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


#########################################################################
#####
                        RUNTIME          RESULTS
#########################################################################
#####

Max. no. of links allowed =       1500

Max. no. of routng increments allowed =     250000

Max. no. of rating curve points =     250000

Max. no. of storm temporal points =     250000

Max. no. of channel subreaches =         25

Max link stack level =         50

Input Version number =          800

 LINK S1.0              1.000

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

 LINK S3.0              1.000

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

 LINK D1                1.000

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

 LINK S2.0              1.000

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

 LINK B                 1.000

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

 LINK B1                1.000

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

 LINK S2.1              1.000
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ESTIMATED VOLUME (CU METRES*10**3) =                174.4
ESTIMATED PEAK FLOW          (CUMECS) =                 11.
ESTIMATED TIME TO PEAK          (MINS) =             330.00

LINK S4.0              1.000

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

LINK S1.1              1.000

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

LINK D2                1.000

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

LINK S5.0              1.000

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

LINK D3                1.000

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

LINK S1.2              1.000

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

LINK S7.0              1.000

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

LINK D4                1.000

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

LINK S9.0              1.000

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

LINK A                 1.000

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

LINK S6.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                98.53
ESTIMATED PEAK FLOW          (CUMECS) =                  7.2
ESTIMATED TIME TO PEAK          (MINS) =             330.00
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LINK D5                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                1063.
ESTIMATED PEAK FLOW          (CUMECS) =               73.
ESTIMATED TIME TO PEAK          (MINS) =           333.00

LINK S10.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =               20.98
ESTIMATED PEAK FLOW          (CUMECS) =              1.8
ESTIMATED TIME TO PEAK          (MINS) =           330.00

LINK S8.0               1.000

ESTIMATED VOLUME (CU METRES*10**3) =               81.28
ESTIMATED PEAK FLOW          (CUMECS) =              6.5
ESTIMATED TIME TO PEAK          (MINS) =           300.00

LINK S8.1               1.000

ESTIMATED VOLUME (CU METRES*10**3) =               99.88
ESTIMATED PEAK FLOW          (CUMECS) =              8.1
ESTIMATED TIME TO PEAK          (MINS) =           300.00

LINK D6                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                1184.
ESTIMATED PEAK FLOW          (CUMECS) =               82.
ESTIMATED TIME TO PEAK          (MINS) =           335.00

LINK S12.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =               52.28
ESTIMATED PEAK FLOW          (CUMECS) =              4.4
ESTIMATED TIME TO PEAK          (MINS) =           300.00

LINK S11.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =               26.87
ESTIMATED PEAK FLOW          (CUMECS) =              2.5
ESTIMATED TIME TO PEAK          (MINS) =           300.00

LINK D7                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                1263.
ESTIMATED PEAK FLOW          (CUMECS) =               87.
ESTIMATED TIME TO PEAK          (MINS) =           339.00

LINK S13.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =               167.1
ESTIMATED PEAK FLOW          (CUMECS) =               15.
ESTIMATED TIME TO PEAK          (MINS) =           300.00

LINK S14.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =               7.886
ESTIMATED PEAK FLOW          (CUMECS) =             0.77
ESTIMATED TIME TO PEAK          (MINS) =           300.00

LINK S14.1              1.000

ESTIMATED VOLUME (CU METRES*10**3) =               20.98
ESTIMATED PEAK FLOW          (CUMECS) =              1.9
ESTIMATED TIME TO PEAK          (MINS) =           300.00

LINK D8                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                1451.
ESTIMATED PEAK FLOW          (CUMECS) =               99.
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ESTIMATED TIME TO PEAK         (MINS) =             330.00

LINK S16.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =               87.47
ESTIMATED PEAK FLOW          (CUMECS) =                8.5
ESTIMATED TIME TO PEAK         (MINS) =             300.00

LINK S15.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =               32.40
ESTIMATED PEAK FLOW          (CUMECS) =                3.3
ESTIMATED TIME TO PEAK         (MINS) =             300.00

LINK D9                1.000

ESTIMATED VOLUME (CU METRES*10**3) =               1571.
ESTIMATED PEAK FLOW          (CUMECS) =             0.11E+03
ESTIMATED TIME TO PEAK         (MINS) =             330.00

LINK S17.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =               134.6
ESTIMATED PEAK FLOW          (CUMECS) =                12.
ESTIMATED TIME TO PEAK         (MINS) =             300.00

LINK S17.1             1.000

ESTIMATED VOLUME (CU METRES*10**3) =               180.5
ESTIMATED PEAK FLOW          (CUMECS) =                17.
ESTIMATED TIME TO PEAK         (MINS) =             300.00

LINK S18.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =               46.57
ESTIMATED PEAK FLOW          (CUMECS) =                4.3
ESTIMATED TIME TO PEAK         (MINS) =             300.00

LINK D10               1.000

ESTIMATED VOLUME (CU METRES*10**3) =               1798.
ESTIMATED PEAK FLOW          (CUMECS) =             0.12E+03
ESTIMATED TIME TO PEAK         (MINS) =             330.00

LINK S19.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =               53.68
ESTIMATED PEAK FLOW          (CUMECS) =                5.2
ESTIMATED TIME TO PEAK         (MINS) =             300.00

LINK S20.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =               46.35
ESTIMATED PEAK FLOW          (CUMECS) =                4.6
ESTIMATED TIME TO PEAK         (MINS) =             300.00

LINK Outlet            1.000

ESTIMATED VOLUME (CU METRES*10**3) =               1898.
ESTIMATED PEAK FLOW          (CUMECS) =             0.13E+03
ESTIMATED TIME TO PEAK         (MINS) =             327.00
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##############################################################################
#####
Existing - 100 year re-run - Hyder Sept 2010

Results for period from  0: 0.0  1/ 1/1990
                     to 16:40.0  1/ 1/1990
##############################################################################
#####
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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 540.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 689.69
TOTAL OF SECOND SUB-AREAS (ha) = 386.68
TOTAL OF ALL SUB-AREAS (ha) = 1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA

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

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

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

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

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

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


#########################################################################
#####
                          RUNTIME          RESULTS
#########################################################################
#####

