC1	0								
P18	DetC2	DetD_Prop	160	15	14	0.63	Box Culverts	1.2W x 0.45H		0.3	Existing	2	DetC2	0								
P20	DetC3	DetD_Prop	160	15	14	0.63	Box Culverts	1.2W x 0.45H		0.3	Existing	2	DetC3	0								
P22	DetC4	DetD_Prop	160	15	14	0.63	Box Culverts	1.2W x 0.45H		0.3	Existing	2	DetC4	0								
P24	DetC5	DetD_Prop	160	15	14	0.63	Box Culverts	1.2W x 0.45H		0.3	Existing	2	DetC5	0								
P26	DetC6	DetD_Prop	160	15	14	0.63	Box Culverts	1.2W x 0.45H		0.3	Existing	2	DetC6	0								
P10	HW2	N50	21	11.45	11.4	0.24	Box Culverts	2W x 1.8H		0.3	Existing	2	HW2	0								
DETAILS of SERVICES CROSSING PIPES																						
Pipe	Chg	Bottom	Height of Service	Chg	Bottom	Height of Service	Chg	Bottom	Height of Service	etc												
	(m)	Elev (m)	(m)	(m)	Elev (m)	(m)	(m)	Elev (m)	(m)	etc												
CHANNEL DETAILS																						
Name	From	To	Type	Length	U/S IL	D/S IL	Slope	Base Width	L.B. Slope	R.B. Slope	Manning	Depth	Roofed									
				(m)	(m)	(m)	(%)	(m)	(1:?)	(1:?)	n	(m)										
OVERFLOW ROUTE DETAILS																						
Name	From	To	Travel	Spill	Crest	Weir	Cross	Safe Depth	SafeDepth	Safe	Bed	D/S Area		id	U/S IL	D/S IL	Length (m)					
			Time	Level	Length	Coeff. C	Section	Major Storms	Minor Storms	DxV	Slope	Contributing										
			(min)	(m)	(m)			(m)	(m)	(sq.m/sec)	(%)	%										
OF9	N4	OutBEx	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		1051048								
OF12	N5	N4	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		1575195								
OF26	N8	HW2	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		5647957								
OF1	DetBEx	N4	0.1	13.24			Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		70								
OF18	DetAEx	N40	0.1	13			Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		4370450								
OF17	N40	OutAEx	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		4370449								
StageDischarge_B	DetB_Prop	N69	0.1	14			Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		13086155								
OF43	N62	DetB_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		13086141								
OF44	N63	DetB_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		13086142								
OF46	N64	N69	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		13086156								
OF47	N65	N69	4.75				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		13086157								
OF51	N69	OutB_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		13086163								
OF58	N75	DetA_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		14111588								
OF59	N76	DetA_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		14111589								
OF60	N77	N79	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		14111590								
OF61	N78	N79	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		14111591								
OF64	N79	OutA_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		14111594								
StageDischarge_A	DetA_Prop	N79	0.1	14			Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		14111593								
OF549	DetC1	DetD_Prop	0.1	16.25	200	1.6	Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84388929								
StageDischarge_D	DetD_Prop	N82	0.1	14			Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		15137075								
OF550	DetC2	DetD_Prop	0.1	16.25	200	1.6	Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84388930								
OF551	DetC3	DetD_Prop	0.1	16.25	200	1.6	Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84388931								
OF552	DetC4	DetD_Prop	0.1	16.25	200	1.6	Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84388932								
OF553	DetC5	DetD_Prop	0.1	16.25	200	1.6	Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84388933								
OF554	DetC6	DetD_Prop	0.1	16.25	200	1.6	Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84388934								
OF102	N92	OutC_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		15137087								
OF101	N95	DetD_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		15137085								
OF131	N96	DetD_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		20006340								
OF104	N97	N92	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		15137089								
OF205	N169	DetA_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		46653710								
OF485	N177	HW2	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84070745								
OF305	N224	DetD_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		68906727								
OF340	N232	DetB_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		73934575								
OF28	HW2	N50	0.1	14.2	20	1.6	Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		5647963								
OF30	N50	OutCEx	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		5647967								
OF487	N294	N92	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84070747								
OF594	N326	N75	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84402422								
OF593	N327	N326	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84402421								
OF590	N328	N327	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84402419								
OF600	N329	N62	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		84402436								

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 2 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	12.34	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 Tc (min)	Grassed Tc (min)	Supp Tc (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	2.76	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_Ex	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	3.663	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 cu.m	Total Runoff cu.m (Runoff	Impervious Ru cu.m (Runoff %	Pervious Runoff cu.m (Runoff %)
AR&R 2 year, 5 min	19807.55	12757.59 (64.	12649.92 (89.	107.67 (1.9%)
AR&R 2 year, 10 mi	30347.35	21235.00 (70.	20213.78 (92.	1021.22 (11.9%)
AR&R 2 year, 15 mi	38161.34	28053.71 (73.	25821.41 (94.	2232.30 (20.7%)
AR&R 2 year, 20 mi	44485.22	33654.47 (75.	30359.75 (95.	3294.72 (26.2%)
AR&R 2 year, 25 mi	49700.61	38202.99 (76.	34102.68 (95.	4100.31 (29.2%)
AR&R 2 year, 30 mi	54298.14	41954.61 (77.	37401.99 (96.	4552.62 (29.7%)
AR&R 2 year, 45 mi	65092.34	51071.20 (78.	45148.41 (96.	5922.79 (32.2%)
AR&R 2 year, 1 hou	73487.84	58130.29 (79.	51173.34 (97.	6956.94 (33.5%)
AR&R 2 year, 1.5 ho	86026.57	68093.83 (79.	60171.75 (97.	7922.08 (32.6%)
AR&R 2 year, 2 hou	95948.54	76033.59 (79.	67292.29 (97.	8741.31 (32.3%)
AR&R 2 year, 3 hou	110558.87	87557.55 (79.	77778.05 (98.	9779.50 (31.3%)
AR&R 2 year, 4.5 ho	127567.9	99997.64 (78.	89984.34 (98.	10013.30 (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
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 (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
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

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	1.56	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	Outflow	Storage Chan	Difference
	(cu.m)	(cu.m)	(cu.m)	%
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	13426.48	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

N50	14438.72	14438.72	0	0								
N294	896.55	896.55	0	0								
N320	397.73	397.73	0	0								
N321	1401.36	1401.36	0	0								
N322	150.04	150.04	0	0								
N323	4837	4837	0	0								
N324	168.11	168.11	0	0								
N325	58.52	58.52	0	0								
N326	7512.96	7512.96	0	0								
N327	5178.06	5178.06	0	0								
N328	2540.44	2540.44	0	0								
N329	1916.51	1916.51	0	0								
Run Log for Moorebank_REV02.run at 10:31:20 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				Version 8								
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving	Max Pond Volume	Min Freeboard	Overflow (cu.m/s)	Constraint					
			(cu.m/s)	(cu.m)	(m)							
HW2	12.06	3.217			2.14	0	None					
N50	11.78		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	0.07	0	0.07	3	8	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatchC1Ex	0.208	0.179	0.029	7	7	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatchBEx	1.753	0.684	1.069	14.5	24	0.0	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1					
CatchAEx	2.117	1.235	0.882	13.75	15	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatB1_Prop	0.762	0.762	0	6	3	0.0	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	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatB1Ext_Prop	0.07	0	0.07	5	8	0.0	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	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatA1_Prop	0.708	0.708	0	6	3	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatA2(Swale)_Prop	0.316	0.316	0	12	11	0.0	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	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatA2Ex_Prop	0.048	0	0.048	0	18	0.0	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1					
CatCa_Prop	0.321	0.321	0	3	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatCb_Prop	0.304	0.304	0	3	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatCc_Prop	0.303	0.303	0	3	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatCd_Prop	0.316	0.316	0	3	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatCe_Prop	0.291	0.291	0	3	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatCf_Prop	0.325	0.325	0	3	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatC2_Prop	1.161	1.161	0	3	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatCEx1_Prop	0.208	0.179	0.029	7	7	0.0	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	0.0	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1					
Cat_A3_Prop	0.214	0.214	0	3	0	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
Cat Carpark_Ex	0.188	0.188	0	5	0	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					
Cat1	0.107	0.062	0.045	5	12	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
Cat2	0.355	0.24	0.114	7	15	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
Cat3	0.041	0.024	0.017	4	8	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
Cat4	1.085	0.949	0.136	5	15	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
Cat5	0.046	0.026	0.019	6	8	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
Cat6	0.016	0.009	0.007	6	8	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatA4_Prop	0.489	0.489	0	6	3	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatA5_Prop	0.552	0.552	0	6	3	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatA6_Prop	0.532	0.532	0	6	3	0.0	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1					
CatB3_Prop	0.401	0.401	0	6	3	0.0	AR&R 2 year, 6 hours storm, average 10.8 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 Ru cu.m (Runoff	Pervious Runoff cu.m (Runoff %)								
AR&R 2 year, 6 hou	141305.98	110836.58 (78	99842.64 (98.	10993.94 (27.6%)								
AR&R 2 year, 9 hou	163286.91	128975.79 (79	115622.15 (98	13353.64 (29.0%)								
AR&R 2 year, 12 ho	181081	143399.65 (79	128379.24 (98	15020.40 (29.4%)								
AR&R 2 year, 18 ho	209996.39	161625.47 (7	149142.59 (99	12482.88 (21.1%)								
AR&R 2 year, 24 ho	232893.2	177091.17 (76	165586.45 (99	11504.72 (17.5%)								
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	0.321	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 (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	0.32	0.32	7.665	0.054	0.04	14.87	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	13.25	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	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	15.08	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	Outflow	Storage Chan	Difference
	(cu.m)	(cu.m)	(cu.m)	%
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

N177	1330.24	1330.24	0	0								
N224	1364.68	1364.68	0	0								
N232	85.98	85.98	0	0								
HW2	20919.38	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												

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 20 YEAR ARI

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	12.76	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	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	6.3	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_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
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 cu.m	Total Runoff cu.m (Runoff	Impervious Ru cu.m (Runoff	Pervious Runoff cu.m (Runoff %)
AR&R 20 year, 5 m	31801.12	23349.77 (73.	21257.06 (93.	2092.71 (23.3%)
AR&R 20 year, 10 r	48701.14	39129.66 (80.	33385.34 (95.	5744.31 (41.8%)
AR&R 20 year, 15 r	61058.14	50683.12 (83.	42253.21 (96.	8429.90 (48.9%)
AR&R 20 year, 20 r	71379.88	60285.51 (84.	49660.72 (96.	10624.79 (52.7%)
AR&R 20 year, 25 r	79775.38	67927.40 (85.	55685.65 (97.	12241.75 (54.3%)
AR&R 20 year, 30 r	87116.89	74393.13 (85.	60954.32 (97.	13438.81 (54.6%)
AR&R 20 year, 45 r	104834.66	90285.41 (86.	73669.27 (97.	16616.13 (56.1%)
AR&R 20 year, 1 ho	119627.25	102899.03 (86	83567.49 (98.	19131.53 (57.1%)
AR&R 20 year, 1.5	139670.52	121238.64 (86	98669.28 (98.	22569.36 (57.2%)
AR&R 20 year, 2 ho	156134.39	135577.38 (86	110484.45 (98	25092.93 (56.9%)
AR&R 20 year, 3 ho	181866.03	158100.23 (86	128950.34 (98	29149.89 (56.8%)
AR&R 20 year, 4.5	210977.67	182255.05 (86	149844.19 (99	32410.87 (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	1.539	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	0.652	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

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	7.633	7.633	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	1.46	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 Total	Max Q Low Level	Max Q 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 Chan (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	2277.36	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

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

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	12.4	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_Ex	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 Ru cu.m (Runoff	Pervious Runoff cu.m (Runoff %)
AR&R 20 year, 6 h	235509.99	202773.54 (86	167447.16 (99	35326.39 (53.1%)
AR&R 20 year, 9 h	274761.66	232965.29 (84	195623.38 (99	37341.92 (48.1%)
AR&R 20 year, 12 h	306162.97	260278.81 (85	218148.44 (99	42130.17 (48.7%)
AR&R 20 year, 18 h	360722.78	301060.31 (83	257317.38 (99	43742.93 (42.9%)
AR&R 20 year, 24 h	405077.25	331860.18 (81	288138.53 (99	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	

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 Chan	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	2230.96	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	461.67	461.67	0	0								
N325	167.68	167.68	0	0								
N326	18894.93	18895.02	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												

DRAINS Model Name and File Path:	F:\AA003210\D-Calculations\C-Civil\Stormwater\DRAINS\Post PEA\Moorebank_REV02-20110713.dm
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

