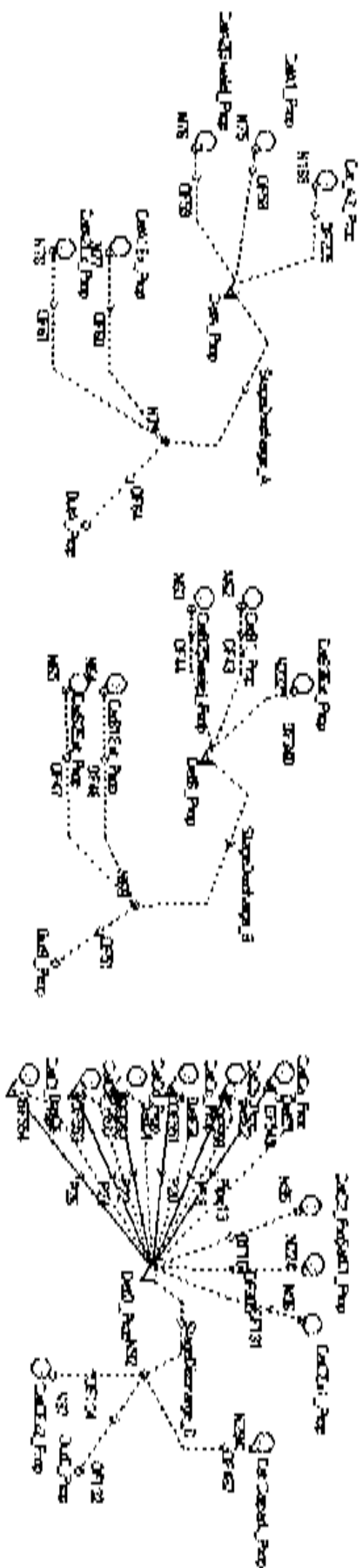
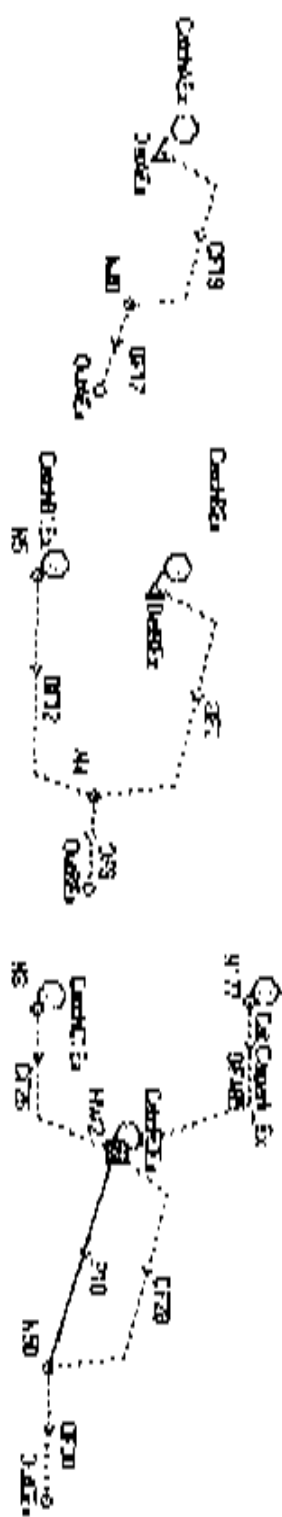