Max. no. of links allowed =       1500

Max. no. of routng increments allowed =     250000

Max. no. of rating curve points =     250000

Max. no. of storm temporal points =     250000

Max. no. of channel subreaches =         25

Max link stack level =         50

Input Version number =          800

 LINK S1.0              1.000

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

 LINK S3.0              1.000

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

 LINK D1                1.000

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

 LINK S2.0              1.000

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

 LINK B                 1.000

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

 LINK B1                1.000

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

 LINK S2.1              1.000
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ESTIMATED VOLUME (CU METRES*10**3) =                343.4
ESTIMATED PEAK FLOW          (CUMECS) =                50.
ESTIMATED TIME TO PEAK          (MINS) =               57.00

LINK S4.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                66.59
ESTIMATED PEAK FLOW          (CUMECS) =                19.
ESTIMATED TIME TO PEAK          (MINS) =               27.00

LINK S1.1              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                96.46
ESTIMATED PEAK FLOW          (CUMECS) =                15.
ESTIMATED TIME TO PEAK          (MINS) =               60.00

LINK D2                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                1171.
ESTIMATED PEAK FLOW          (CUMECS) =                 0.23E+03
ESTIMATED TIME TO PEAK          (MINS) =               57.00

LINK S5.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                42.22
ESTIMATED PEAK FLOW          (CUMECS) =                15.
ESTIMATED TIME TO PEAK          (MINS) =               27.00

LINK D3                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                1213.
ESTIMATED PEAK FLOW          (CUMECS) =                 0.24E+03
ESTIMATED TIME TO PEAK          (MINS) =               64.00

LINK S1.2              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                140.6
ESTIMATED PEAK FLOW          (CUMECS) =                31.
ESTIMATED TIME TO PEAK          (MINS) =               53.00

LINK S7.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                478.7
ESTIMATED PEAK FLOW          (CUMECS) =                 0.11E+03
ESTIMATED TIME TO PEAK          (MINS) =               27.00

LINK D4                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                1832.
ESTIMATED PEAK FLOW          (CUMECS) =                 0.32E+03
ESTIMATED TIME TO PEAK          (MINS) =               60.00

LINK S9.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                26.02
ESTIMATED PEAK FLOW          (CUMECS) =                 9.3
ESTIMATED TIME TO PEAK          (MINS) =               27.00

LINK A                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                90.04
ESTIMATED PEAK FLOW          (CUMECS) =                23.
ESTIMATED TIME TO PEAK          (MINS) =               27.00

LINK S6.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                186.7
ESTIMATED PEAK FLOW          (CUMECS) =                44.
ESTIMATED TIME TO PEAK          (MINS) =               43.00
```

```
LINK D5                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                2045.
ESTIMATED PEAK FLOW          (CUMECS) =              0.36E+03
ESTIMATED TIME TO PEAK          (MINS) =             55.00

LINK S10.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                42.24
ESTIMATED PEAK FLOW          (CUMECS) =               11.
ESTIMATED TIME TO PEAK          (MINS) =             47.00

LINK S8.0               1.000

ESTIMATED VOLUME (CU METRES*10**3) =                146.5
ESTIMATED PEAK FLOW          (CUMECS) =               35.
ESTIMATED TIME TO PEAK          (MINS) =             27.00

LINK S8.1               1.000

ESTIMATED VOLUME (CU METRES*10**3) =                180.0
ESTIMATED PEAK FLOW          (CUMECS) =               45.
ESTIMATED TIME TO PEAK          (MINS) =             27.00

LINK D6                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                2267.
ESTIMATED PEAK FLOW          (CUMECS) =              0.40E+03
ESTIMATED TIME TO PEAK          (MINS) =             57.00

LINK S12.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                94.19
ESTIMATED PEAK FLOW          (CUMECS) =               26.
ESTIMATED TIME TO PEAK          (MINS) =             27.00

LINK S11.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                48.40
ESTIMATED PEAK FLOW          (CUMECS) =               16.
ESTIMATED TIME TO PEAK          (MINS) =             27.00

LINK D7                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                2409.
ESTIMATED PEAK FLOW          (CUMECS) =              0.42E+03
ESTIMATED TIME TO PEAK          (MINS) =             57.00

LINK S13.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                301.1
ESTIMATED PEAK FLOW          (CUMECS) =               89.
ESTIMATED TIME TO PEAK          (MINS) =             27.00

LINK S14.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                13.10
ESTIMATED PEAK FLOW          (CUMECS) =               5.4
ESTIMATED TIME TO PEAK          (MINS) =              9.00

LINK S14.1              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                36.72
ESTIMATED PEAK FLOW          (CUMECS) =               12.
ESTIMATED TIME TO PEAK          (MINS) =             27.00

LINK D8                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                2747.
ESTIMATED PEAK FLOW          (CUMECS) =              0.48E+03
```

```
ESTIMATED TIME TO PEAK         (MINS) =              57.00

LINK S16.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =              145.3
ESTIMATED PEAK FLOW          (CUMECS) =               58.
ESTIMATED TIME TO PEAK          (MINS) =             9.00

LINK S15.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =              60.05
ESTIMATED PEAK FLOW          (CUMECS) =               22.
ESTIMATED TIME TO PEAK          (MINS) =             27.00

LINK D9                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =              2952.
ESTIMATED PEAK FLOW          (CUMECS) =             0.50E+03
ESTIMATED TIME TO PEAK          (MINS) =             59.00

LINK S17.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =              232.8
ESTIMATED PEAK FLOW          (CUMECS) =               74.
ESTIMATED TIME TO PEAK          (MINS) =             27.00

LINK S17.1              1.000

ESTIMATED VOLUME (CU METRES*10**3) =              309.1
ESTIMATED PEAK FLOW          (CUMECS) =             0.10E+03
ESTIMATED TIME TO PEAK          (MINS) =             9.00

LINK S18.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =              88.04
ESTIMATED PEAK FLOW          (CUMECS) =               29.
ESTIMATED TIME TO PEAK          (MINS) =             33.00