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving	Version 8 Max Pond Volume	Min Freeboard	Overflow	Constraint
			(cu.m/s)	(cu.m)	(m)	(cu.m/s)	
HW2	13.38	12.746			0.82	0	None
N50	13.28		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q	Paved Max Q	Grassed Max Q	Paved Tc	Grassed Tc	Supp. Tc	Due to Storm
	(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_Ex	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 m	40705.43	32100.10 (78.	27647.31 (94.	4452.79 (38.7%)
AR&R 100 year, 10	62511.91	52822.48 (84.	43296.53 (96.	9525.95 (54.0%)
AR&R 100 year, 15	78503.32	67964.89 (86.	54772.67 (97.	13192.22 (59.5%)
AR&R 100 year, 20	91587.23	80290.73 (87.	64162.38 (97.	16128.35 (62.4%)
AR&R 100 year, 25	101763.58	89556.05 (88.	71465.52 (97.	18090.52 (63.0%)
AR&R 100 year, 30	111213.05	98245.21 (88.	78246.95 (98.	19998.26 (63.7%)
AR&R 100 year, 45	134273.41	119478.42 (89	94796.08 (98.	24682.35 (65.1%)
AR&R 100 year, 1 h	151991.16	135745.67 (89	107511.19 (98	28234.48 (65.8%)
AR&R 100 year, 1.5	179576.36	160892.24 (89	127307.49 (98	33584.75 (66.2%)
AR&R 100 year, 2 h	201055.77	180304.16 (89	142721.55 (98	37582.62 (66.2%)
AR&R 100 year, 3 h	234855.8	210569.45 (89	166978.94 (99	43590.51 (65.7%)
AR&R 100 year, 4.5	272799.09	243546.58 (89	194210.94 (99	49335.64 (64.1%)

PIPE DETAILS

Name	Max Q	Max V	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
	(cu.m/s)	(m/s)			
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 HGL (m)	Due to Storm
	(cu.m/s)	(m/s)	(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

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 Total	Max Q Low Level	Max Q 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 (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %
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

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				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	13.32	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_Ex	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 Ru	Pervious Runoff								
	cu.m	cu.m (Runoff	cu.m (Runoff '	cu.m (Runoff %)								
AR&R 100 year, 6 h	304854.63	270784.28 (8	217212.31 (99	53571.97 (62.2%)								
AR&R 100 year, 9 h	3307316	313204.46 (9	254771.72 (10	58432.74 (6.3%)								
AR&R 100 year, 12	400367	350135.02 (8	285758.69 (99	64376.34 (56.9%)								
AR&R 100 year, 18	474945.16	408699.81 (8	339291.97 (99	69407.84 (51.8%)								
AR&R 100 year, 24	539056.13	456777.45 (8	385271.72 (99	71505.73 (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	15.559	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				

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	Outflow	Storage Chan	Difference
	(cu.m)	(cu.m)	(cu.m)	%
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	478.66	478.88	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

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.												

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
Climate Change

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	13.19	15.598			1.01	0	None
N50	12.56		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	0.573	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_Ex	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 cu.m	Total Runoff cu.m (Runoff	Impervious Ru cu.m (Runoff	Pervious Runoff cu.m (Runoff %)
AR&R 102 year, 5 m	48882.86	40233.50 (82.	33515.75 (95	6717.75 (48.7%)
AR&R 102 year, 10	74868.91	65129.53 (87.	52164.57 (97.	12964.96 (61.3%)
AR&R 102 year, 15	94313.03	83699.96 (88.	66118.59 (97.	17581.36 (66.0%)
AR&R 102 year, 20	109759.3	98384.88 (89.	77203.63 (98.	21181.25 (68.3%)
AR&R 102 year, 25	121752.85	109465.23 (89	85810.67 (98.	23654.56 (68.8%)
AR&R 102 year, 30	133019.53	119984.68 (90	93896.34 (98.	26088.34 (69.5%)
AR&R 102 year, 45	161095.38	146237.80 (90	114044.66 (98	32193.14 (70.8%)
AR&R 102 year, 1 h	182302.19	165987.45 (91	129263.70 (98	36723.75 (71.3%)
AR&R 102 year, 1.5	215557.06	196809.39 (91	153129.33 (99	43680.06 (71.6%)
AR&R 102 year, 2 h	241179.64	220327.19 (91	171517.27 (99	48809.93 (71.7%)
AR&R 102 year, 3 h	281957.75	257485.74 (91	200779.45 (99	56706.29 (71.2%)
AR&R 102 year, 4.5	327751.44	298350.03 (91	233645.61 (99	64704.42 (69.9%)

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
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 (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	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	0.62	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

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	Outflow	Storage Chan	Difference
	(cu.m)	(cu.m)	(cu.m)	%
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

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, (												
DRAINS results prepared 09 August, 2011 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	12.68	9.326			1.52	0	None					
N50	12.2		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	0.213	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_Ex	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 cu.m	Total Runoff cu.m (Runoff	Impervious Ru cu.m (Runoff %	Pervious Runoff cu.m (Runoff %)								
AR&R 102 year, 6 h	386348.84	331903.44 (9	261351.63 (99	70551.81 (66.2%)								
AR&R 102 year, 9 h	427843.13	383158.98 (8	305481.31 (99	77677.67 (64.3%)								
AR&R 102 year, 12	481487.06	429691.20 (8	343953.34 (99	85737.85 (63.1%)								
AR&R 102 year, 18	569149.13	500128.20 (8	406857.28 (99	93270.92 (58.0%)								
AR&R 102 year, 24	648960.81	563771.91 (8	464126.28 (99	99645.63 (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	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 (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	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				

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	1.36	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 Total	Max Q Low Level	Max Q 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	9976.26	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

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												

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Appendix G

‘Site only’ TUFLOW model inputs and results – existing and proposed conditions

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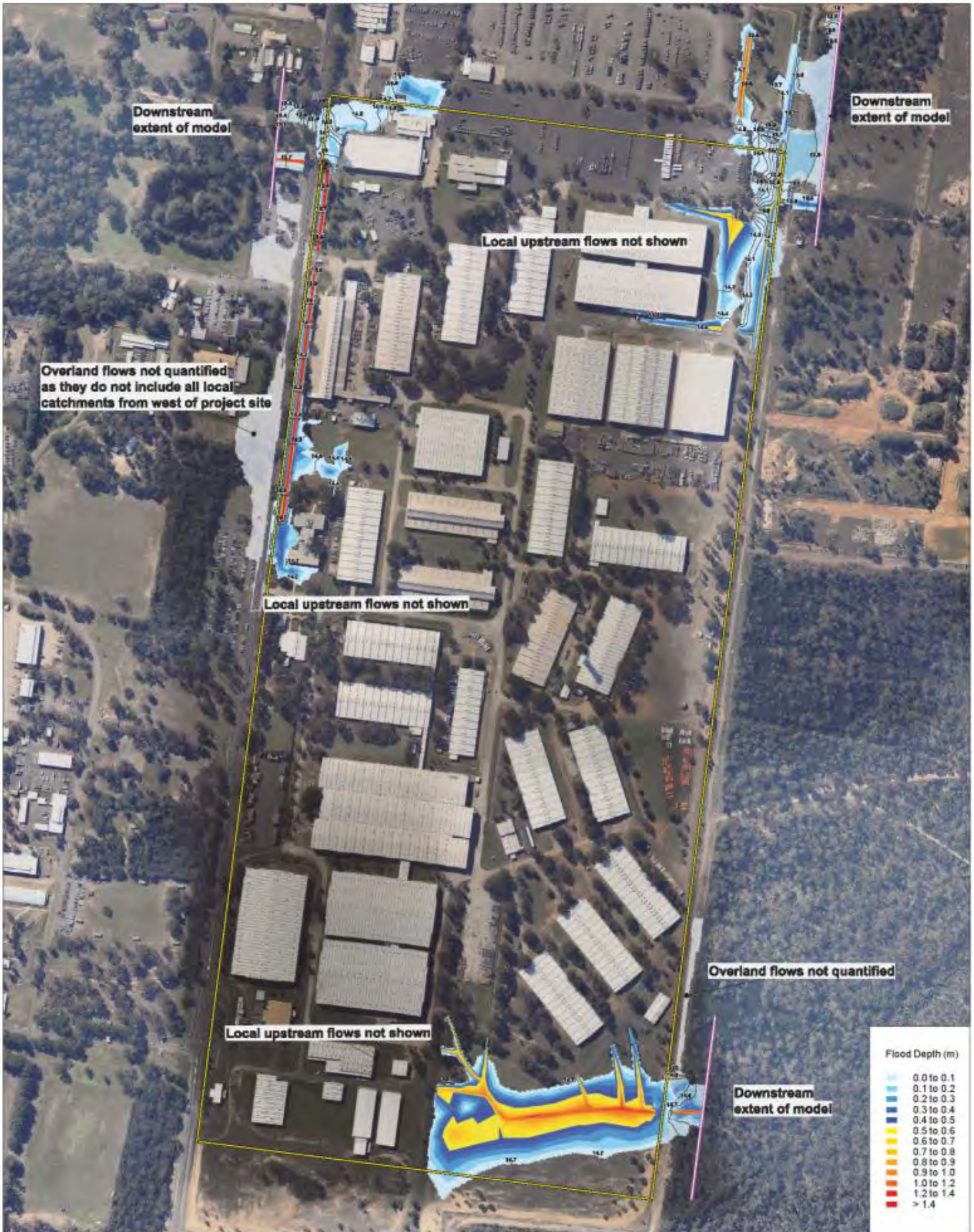

LEGEND

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

Notes:

The mapping on this drawing represents peak flood level and depth for the 100 year ARI 1, 2, 4, 5 and 6 hour duration storm events.

Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2010) and ground survey of the site by Reid and Preston (August 2010).

This figure may not represent all local flow regimes.

TUFLOW Version: [TUFLOW Version 2010-10-AB(SP=x32)]
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Figure Workspace:
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* Aerial Imagery by Nearmap 2011 ©

Client	SYDNEY INTERMODAL TERMINAL ALLIANCE (STATA)
Scale: 1:2000 @ A1	
TUFLOW 5-nd Size, 2m	
Datum: MGA94	
Projection: MGA56	

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

Hyder

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Fax +61 (0)2 9927 9001
www.hyderconsulting.com
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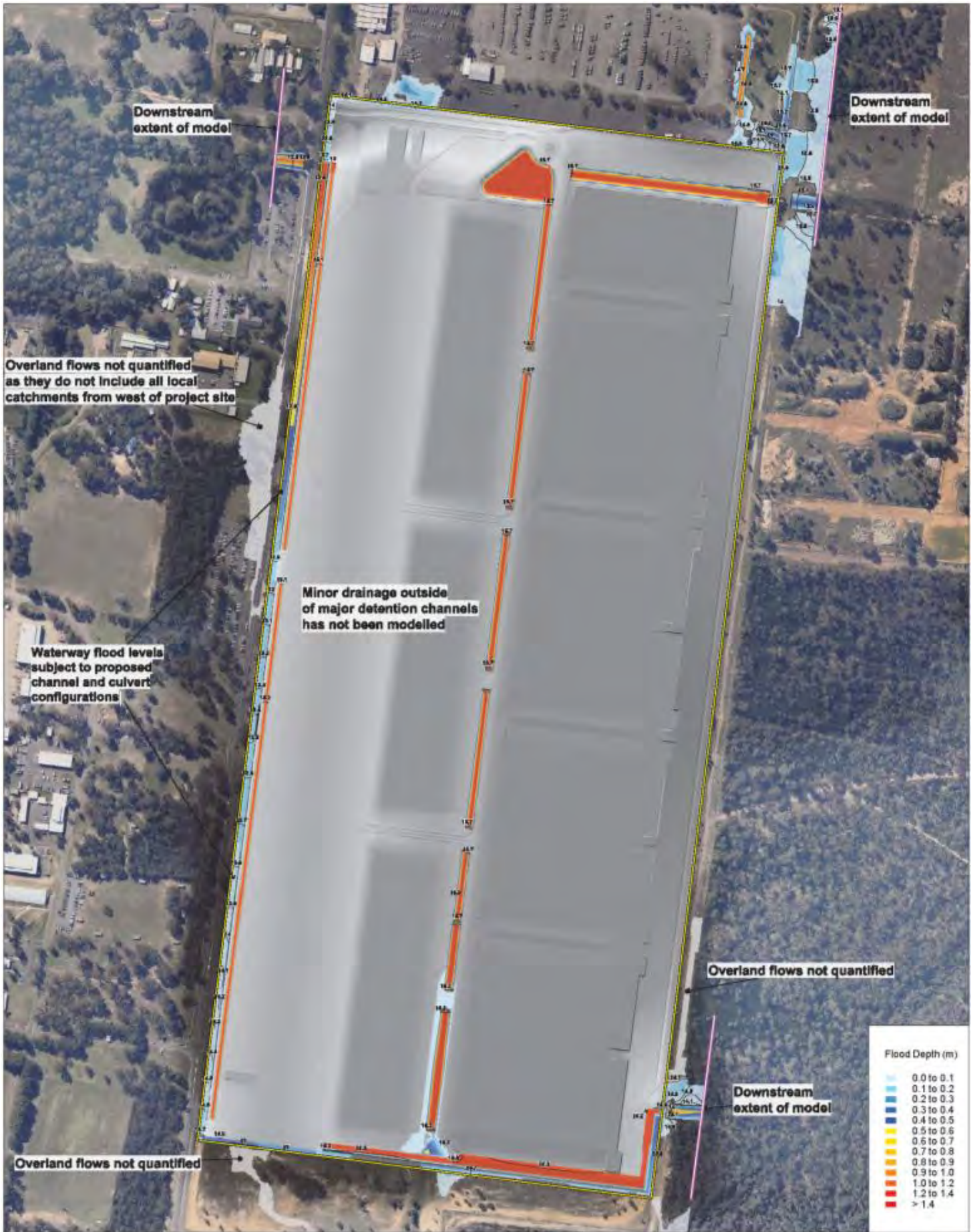
Figure No	Project No		Issue
01	AM0010	N	01



LEGEND

Project Site Boundary

Flood Level Contour (m AHD)

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 storage storms were)

Flood regimes are based on aerial base survey provided by Aitkin Ellelsh Pty Ltd (May 2008), ground survey of the site by Hyder and Penleton (August, 2010) and Hyder civil design surfaces.