LINK D10                1.000

ESTIMATED VOLUME (CU METRES*10**3) =              3349.
ESTIMATED PEAK FLOW          (CUMECS) =             0.57E+03
ESTIMATED TIME TO PEAK          (MINS) =             50.00

LINK S19.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =              89.17
ESTIMATED PEAK FLOW          (CUMECS) =               36.
ESTIMATED TIME TO PEAK          (MINS) =             9.00

LINK S20.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =              86.89
ESTIMATED PEAK FLOW          (CUMECS) =               31.
ESTIMATED TIME TO PEAK          (MINS) =             27.00

LINK Outlet             1.000

ESTIMATED VOLUME (CU METRES*10**3) =              3525.
ESTIMATED PEAK FLOW          (CUMECS) =             0.60E+03
ESTIMATED TIME TO PEAK          (MINS) =             45.00
```

```
################################################################################
#####
PMF

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

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

SUMMARY OF CATCHMENT AND RAINFALL DATA

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

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

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

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

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

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Appendix E

Anzac Creek TUFLOW model inputs and results – existing and proposed conditions

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LEGEND

Project Site Boundary

Flood Level Contour (m AHD)

Notes:

TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek. Adjustments were made to represent existing flow crossing the project site.

The mapping on this drawing represents TUFLOW model results for the 100 year ARI storm duration.

This figure may not represent local flow regimes away from the Anzac Creek corridor.

Aerial Imagery by NearMap

Client: SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)

Project: MOOREBANK INTERMODAL TERMINAL FACILITY

Scale 1:3000 @ A1

TUFLOW Grid Size: 5m

Datum: GDA94

Projection: MGA56

Title: ANZAC CREEK MODEL: 100 YEAR ARI FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR EXISTING CONDITION

Hyder

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Figure No	Project No	Issue
01	AA003210	01

LEGEND

Project Site Boundary
Line

Notes

TUFLOW modelling was undertaken using Liverpool City Councils' TUFLOW model for Anzac Creek (Ac_exg_100yAh_01_Blockage_25pc.tcf – TUFLOW Version 2009-06-BT). Adjustments were made to represent existing and proposed flows leaving the project site.

The mapping on this drawing represents TUFLOW model results for the 100 year ARI 9 hour storm duration.

The mapping is based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Bird and Forrester (August 2010).

TUFLOW Run Files (TUFLOW Version 2009-06-DB):
F:\AA003210\D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOW\runs\Creek\TUFLOW\runs\
Ac_ity_Exg100yAh_02.tcf
Ac_ity_Prop100yAh_02.tcf

Figure Workspace:
F:\AA003210\D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspaces\
100yr_Afflux_Anzac_Ck_Flood_Map.mxd

Aerial Imagery by Nearmap 2011-8

Client	SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)
Project	MOOREBANK INTERMODAL TERMINAL FACILITY
Scale: 1:2000 @ A1	
TUFLOW Grid Size: 5m	
Datum: GDA94	
Projection: MGA56	
Title	ANZAC CREEK MODEL CHANGE IN 100 YEAR ARI FLOW REGIMES BETWEEN EXISTING AND PROPOSED CONDITIONS

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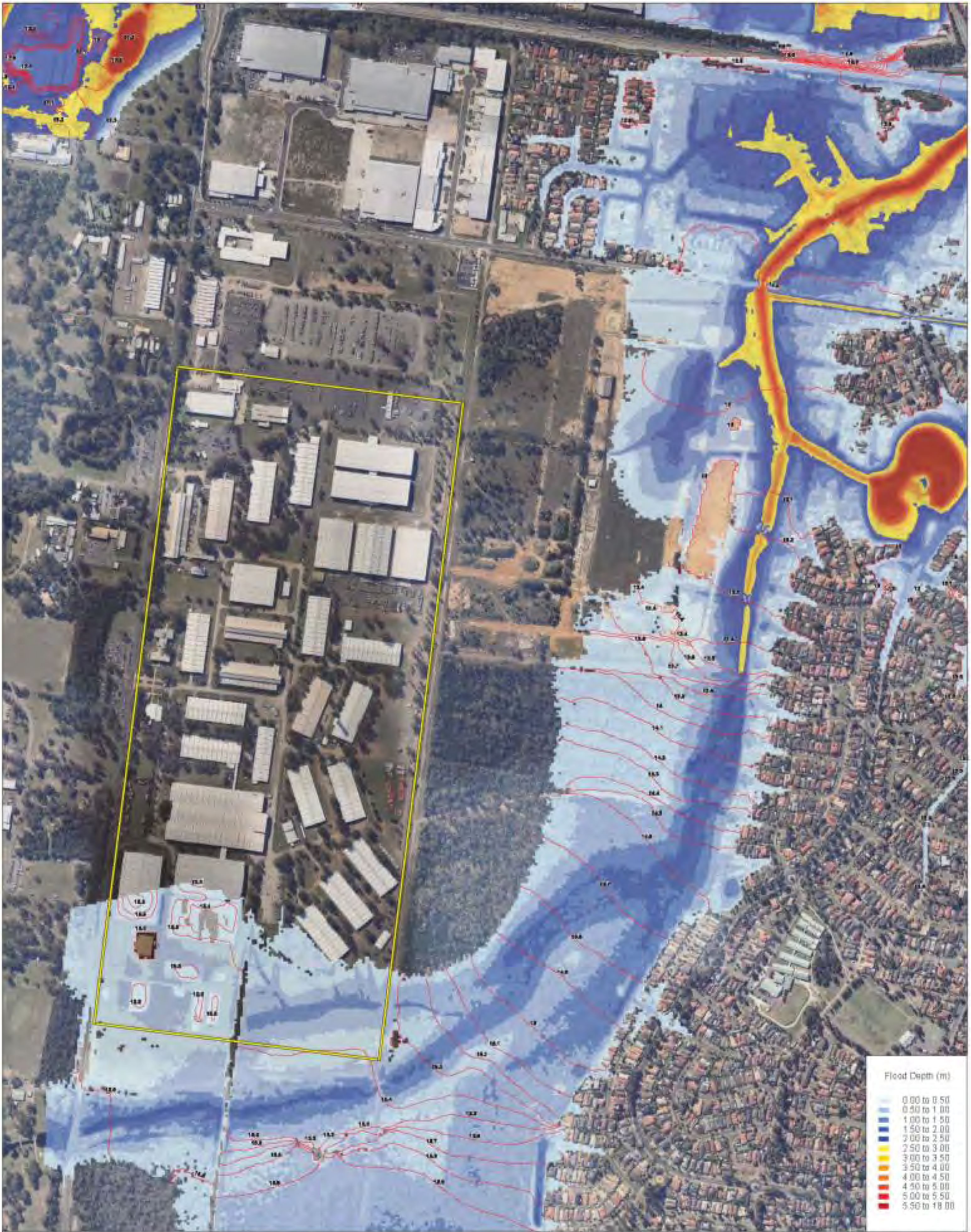
Figure No	Project No		Issue
E2	AA003210	N	01



LEGEND

Project Site Boundary

Notes:

TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (Ac_exg_PMF01_01.tcf : TUFLOW Version 2008-08-AF). Adjustments were made to represent existing flows leaving the project site.

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

Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forester (August 2010).

This figure may not represent local flow regimes away from the Anzac Creek corridor.

TUFLOW run files: (TUFLOW Version 2008-08-DB)
F:\AA003210\D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOW\runs\Ac_1h_ExgPMF16_01.tcf

Figure Workspace:
F:\AA003210\D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\PMF_Ex_Anzac_Ck_Flood_Map.wor

Aerial Imagery by NearMap 2011 ©

Client	SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)
Project	MOOREBANK INTERMODAL TERMINAL FACILITY
Scale	1:3500 @ A1
	TUFLOW Grid Size: 5m
	Datum: GDA94
	Projection: MGA56
Title	ANZAC CREEK MODEL: PROBABLE MAXIMUM FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR EXISTING CONDITION
Figure No	E3
Project No	AA003210
Issue	01

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Legend

Project Site Boundary
— Site

Flood Level Contour (m AHD)
— Site

Notes

TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (Ac_exg_PMF16_01.tcf - TUFLOW Version 2009-08-BY). Adjustments were made to represent proposed flows leaving the project site.

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

Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forrester (August 2010).

This figure may not represent local flow regimes away from the Anzac Creek corridor.

TUFLOW run files (TUFLOW Version 2009-08-DS):
F:\AA003210\D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOW\AnzacCreek\TUFLOW\runs\Ac_dv_PropPMF16_01.tcf

Figure Workspace:
F:\AA003210\D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\PMF_Proposed_Anzac_Ck_Flood_Map.mxd

Aerial Imagery by NearMap 2011-05

Client: SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)	Project: MOOREBANK INTERMODAL TERMINAL FACILITY
Scale: 1:3500 @ A1	Title: ANZAC CREEK MODEL: PROBABLE MAXIMUM FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR PROPOSED CONDITION
TUFLOW Grid Size: 5m	
Datum: GDA94	
Projection: MGA56	

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Figure No.	Project No.		Issue
E4	AA003210	N	01

LEGEND

Project Site Boundary

Notes

TUFLOW modelling was undertaken using Liverpool City Councils' TUFLOW model for Anzac Creek.

The mapping on this drawing represents flood depth afflux for the PMF 1 hour storm duration.

This figure may not represent local flow regimes and afflux away from the Anzac Creek corridor.

Aerial Imagery by NearMap 2011

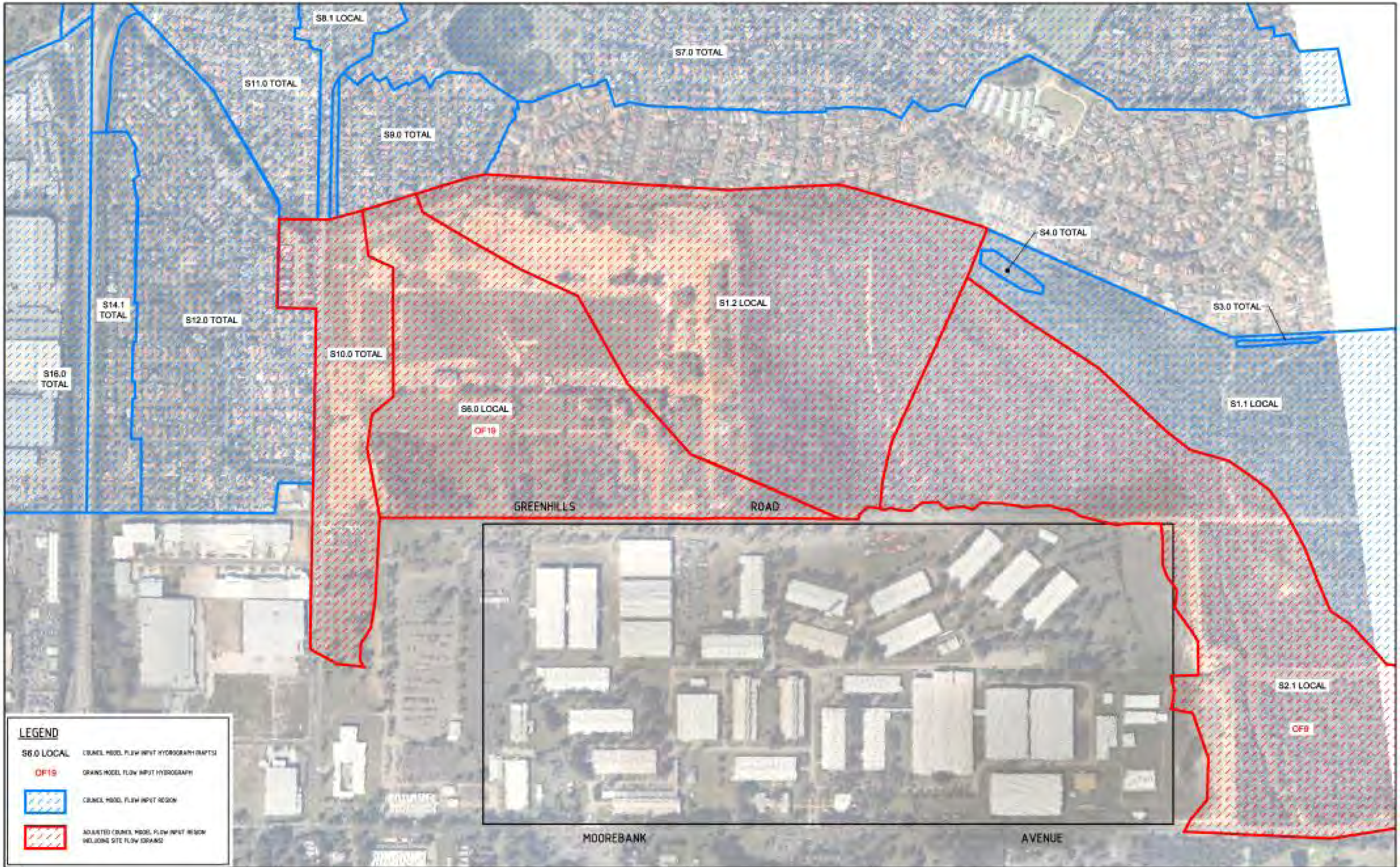
Client: SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)	Project: MOOREBANK INTERMODAL TERMINAL FACILITY
Scale: 1:3500 @ A1	Title: ANZAC CREEK MODEL CHANGE IN PMF FLOW REGIMES BETWEEN EXISTING AND PROPOSED CONDITION
TUFLOW Grid Size: 5m	
Datum: AHD	
Projection: MGA56	