This figure does not represent all local flow regimes.

TUFLOW Version Mac (TUFLOW Version 2010-12-AD (SP-w32)
F:\SA6002\2010_Calculations\C Civil\Stormwater\Flooding\2011 - Revised Modelling\FIGURES FOR EXHIBITION\Figure 02 - 100yr_Prop_24hr_Median_Flood_Map.wor
* Aerial Imagery by NearMap 2011.8

Client: SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)

Project: MOOREBANK INTERMODAL TERMINAL FACILITY

Scale: 1:2000 @ A1

TUFLOW Grid Size: 2m

Datum: MGA94

Projection: MGA56

Title: SITE MODEL 100 YEAR ARI FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR CONCEPT EXHIBITION OPTIONS CONDITION

Hyder

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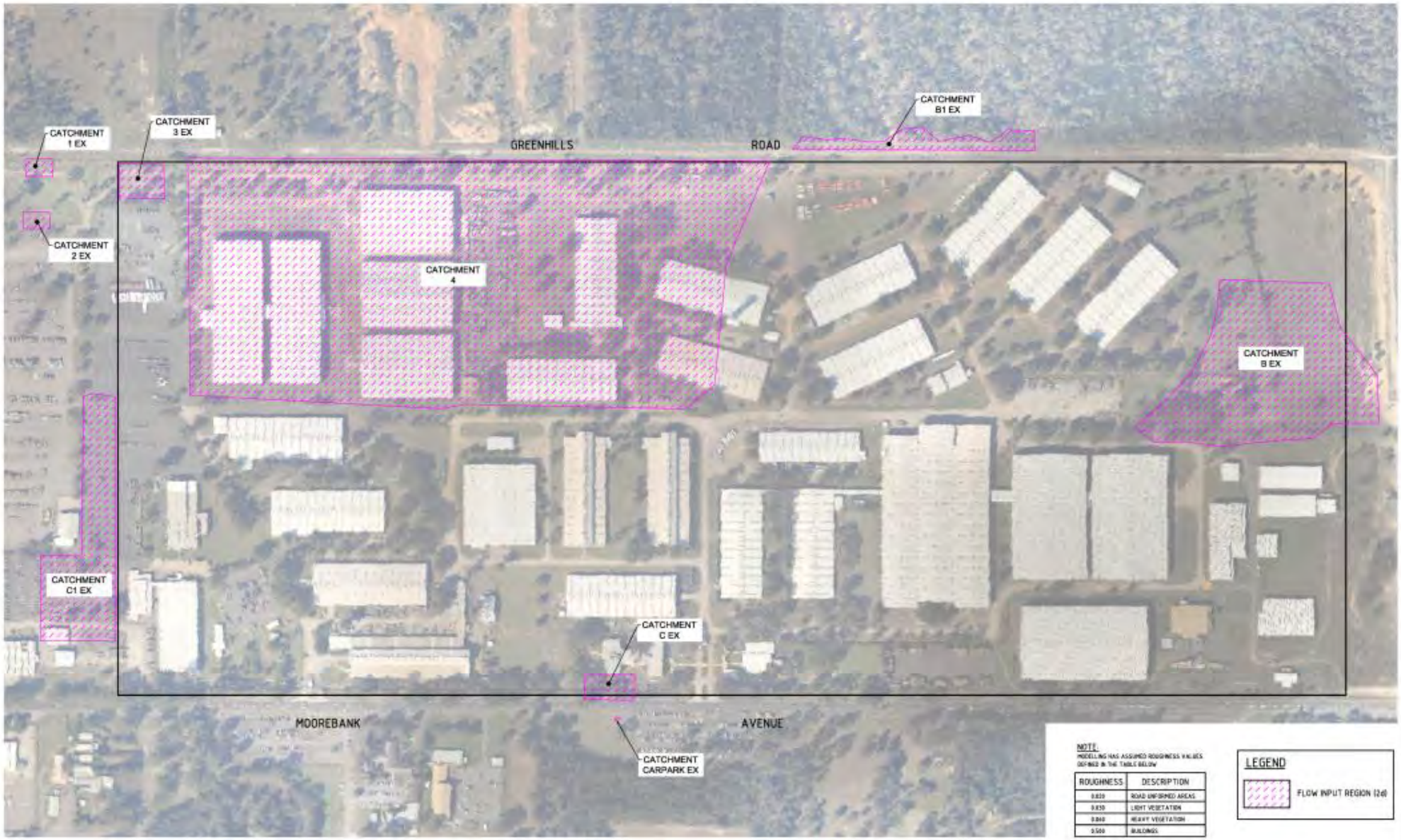
Figure No: 02

Project No: A6002210

N

Issue: 01



NOTE:
MODELLING HAS ASSUMED ROUGHNESS VALUES DEFINED IN THE TABLE BELOW

ROUGHNESS	DESCRIPTION
0.020	ROAD UNFORMED AREAS
0.030	LIGHT VEGETATION
0.040	HEAVY VEGETATION
0.500	BUILDINGS

LEGEND

FLOW INPUT REGION (2d)

Issue	Description	Date
01	ISSUE FOR REVIEW	13/09/11

0 50 100 150 200m
1 : 2000

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1 : 2000	Drawn	E. ROBINSON
Original Size	A1	Designed	E. MACLELLAND
Height Datum	AHD	Checked	E. IVES
Grid	MGA	Approved	N. McMILLAN
Filename			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: EXISTING 'SITE ONLY' TUFLOW FLOW INPUT AND ROUGHNESS PLAN

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Level 5, 141 Walker St
North Sydney NSW 2060
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Fax: +61 (0)2 8907 9001
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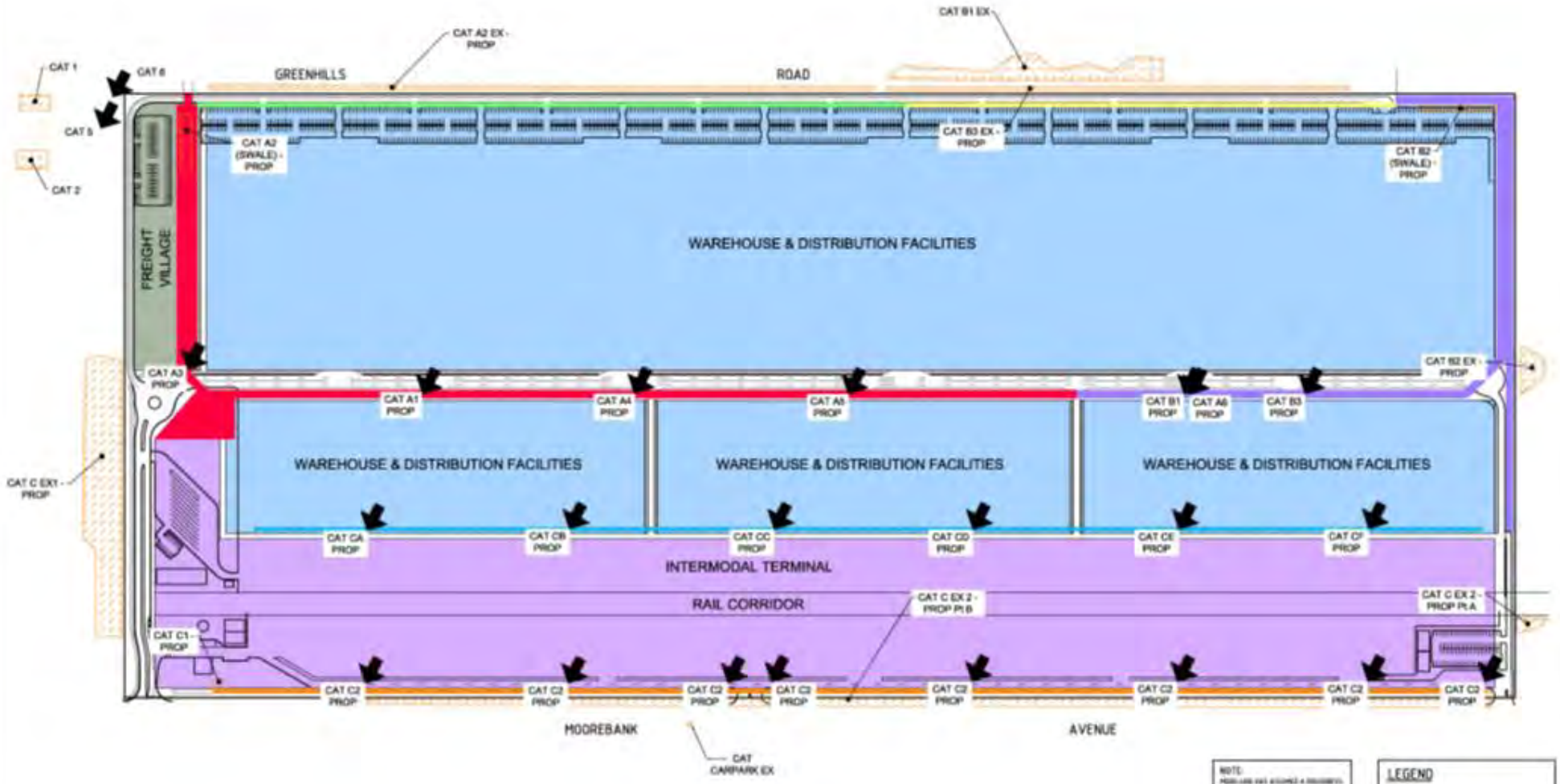
Drawing No. FIG-G3 | Project No. AA003210 | Issue 01

Date Plotted: 13 Aug 2011 - 09:08AM File Name: P:\AA003210\E-CAD\2-Civil\8-Sketches\FIGURE-G3-Roughness_Plan-Existing.dwg


CAT 1
CAT 6
CAT 5
CAT 2
GREENHILLS
CAT A2 EX - PROP
ROAD
CAT B1 EX
CAT A2 (SWALE) - PROP
CAT B3 EX - PROP
CAT B2 (SWALE) - PROP
FREIGHT VILLAGE
WAREHOUSE & DISTRIBUTION FACILITIES
CAT A3 PROP
CAT A1 PROP
CAT A4 PROP
CAT A5 PROP
CAT B2 EX - PROP
CAT B1 PROP
CAT A6 PROP
CAT B3 PROP
CAT C EX1 - PROP
WAREHOUSE & DISTRIBUTION FACILITIES
WAREHOUSE & DISTRIBUTION FACILITIES
WAREHOUSE & DISTRIBUTION FACILITIES
CAT CA PROP
CAT CB PROP
CAT CC PROP
CAT CD PROP
CAT CE PROP
CAT CF PROP
INTERMODAL TERMINAL
RAIL CORRIDOR
CAT C EX 2 - PROP PtB
CAT C EX 2 - PROP PtA
CAT C1 - PROP
CAT C2 PROP
MOOREBANK
AVENUE
CAT CARPARK EX
NOTE:
LEGEND
FLOW INPUT REGION (2d)
FLOW INPUT LOCATION (1d)

Drawings

Current Civil Design
Dwg No. CP020 Existing Stormwater Catchment Plan
Dwg No. CP021 Stormwater Concept and Proposed Catchment Plan
Dwg No. CP022 Stormwater Quality Concept Plan
Dwg No. CP023 Stormwater Quantity Concept Plan
Dwg No. CP024 Stormwater Drainage Details Sheet 1 of 4
Dwg No. CP025 Stormwater Drainage Details Sheet 2 of 4
Dwg No. CP026 Stormwater Drainage Details Sheet 3 of 4
Dwg No. CP027 Stormwater Drainage Details Sheet 4 of 4

Civil Design Options
Dwg No. SKC230 Civil Design Options for Stormwater Plan Layout Sheet 1 of 4
Dwg No. SKC231 Civil Design Options for Stormwater Plan Layout Sheet 2 of 4
Dwg No. SKC232 Civil Design Options for Stormwater Plan Layout Sheet 3 of 4
Dwg No. SKC233 Civil Design Options for Stormwater Plan Layout Sheet 4 of 4
Dwg No. SKC220 Civil Design Options for Stormwater Sections Sheet 1 of 3
Dwg No. SKC221 Civil Design Options for Stormwater Sections Sheet 2 of 3
Dwg No. SKC222 Civil Design Options for Stormwater Sections Sheet 3 of 3

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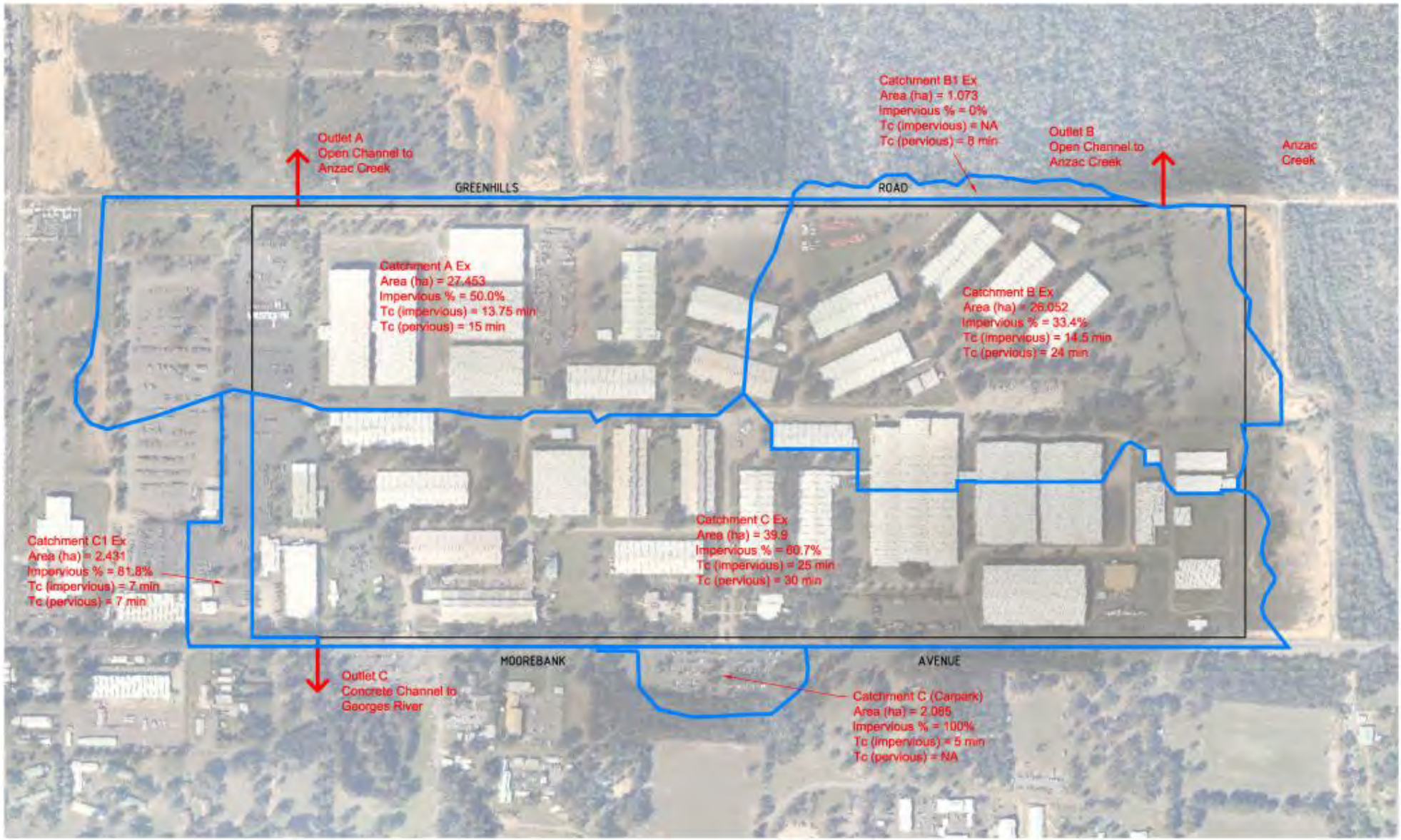

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01	ISSUE FOR REVIEW	03/08/11

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Client: SIMTA

Status: PRELIMINARY
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Original Size	A1	Designed	C. McCLELLAND
Height Datum	AHD	Checked	R. SMITH
Grid	MGA	Approved	J. MOORHOUSE

Filename:

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: EXISTING STORMWATER CATCHMENT PLAN

HYDER CONSULTING PTY LTD
ABN 76 104 485 289
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Australia
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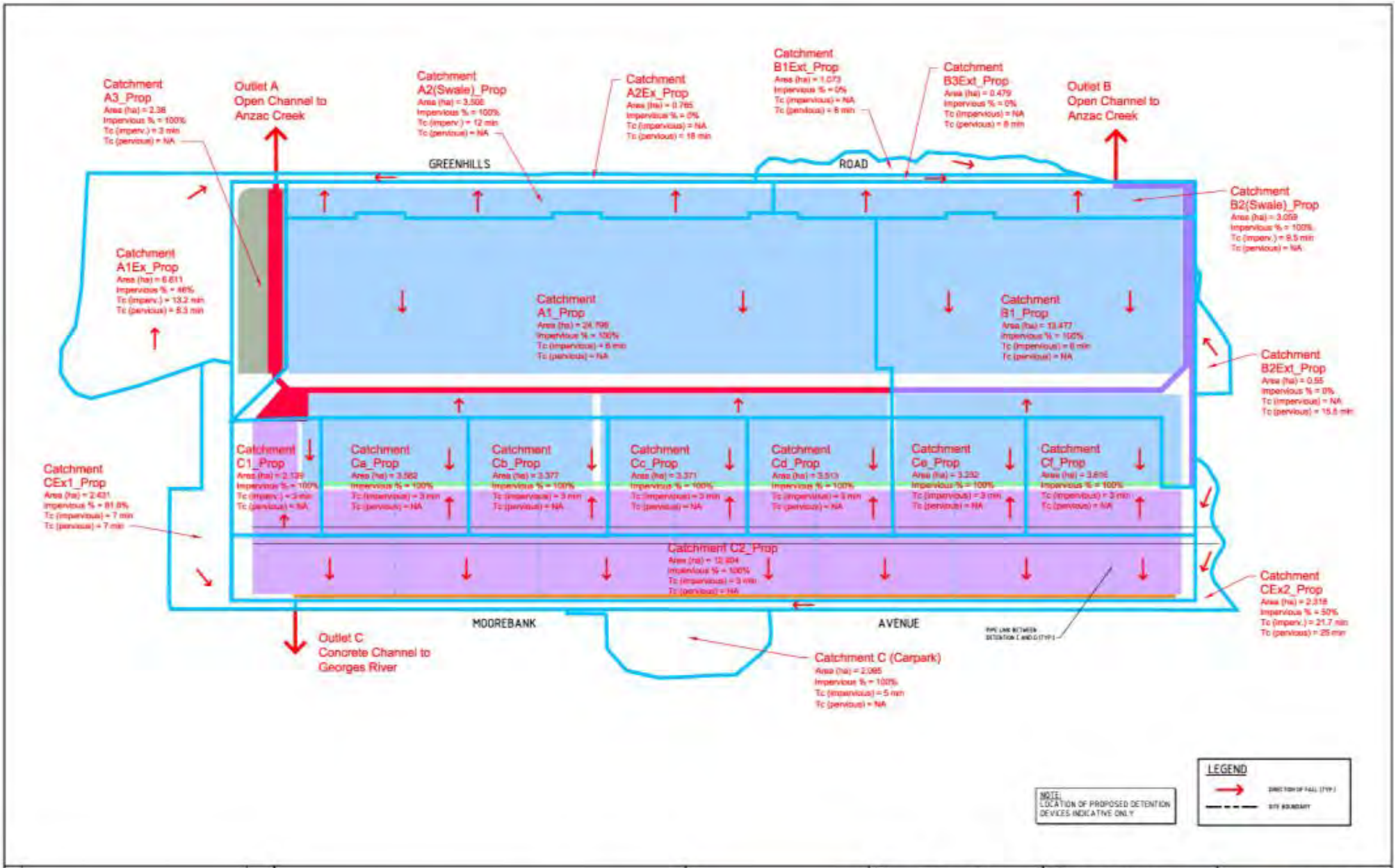
Drawing No. CP020 | Project No. AA003210 | Issue 02

Date Plotted: 15 Aug 2011 - 10:16AM File Name: P:\AA003210\12-CAD\12-Civil\Concept\CP020-AA003210-M02-00-CP-Existing_Catchment_Plan.dwg



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01	ISSUE FOR REVIEW	01/08/19

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Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	1 : 2500	Current Issue Signatures	
		Drawn	B. BALL
Original Size	A1	Designed	T. MUCCILLARO
Height Datum	AHD	Checked	B. SMITH
Grid	MGA	Approved	J. McDERMOTT
Filename			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: PROPOSED STORMWATER CATCHMENT PLAN

Hyder

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Drawing No	Project No	Issue
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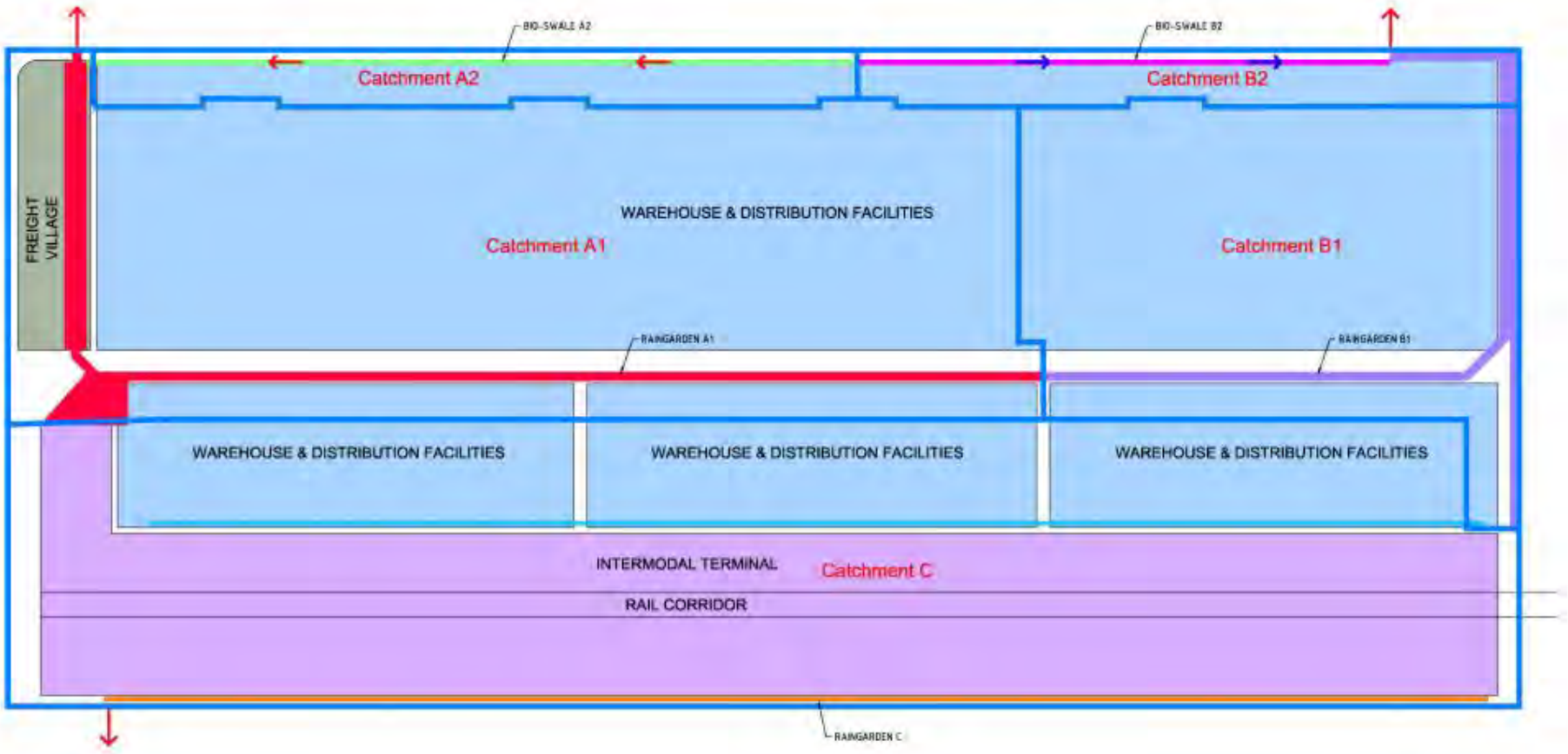