Hyder

HYDER CONSULTING PTY LTD

Level 5, 141 Walker Street
North Sydney NSW 2060

Figure No | Project No | Issue
N



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

1 : 3500

Client: SIMTA

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

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

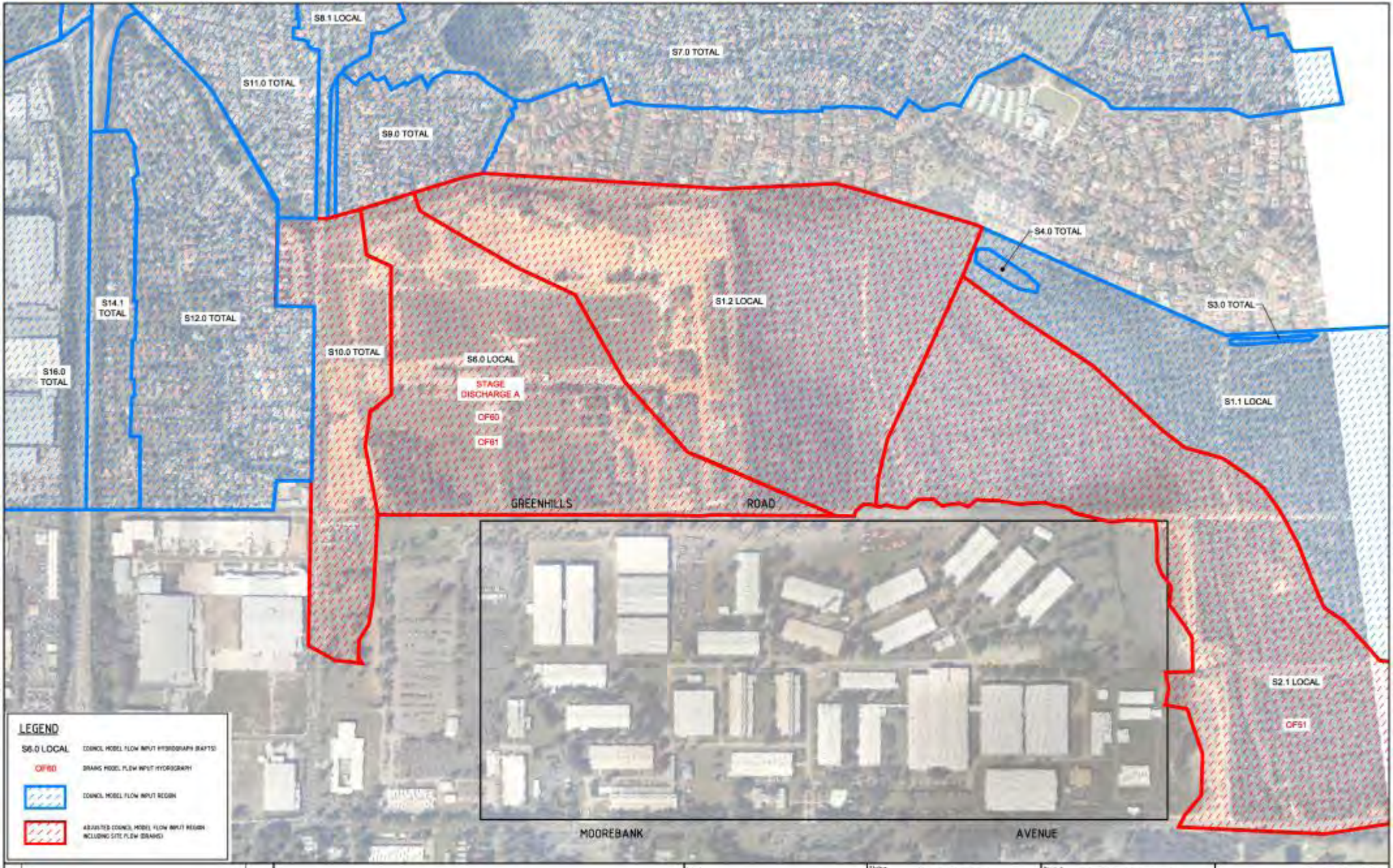
Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: EXISTING ANZAC CREEK MODEL FLOW INPUT PLAN

HYDER CONSULTING PTY LTD

Hyder

Drawing No	Project No	Issue
FIG-E6	AA003210	01



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

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. McMILLAN

Filename:

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: PROPOSED ANZAC CREEK MODEL FLOW INPUT PLAN

HYDER CONSULTING PTY LTD
ABN 76 104 485 289
Level 5, 141 Walker St
North Sydney NSW 2060
Australia
Tel: +61 (0)2 8907 0900
Fax: +61 (0)2 8907 9001
www.hyderconsulting.com