NOTE:
LOCATION OF PROPOSED STORMWATER QUALITY DEVICES INDICATIVE ONLY

Issue	Description	Date
02	ISSUE FOR REVIEW	12/08/11
01	ISSUE FOR REVIEW	03/06/10

0 50 100 150 200m
1 : 2000

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	1 : 2000	Current Issue Signatures	
		Drawn	D. BALL
Original Size	A1	Designed	C. PALLELLAND
Height Datum	AHD	Checked	D. SMITH
Grid	MGA	Approved	J. MAGERMOOT
Filename			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: STORMWATER QUALITY CONCEPT PLAN

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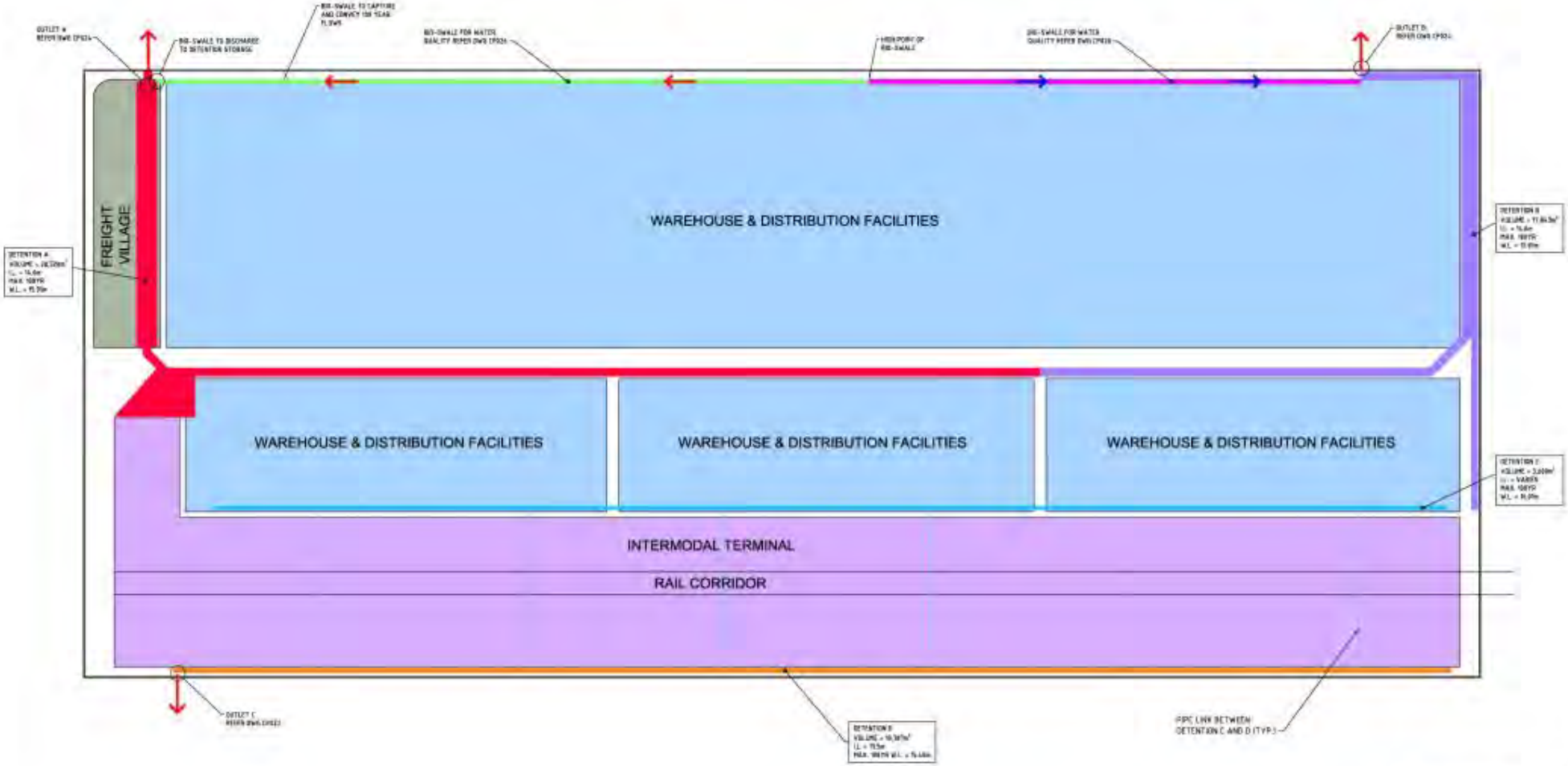
Drawing No. CP022 — Project No. AA003210 — Issue 02

Date Plotted: 11 Aug 2010 - 10:13AM File Name: F:\AA003210\CAD\C-Cad\C-Concept\CP022-AA003210-R02-00-CP-Stormwater_Quality_Concept_Plan.dwg



NOTE:
LOCATION OF PROPOSED STORMWATER QUALITY DEVICES INDICATIVE ONLY

Issue	Description	Date
02	ISSUE FOR REVIEW	12/08/11
01	ISSUE FOR REVIEW	03/08/10

1 : 2000

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

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Original Size	A1	Designed	C. YALLELAND
Height Datum	AHD	Checked	R. SMITH
Grid	MGA	Approved	J. McDERMOTT
Filename:			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: STORMWATER QUANTITY CONCEPT PLAN

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Drawing No	Project No	Issue
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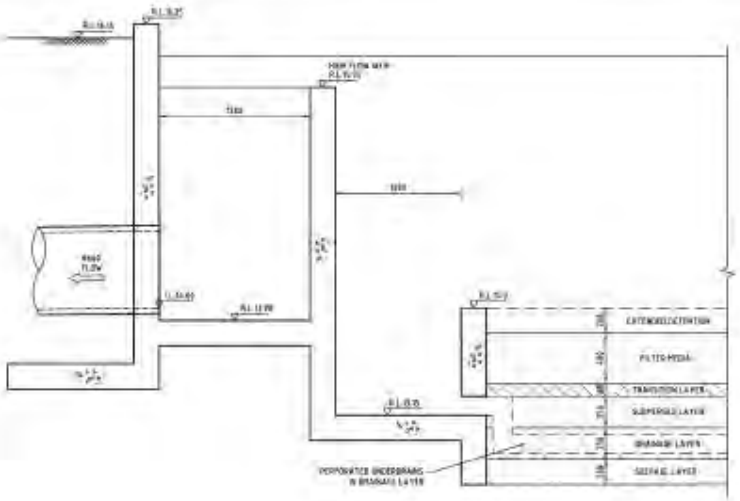

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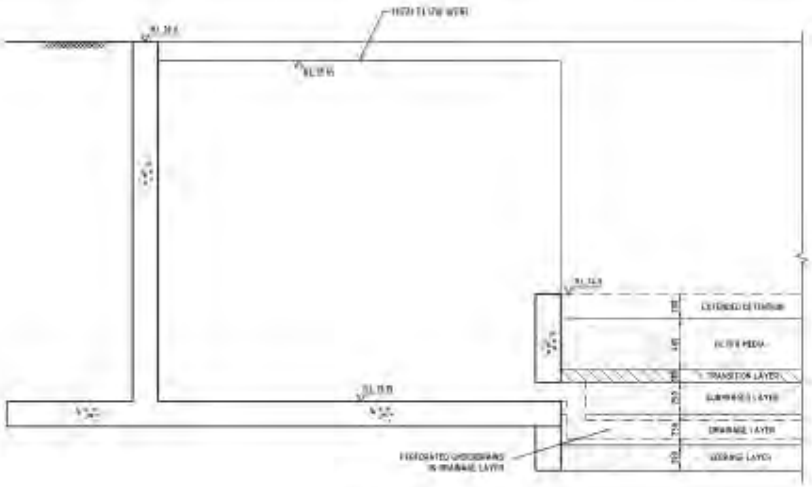

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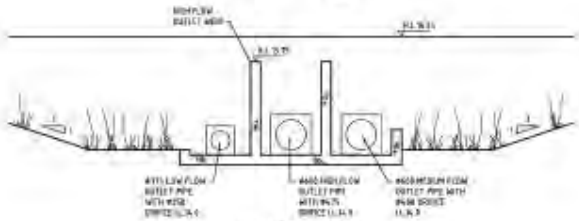

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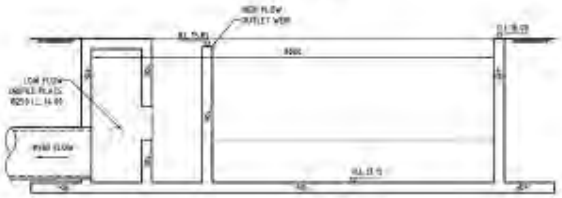

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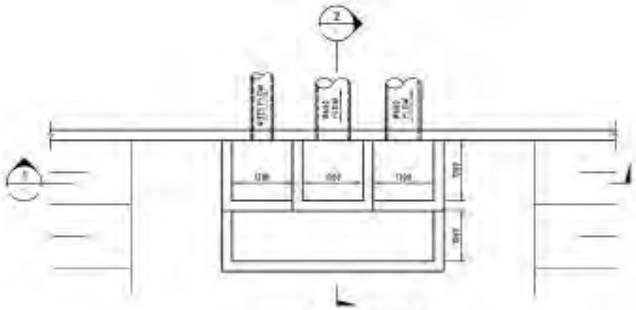

DRAINAGE OUTLET A
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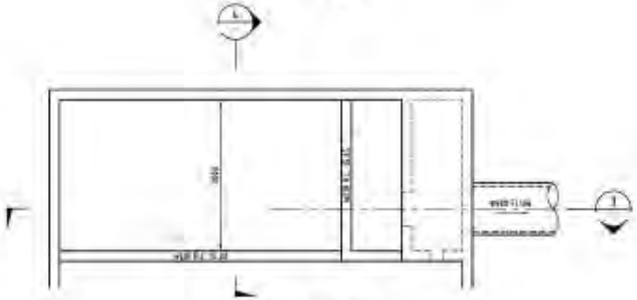

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Issue	Description	Date
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01	ISSUE FOR REVIEW	03/08/10

1:20

1:50

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	AS SHOWN	Drawn	S. BALL
Original Size	A1	Designed	R. KASSELL
Height Datum	AHD	Checked	B. SMITH
Zone	IMGA	Approved	J. HUDERMOTT

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: STORMWATER DRAINAGE DETAILS SHEET 1 OF 4

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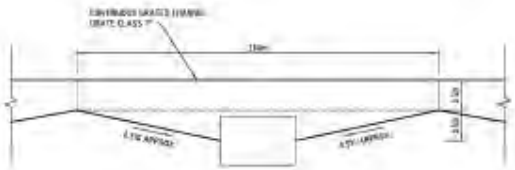
Drawing No: CP024 — Project No: AA003210 — Issue: 02



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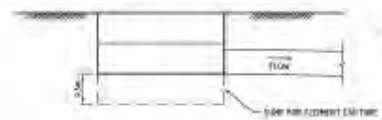
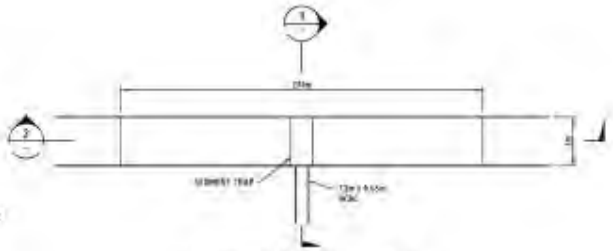
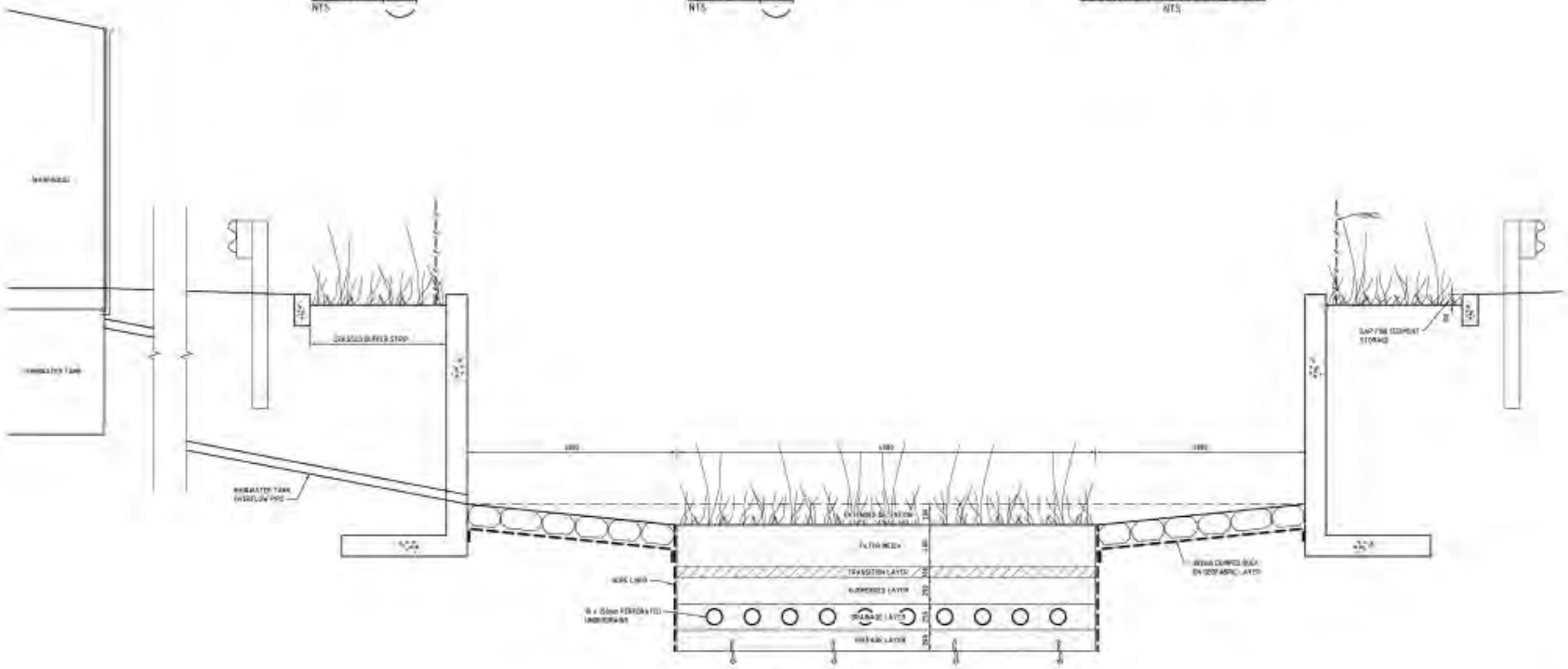


SECTION 1
NTS



DETENTION 'C' CHANNEL PLAN
NTS



TYPICAL CROSS SECTION
CENTRAL CHANNEL BIO-RETENTION (DETENTION 'A' & 'B')
NTS

Issue	Description	Date
02	ISSUE FOR REVIEW	[illegible]
01	ISSUE FOR REVIEW	[illegible]

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scale	AS SHOWN	Drawn	D. BALL
Original Size	A1	Designed	R. RUSSELL
Height Datum	AHD	Checked	R. SMITH
Grid	MGA	Approved	J. McDERMOTT

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: STORMWATER DRAINAGE DETAILS SHEET 2 OF 4

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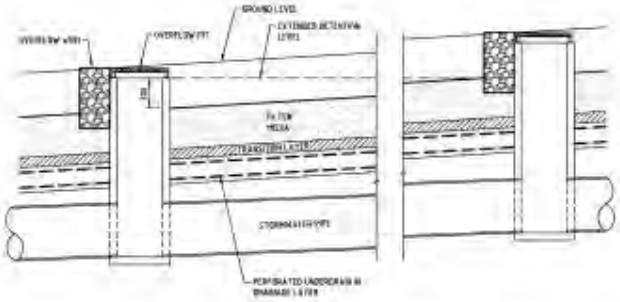
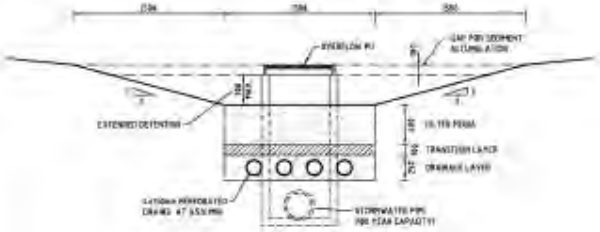
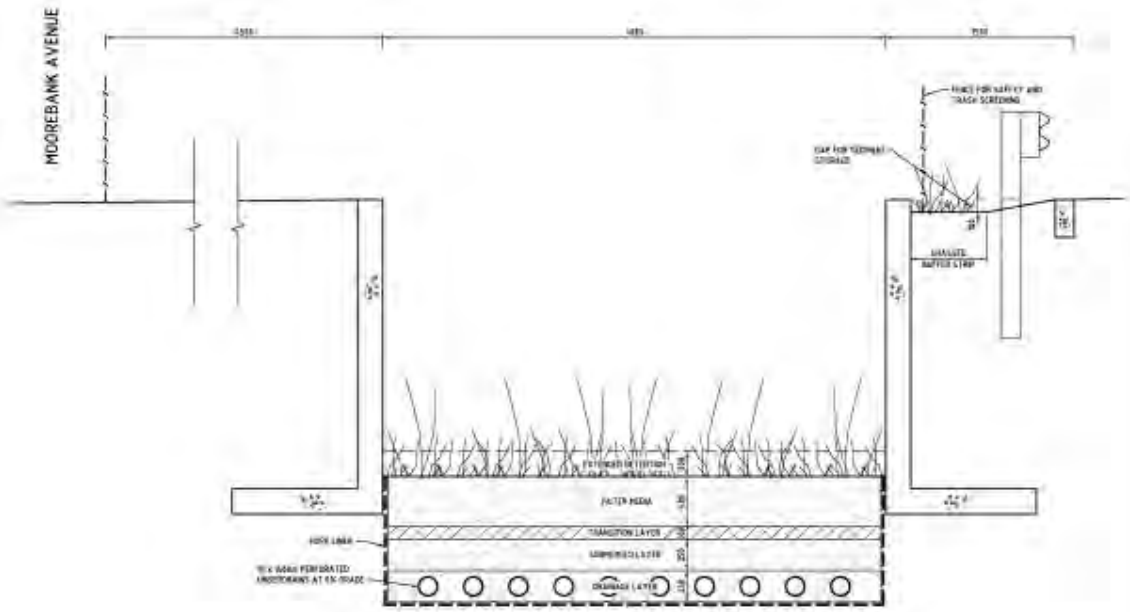
Drawing No. CP025 — Project No. AA003210 — Issue 02



BIO SWALE
TYPICAL LONGITUDINAL SECTION
NTS



BIO SWALE
TYPICAL CROSS SECTION
NTS



TYPICAL CROSS SECTION
CHANNEL ALONG MOOREBANK AVENUE (DETENTION 'D')
NTS

Issue	Description	Date
02	ISSUE FOR REVIEW	22/08/11
01	ISSUE FOR REVIEW	03/08/11

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scale	AS SHOWN	Current Issue Signatures
Original Size	A1	Drawn: D. BALL
Height Datum	AHD	Designed: R. WOODALL
Grid	MGA	Checked: R. SMITH
Filename:		Approved: J. MCDERMOTT

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: STORMWATER DRAINAGE DETAILS SHEET 3 OF 4

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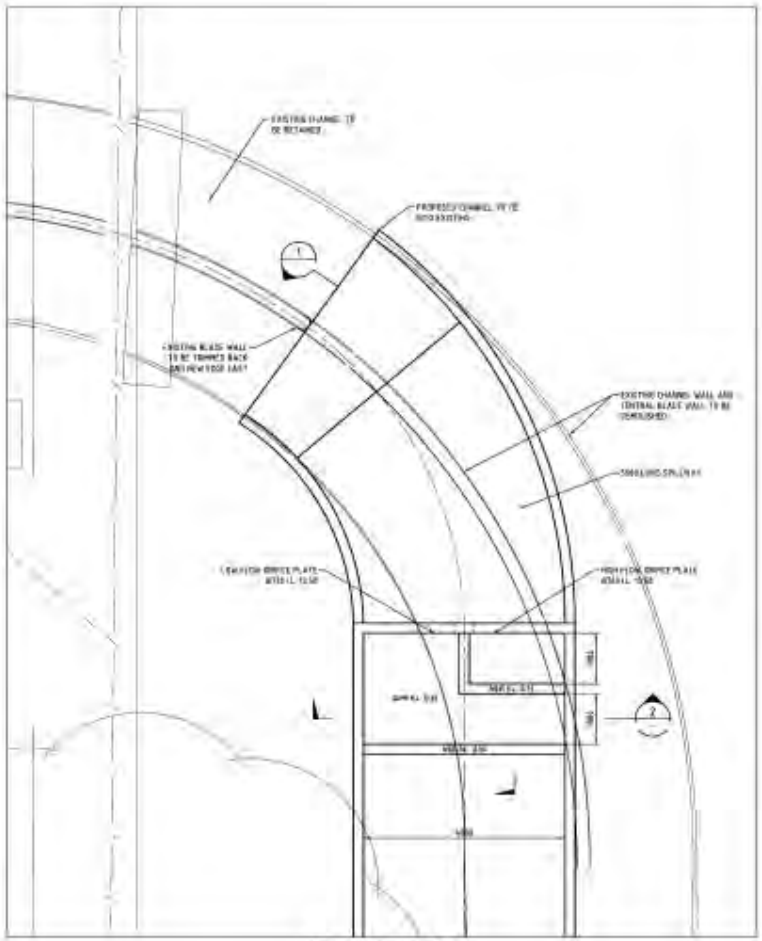
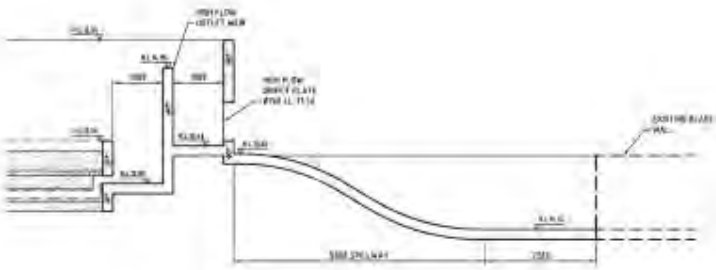


DRAINAGE OUTLET C
1:50



SECTION 1
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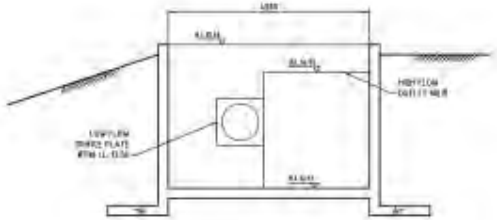

SECTION 2
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Issue	Description	Date
20	ISSUE FOR REVIEW	[illegible]
01	ISSUE FOR REVIEW	[illegible]

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scale	AS SHOWN	Drawn	[illegible]
Original Size	A1	Designed	[illegible]
Sheet Size	AHD	Checked	[illegible]
Grid	MGA	Approved	[illegible]

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: STORMWATER DRAINAGE DETAILS SHEET 4 OF 4

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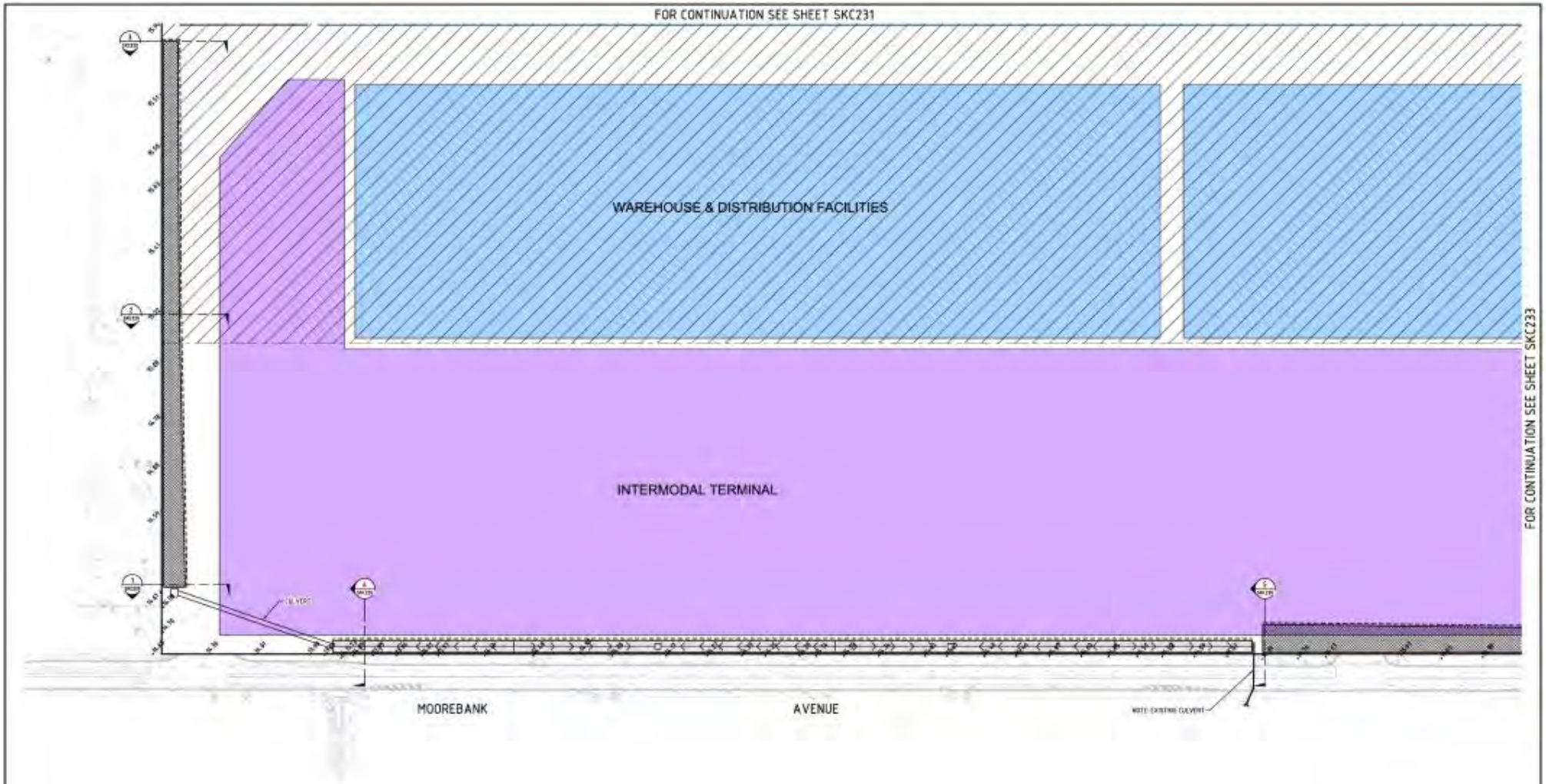