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

Date Plotted: 12 Aug 2011 - 10:22AM File Name: P:\AA003210AZ-CADD\C-Civil\C-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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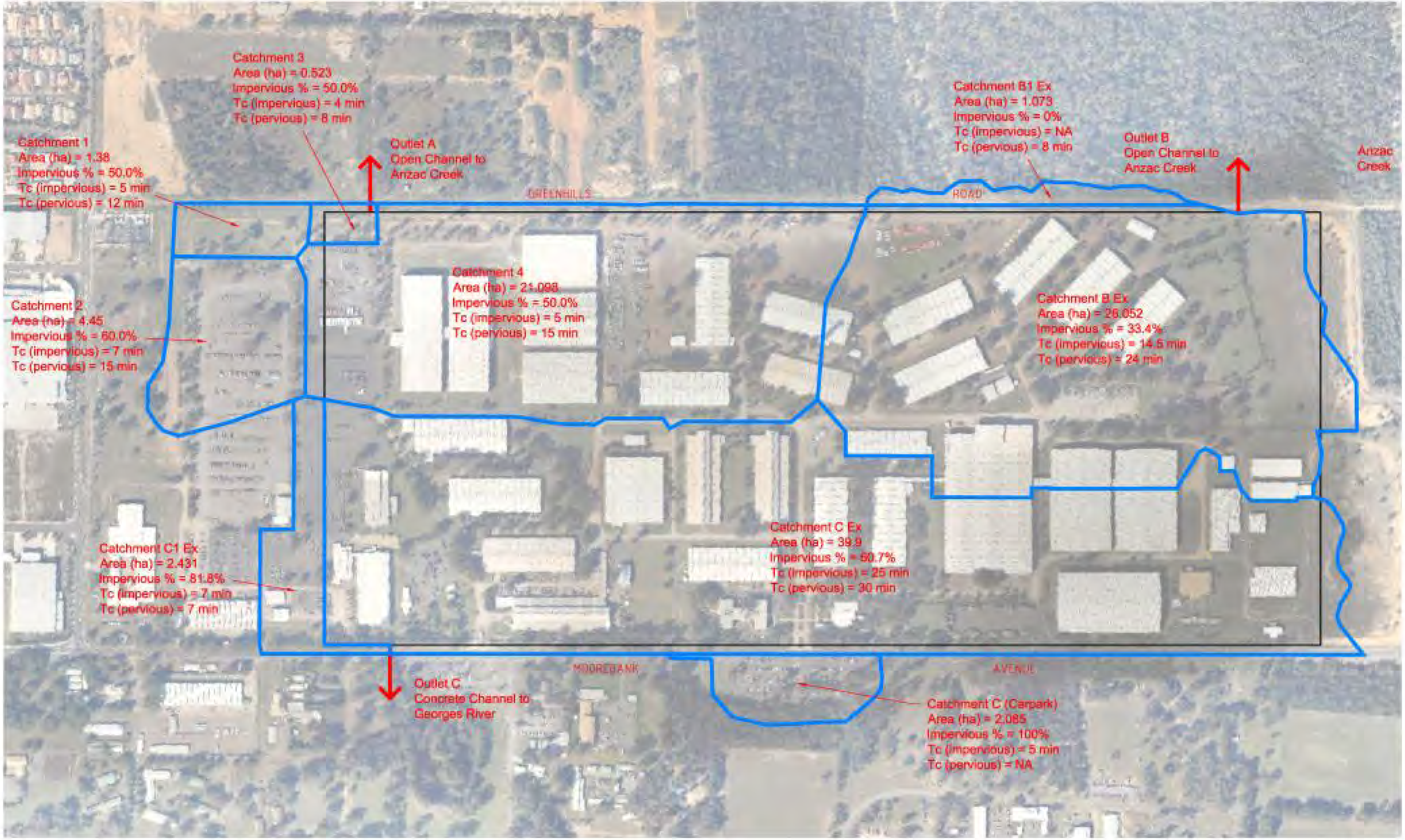

Issue	Description	Date
01	ISSUE FOR REVIEW	12/08/11

Scale bar: 0 50 100 150 200 250m — 1 : 2500

Client: SIMTA

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

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

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: EXISTING STORMWATER CATCHMENT PLAN