Issue	Description	Date
01	FOR INFORMATION ONLY	17/08/12

1 : 1000

Client: SIMTA

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1 : 1000	Drawn	S. BALL
Original Size	A1	Designed	T. MUSELLAMS
Height Datum	AHD	Checked	S. WEE
Grid	MGA	Approved	K. McMILLAN
Filename			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: CIVIL DESIGN OPTIONS FOR STORMWATER PLAN LAYOUT SHEET 1 OF 4

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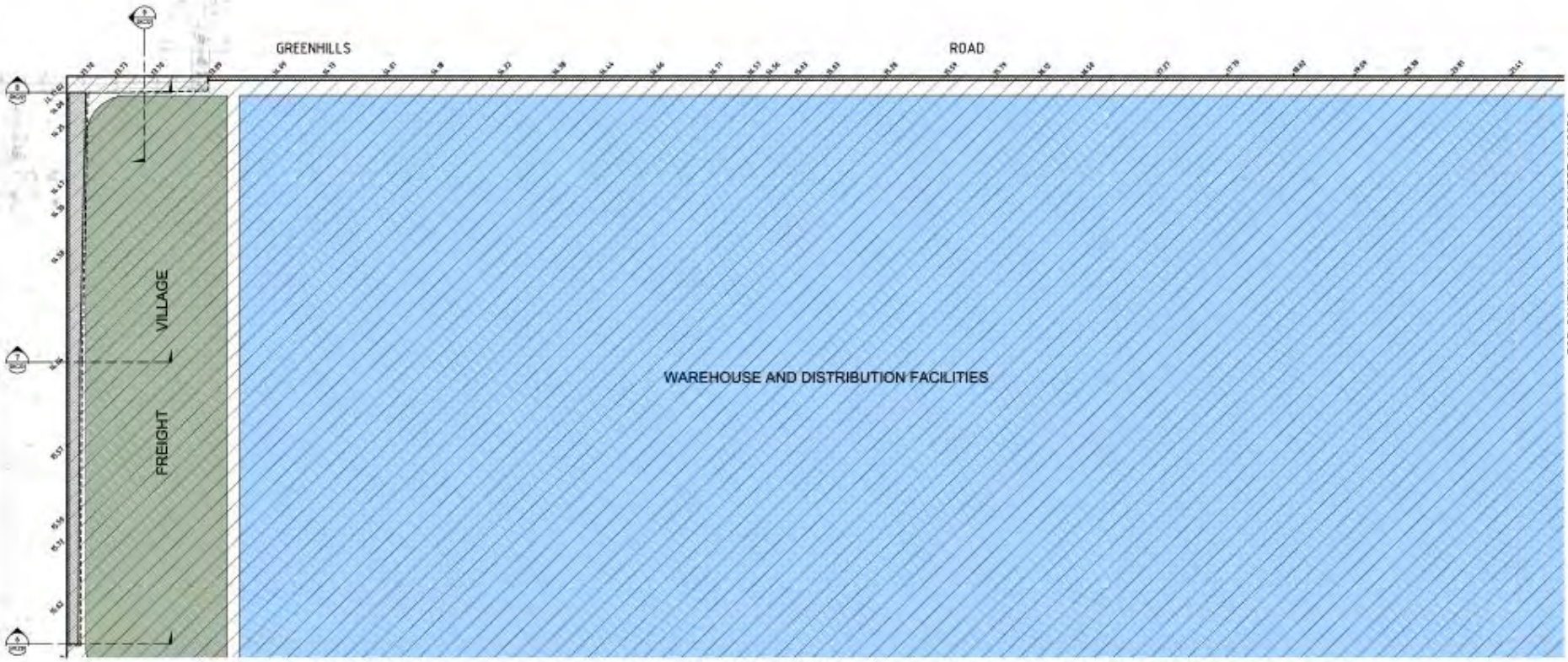
Drawing No.	Project No.	Issue
SKC230	AA003210	01



LEGEND

- INDICATES WATERWAY CORRIDOR
- INDICATES CULVERT AND SWALE CORRIDOR
- SITE LEVELS ARE 0.2m HIGHER THAN INDICATED IN CURRENT CIVIL DESIGN DRAWINGS

Issue	Description	Date
01	FOR INFORMATION ONLY	12/08/11

1 : 1000

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	1 : 1000	Current Issue Signatures: Drawn	D. BALL
Original Size	A1	Designed	C. MITCHELLAND
Height Datum	AHD	Checked	G. IVES
Grid	MGA	Approved	N. MAHLLAN
Filename			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: CIVIL DESIGN OPTIONS FOR STORMWATER PLAN LAYOUT SHEET 2 OF 4

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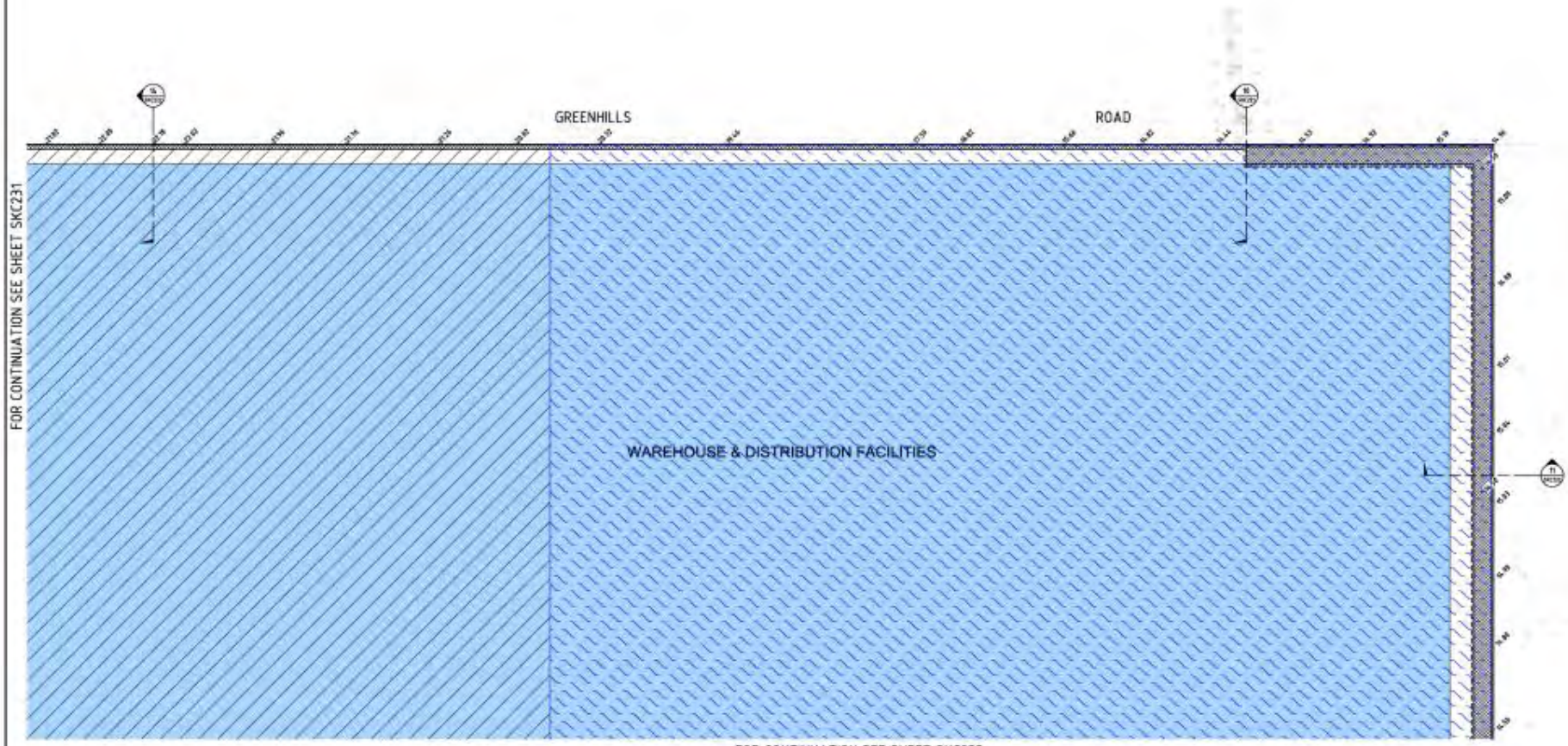
Drawing No.	Project No.	Issue
SKC231	AA003210	01



LEGEND

- INDICATES MAINWAY CORRIDOR
- INDICATES CULVERT AND SWALE CORRIDOR
- SITE LEVELS ARE 0.2m HIGHER THAN INDICATED IN CURRENT CIVIL DESIGN DRAWINGS
- SITE LEVELS ARE 0.4m HIGHER THAN INDICATED IN CURRENT CIVIL DESIGN DRAWINGS

Issue	Description	Date
01	FOR INFORMATION ONLY	17/08/11

1 : 1000

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures
Scales	1 : 1000	Drawn: D. BALL
Original Size	A1	Designed: E. McCLELLAND
Height Datum	AHD	Checked: G. IVES
Grid	MGA	Approved: N. McMILLAN
Filename		

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: CIVIL DESIGN OPTIONS FOR STORMWATER PLAN LAYOUT SHEET 3 OF 4

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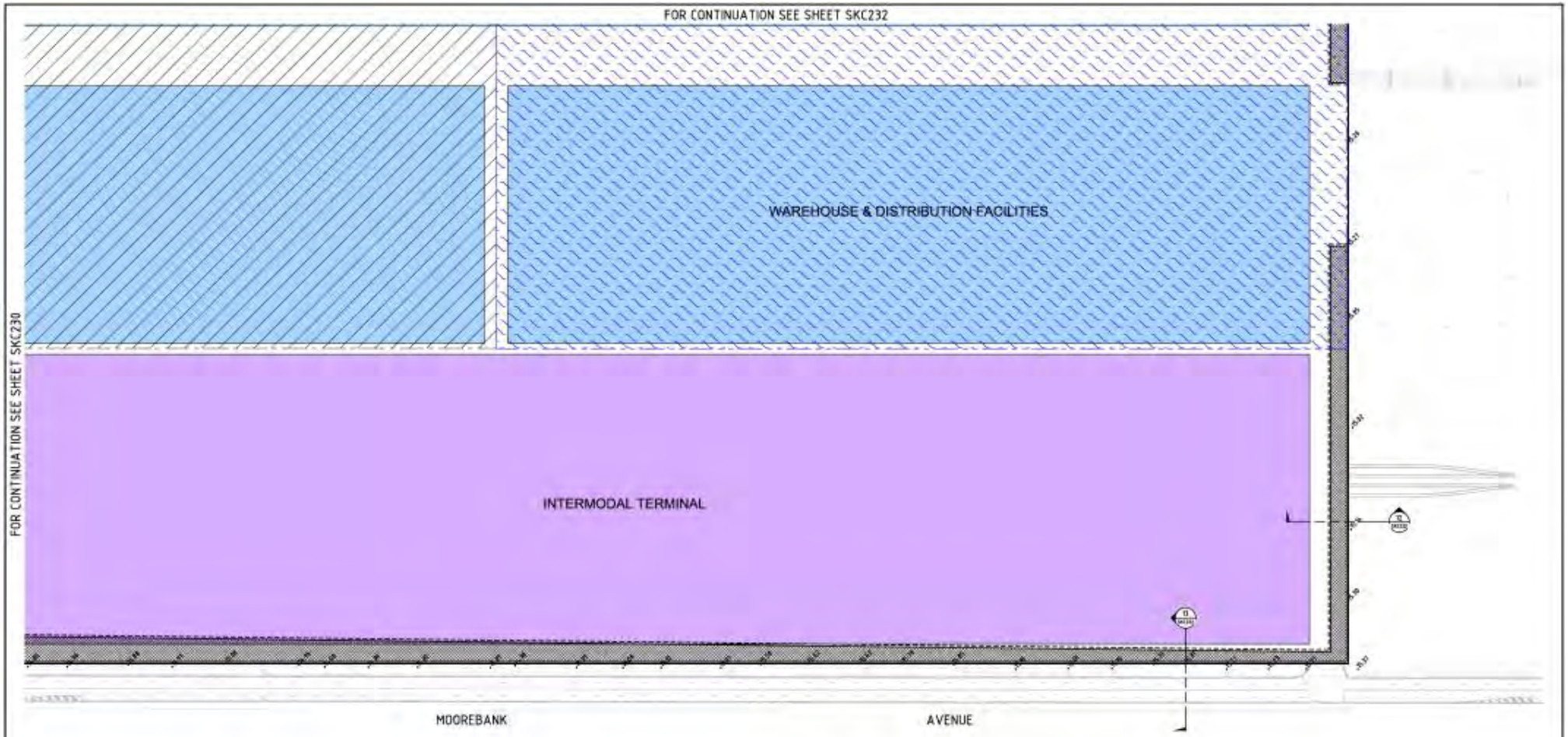
Drawing No.	Project No.	Issue
SKC232	AA003210	01