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Level 5, 141 Walker St
North Sydney NSW 2060
Australia
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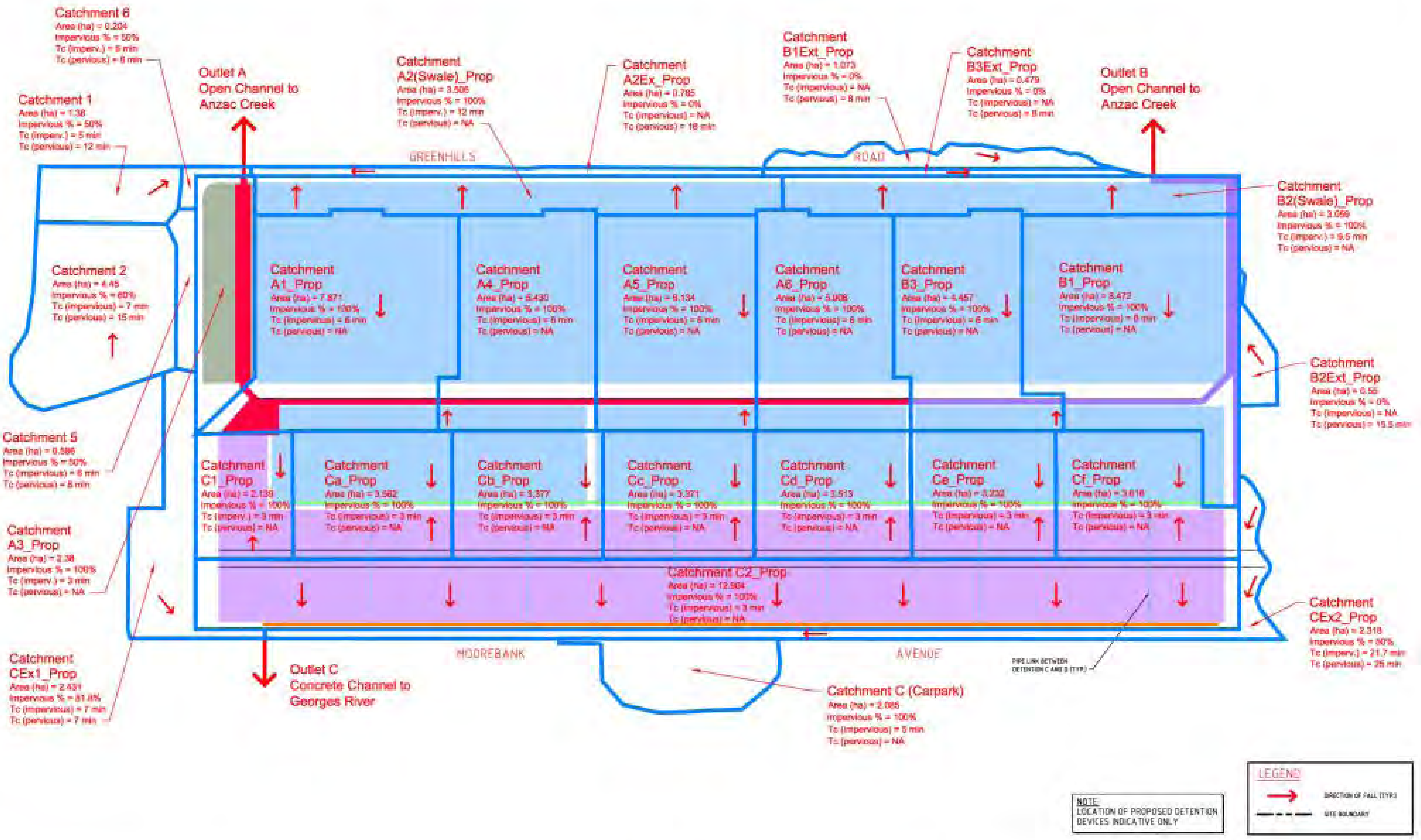
Fax: +61 (0)2 8907 9001
www.hyderconsulting.com

Drawing No	Project No	Issue
FIG-F1	AA003210	01

Date Plotted: 11 Aug 2011 - 09:55AM



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

1 : 2500

Client: SIMTA

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scale: 1 : 2500
Original Size: A1
Height Datum: AHD
Grid: MGA

Drawn: D. BALL
Designed: C. McCLELLAND
Checked: G. IVES
Approved: R. McMILLAN

Project: SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

Title: PROPOSED STORMWATER CATCHMENT PLAN

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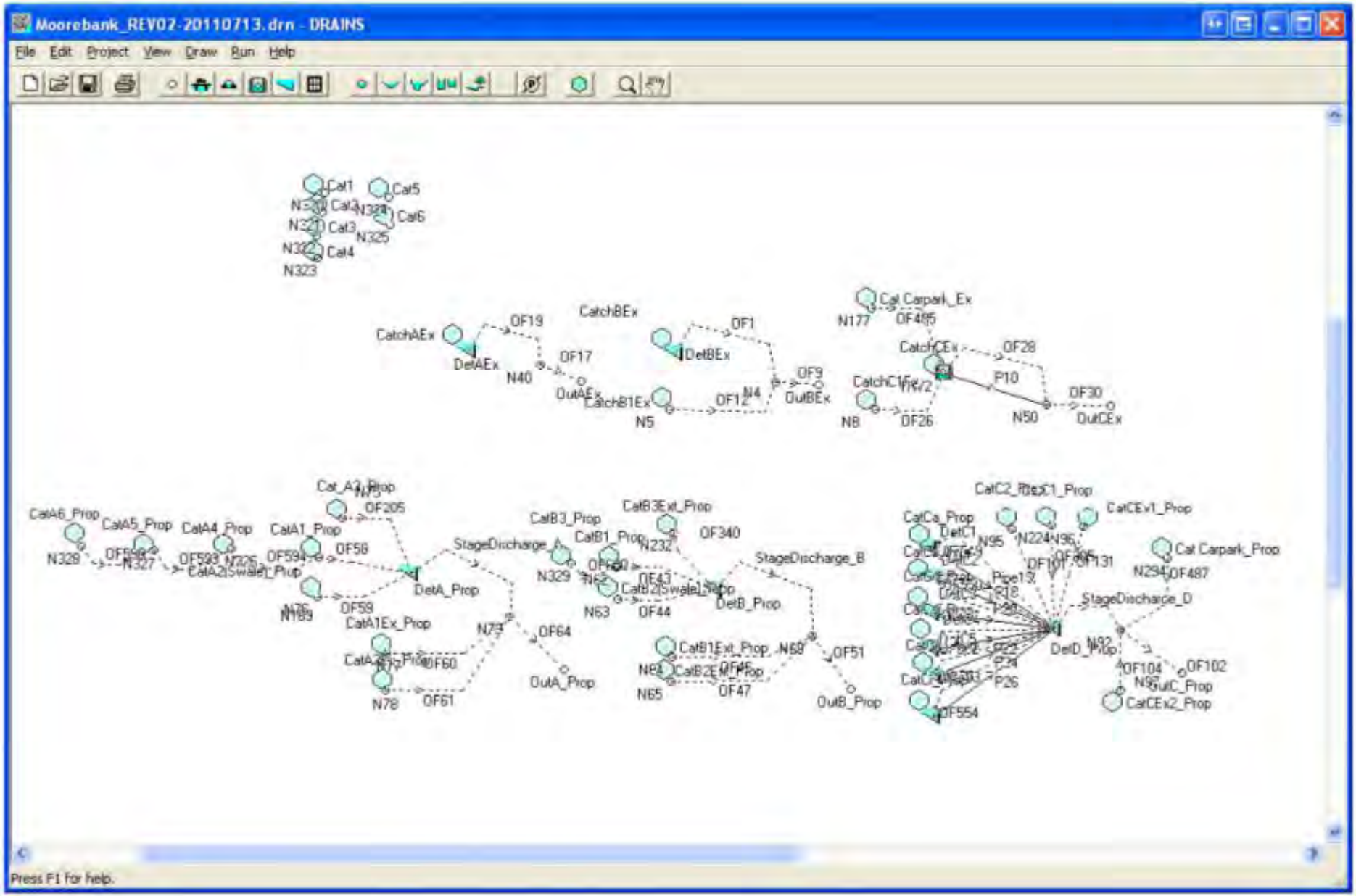
www.hyderconsulting.com