LEGEND

- INDICATES WATERWAY CORRIDOR
- INDICATES CULVERT AND SWALE CORRIDOR
- SITE LEVELS ARE 0.2m HIGHER THAN INDICATED IN CURRENT CIVIL DESIGN DRAWINGS
- SITE LEVELS ARE 0.4m HIGHER THAN INDICATED IN CURRENT CIVIL DESIGN DRAWINGS

Issue	Description	Date
01	FOR INFORMATION ONLY	12/08/11

1 : 1000

Client: SIMTA

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures
Scales	1 : 1000	Drawn: E. BALL
Original Size	A1	Designed: K. HUTCHLAND
Height Datum	AHD	Checked: G. IVES
Grid	MGA	Approved: N. HUNLLAN
Filename:		

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: CIVIL DESIGN OPTIONS FOR STORMWATER PLAN LAYOUT SHEET 4 OF 4

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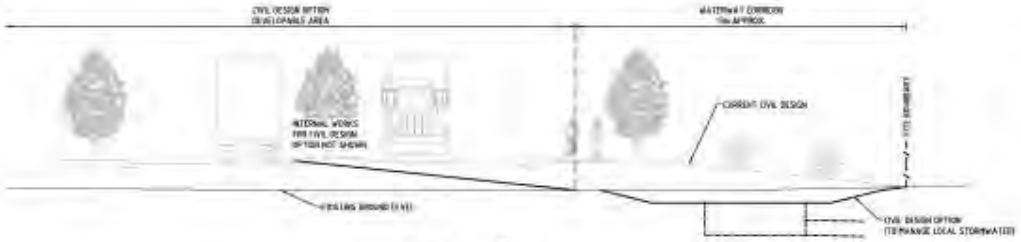
Drawing No. SKC233 | Project No. AA003210 | Issue 01

Date Plotted: 12 Aug 2011 - 8:51PM File Name: P:\AA003210\12-CAD\12-Civil\18-Sketches\SKC233-Drainage_Element_Strategy_Sheet_4.dwg



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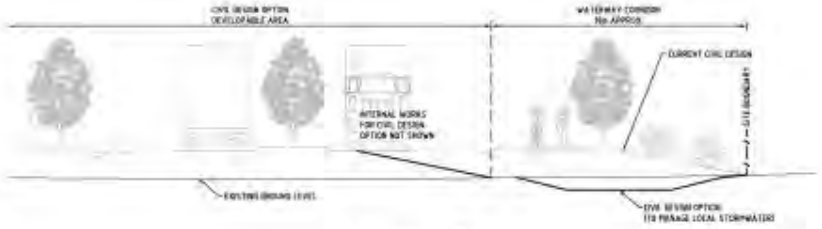

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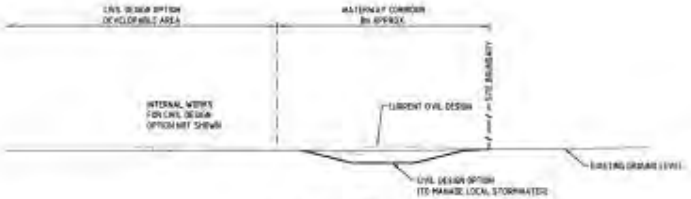

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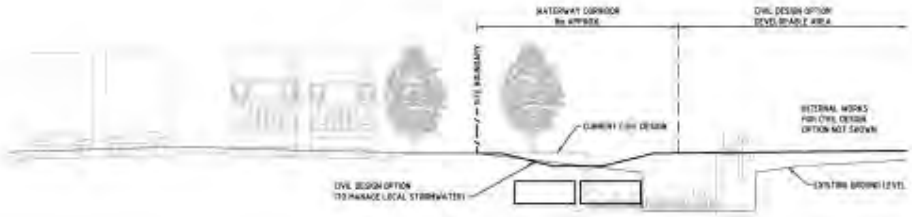

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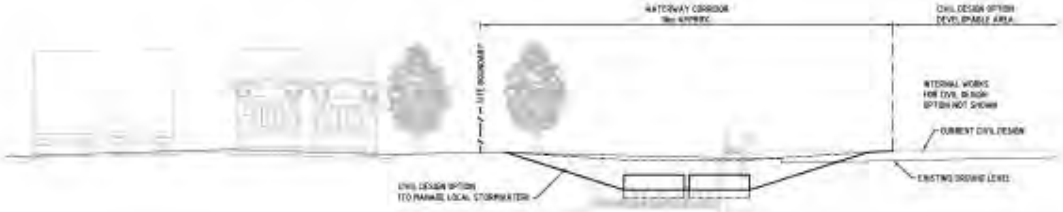

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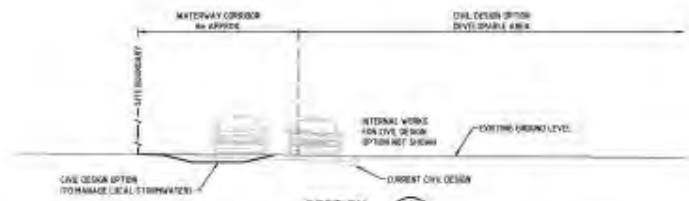

SECTION 6
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NOTE:
SUBSOIL DRAINAGE SYSTEM TO BE PROVIDED IN WATERWAY CORRIDORS (NOT SHOWN)

Issue	Description	Date
01	FOR INFORMATION ONLY	[illegible]

1 / 100

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	AS SHOWN	Current Issue Signatures	
		Drawn	D. BALL
Original Size	A1	Designed	C. MCCLELLAND
Height Datum	AHD	Checked	G. IVES
Grid	MGA	Approved	H. McMILLAN
Filename			

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: CIVIL DESIGN OPTIONS FOR STORMWATER SECTIONS SHEET 1 OF 3

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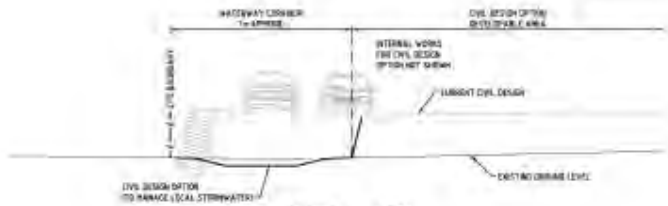
Drawing No.	Project No.	Issue
SKC220	AA003210	01

Date Plotted: 12 Aug 2011 - 3:03PM File Name: F:\AA003210\E-CAD\2-Civil\B-Sketches\SKC220-Drainage_Concept_Sections_Sheet_1.dwg



SECTION 7
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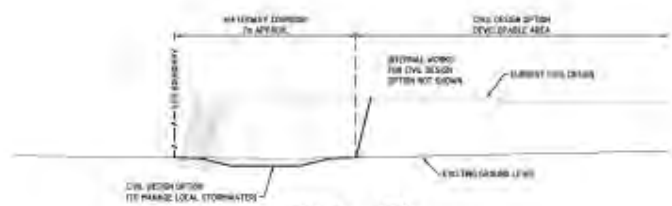

SECTION 8
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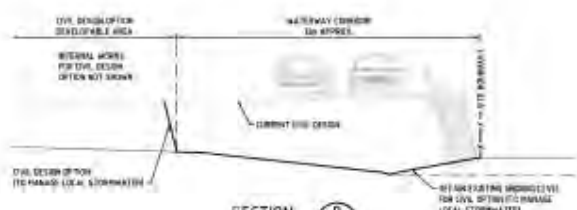

SECTION 9
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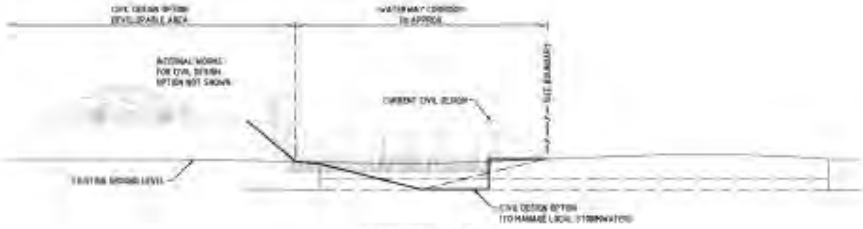

SECTION 10
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NOTE:
SUBSOIL DRAINAGE SYSTEM TO BE PROVIDED IN WATERWAY CORRIDORS NOT SHOWN

Issue	Description	Date
01	FOR INFORMATION ONLY	[illegible]

1:100

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scale	AS SHOWN	Drawn	[illegible]
Original Size	A1	Designed	[illegible]
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Grid	MGA	Approved	[illegible]

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: CIVIL DESIGN OPTIONS FOR STORMWATER SECTIONS SHEET 2 OF 3

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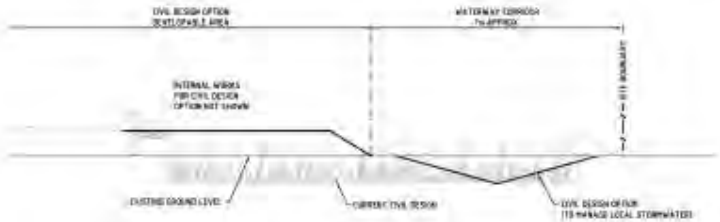

SECTION 11
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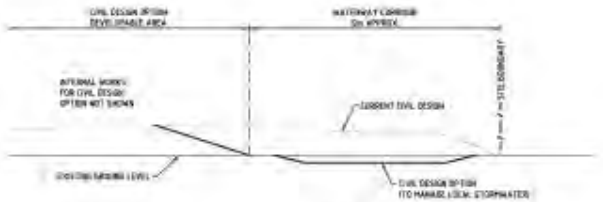

SECTION 12
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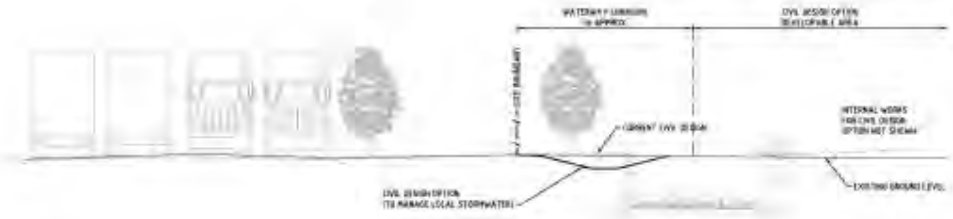

SECTION 13
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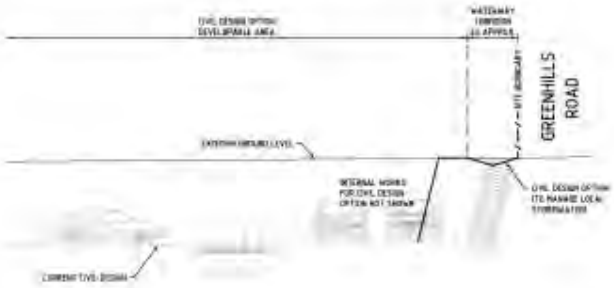

SECTION 14
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NOTE:
SUBSOIL DRAINAGE SYSTEM TO BE PROVIDED IN WATERWAY CORRIDORS (NOT SHOWN)

01	FOR ANOMALOUS DA	17/08/11
Issue	Description	Date

1:100

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	AS SHOWN	Issued for Issue Signatories	
		Drawn	D. BELL
Original Size	A1	Designed	C. TAGLIALAMBE
Height Datum	AHD	Checked	D. IVES
Grid	MGA	Approved	M. MCMILLAN

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: CIVIL DESIGN OPTIONS FOR STORMWATER SECTIONS SHEET 3 OF 3

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Date Plotted: 12 Aug 2011 - 03:03 PM | File Name: T:\AA003210\CAD\C-Civil\SK\Sheet\SKC222-03.dwg | Xref: Drawn_Checked_Sections_Sheet_1.dwg

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