Drawing No: FIG-F2 — Project No: AA003210 — Issue: 01


Moorebank_REV02-20110713.drn - DRAINS
File Edit Project View Draw Run Help
Cat1
Cat5
Cat6
Cat3
Cat4
N323
N325
CatchAEx
DetAEx
OF19
N40
OF17
OutAEx
CatchBEx
DetBEx
OF1
Cat Carpark_Ex
N177
OF485
CatchCEx
OF28
P10
OF30
OutCEx
N50
OF26
N8
CatchB1Ex
N5
OF12
N4
OF9
OutBEx
CatA6_Prop
CatA5_Prop
CatA4_Prop
CatA1_Prop
OF205
OF58
OF59
DetA_Prop
StageDischarge_A
CatB3_Prop
CatB1_Prop
CatB3Ext_Prop
OF340
N232
N329
N63
OF44
DetB_Prop
StageDischarge_B
CatA1Ex_Prop
OF64
OutA_Prop
N78
OF61
CatB1Ext_Prop
OF51
OutB_Prop
N65
OF47
CatCa_Prop
DetC1
CatCEx1_Prop
Cat Carpark_Prop
N294
OF487
StageDischarge_D
DetD_Prop
OF104
OF102
OutC_Prop
CatCEx2_Prop
OF554
Press F1 for help.

DRAINS Model Name and File Path:	[redacted]
DRAINS Version:	2010.03 - 5 August 2010
Modeller's Name:	Chris McClelland
Description:	Moorebank, CSC

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		288.406	221.475		4370448									
OutCEx	Node							0		1568.098	180.549		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		1591.586	-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		1591.586	-533.112		15137091									
N169	Node							0		-298.422	-113.077		46653709									
N177	Node							0		880.6	397.15		51483380									
N224	Node							0		1425.586	-133.112		66906726									
N232	Node							0		507.444	-149.02		73934574									
HW2	Headwall				0.6	14.2		0		1164.793	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	-188.264		84402416									
N327	Node							0		-753.297	-193.411		84402417									
N328	Node							0		-929.553	-183.043		84402418									
N329	Node							0		260.866	-225.999		84402438									

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	13.24	0	0	None						514.018	288.421	No			48							
	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	2988.53																				
	14.4	4603.56																				
	14.5	6635.68																				
	14.6	9172.45																				
	14.7	12182.7																				
	14.8	15734.5																				
	14.82	16517.9																				
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	292.6																				
	13.7	516.484																				
	13.8	880.951																				
	13.9	1438.4																				
	14	2241.32																				
	14.1	3343.31																				

	14.2	4761.79																				
DetB_Prop	14	0	0	None							609.059	-288.731	No			13086138						
	16	17843																				
DetA_Prop	14	0	0	None							-130.806	-249.09	No			14111587						
	14.1	1109.05																				
	14.2	2410.9																				
	14.3	3737.64																				
	14.4	5089.29																				
	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	27589.9																				
	15.9	29480.9																				
	16	31397																				
	16.1	33339.6																				
	16.2	35317.6																				
DetC1	15	0	0	Culvert	0.5						1129.196	-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						1141.292	-257.627	No			15137025						
	15.5	200																				
	16	600																				
DetC3	15	0	0	Culvert	0.5						1136.098	-544.027	No			15137026						
	15.5	200																				
	16	600																				
DetC4	15	0	0	Culvert	0.5						1136.098	-432.155	No			15137027						
	15.5	200																				
	16	600																				
DetC5	15	0	0	Culvert	0.5						1141.292	-496.091	No			15137028						
	15.5	200																				
	16	600																				
DetC6	15	0	0	Culvert	0.5						1137.928	-596.315	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
		(ha)	%	%	%	(min)	(min)		(min)	(m)	(m)	(m)	%	%	%					(m)	%	
CatchB1Ex	N5	1.075	0	100	0	3	8	0											0			
CatchC1Ex	N8	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	9.5	0											0			
CatB1Ex1_Prop	N64	1.075	0	100	0	5	8	0											0			
CatB2Ex1_Prop	N65	0.55	0	100	0	9.5	15.5	0											0			
CatA1_Prop	N75	7.871	100	0	0	6	3	0											0			
CatA2(Swale)_Prop	N76	3.505	100	0	0	12	11	0											0			
CatA1Ex_Prop	N77	6.611	46	54	0	13.2	9.3	0											0			
CatA2Ex_Prop	N78	0.786	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	N95	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			

Cat5	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	5.908	100	0	0	6		3	0										0		
CatB3_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	N9	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							
OF19	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	N92	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		15137088							
OF205	N169	DetA_Prop	0.1				Dummy used to model flow across road low points	0.2	0.05	0.6	1	0		46853710							
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		86908727							
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							
OF497	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 — 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	12.34	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	3.863	0.998	25	30	0	AR&R 2 year, 1 hour storm, average 33.7 mm/h, Zone 1
Cat Carpark_Prop	0.618	0.618	0	5	0	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
Cat1	0.279	0.192	0.09	5	12	0	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1
Cat2	0.869	0.727	0.147	7	15	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
Cat3	0.117	0.072	0.045	4	8	0	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1
Cat4	3.294	3.126	0.175	5	15	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
Cat5	0.127	0.083	0.045	6	8	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
Cat6	0.044	0.029	0.015	6	8	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
CatA4_Prop	1.533	1.533	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
CatA5_Prop	1.732	1.732	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
CatA6_Prop	1.668	1.668	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1
CatB3_Prop	1.258	1.258	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1

Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)

Storm	Total Rainfall 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 (98.(	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	95848.54	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