APPENDIX A

INITIAL DRAINS MODEL INPUT AND OUTPUT - EXISTING AND PROPOSED CONDITIONS



DATA

DATA	
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98	98
99	99
100	100

Year	Month	Day	Time	Location	Activity	Remarks
1950	1	1	10:00	...	...	...
1950	1	2	10:00	...	...	...
1950	1	3	10:00	...	...	...
1950	1	4	10:00	...	...	...
1950	1	5	10:00	...	...	...
1950	1	6	10:00	...	...	...
1950	1	7	10:00	...	...	...
1950	1	8	10:00	...	...	...
1950	1	9	10:00	...	...	...
1950	1	10	10:00	...	...	...
1950	1	11	10:00	...	...	...
1950	1	12	10:00	...	...	...
1950	1	13	10:00	...	...	...
1950	1	14	10:00	...	...	...
1950	1	15	10:00	...	...	...
1950	1	16	10:00	...	...	...
1950	1	17	10:00	...	...	...
1950	1	18	10:00	...	...	...
1950	1	19	10:00	...	...	...
1950	1	20	10:00	...	...	...
1950	1	21	10:00	...	...	...
1950	1	22	10:00	...	...	...
1950	1	23	10:00	...	...	...
1950	1	24	10:00	...	...	...
1950	1	25	10:00	...	...	...
1950	1	26	10:00	...	...	...
1950	1	27	10:00	...	...	...
1950	1	28	10:00	...	...	...
1950	1	29	10:00	...	...	...
1950	1	30	10:00	...	...	...
1950	1	31	10:00	...	...	...
1950	2	1	10:00	...	...	...
1950	2	2	10:00	...	...	...
1950	2	3	10:00	...	...	...
1950	2	4	10:00	...	...	...
1950	2	5	10:00	...	...	...
1950	2	6	10:00	...	...	...
1950	2	7	10:00	...	...	...
1950	2	8	10:00	...	...	...
1950	2	9	10:00	...	...	...
1950	2	10	10:00	...	...	...
1950	2	11	10:00	...	...	...
1950	2	12	10:00	...	...	...
1950	2	13	10:00	...	...	...
1950	2	14	10:00	...	...	...
1950	2	15	10:00	...	...	...
1950	2	16	10:00	...	...	...
1950	2	17	10:00	...	...	...
1950	2	18	10:00	...	...	...
1950	2	19	10:00	...	...	...
1950	2	20	10:00	...	...	...
1950	2	21	10:00	...	...	...
1950	2	22	10:00	...	...	...
1950	2	23	10:00	...	...	...
1950	2	24	10:00	...	...	...
1950	2	25	10:00	...	...	...
1950	2	26	10:00	...	...	...
1950	2	27	10:00	...	...	...
1950	2	28	10:00	...	...	...
1950	2	29	10:00	...	...	...
1950	2	30	10:00	...	...	...
1950	2	31	10:00	...	...	...
1950	3	1	10:00	...	...	...
1950	3	2	10:00	...	...	...
1950	3	3	10:00	...	...	...
1950	3	4	10:00	...	...	...
1950	3					

2 Year ARI Results

General Information		2019-2020		2020-2021		2021-2022		2022-2023		2023-2024		2024-2025		2025-2026		2026-2027		2027-2028		2028-2029		2029-2030		2030-2031		2031-2032		2032-2033		2033-2034		2034-2035		2035-2036		2036-2037		2037-2038		2038-2039		2039-2040		2040-2041		2041-2042		2042-2043		2043-2044		2044-2045		2045-2046		2046-2047		2047-2048		2048-2049		2049-2050		2050-2051		2051-2052		2052-2053		2053-2054		2054-2055		2055-2056		2056-2057		2057-2058		2058-2059		2059-2060		2060-2061		2061-2062		2062-2063		2063-2064		2064-2065		2065-2066		2066-2067		2067-2068		2068-2069		2069-2070		2070-2071		2071-2072		2072-2073		2073-2074		2074-2075		2075-2076		2076-2077		2077-2078		2078-2079		2079-2080		2080-2081		2081-2082		2082-2083		2083-2084		2084-2085		2085-2086		2086-2087		2087-2088		2088-2089		2089-2090		2090-2091		2091-2092		2092-2093		2093-2094		2094-2095		2095-2096		2096-2097		2097-2098		2098-2099		2099-2100		2100-2101		2101-2102		2102-2103		2103-2104		2104-2105		2105-2106		2106-2107		2107-2108		2108-2109		2109-2110		2110-2111		2111-2112		2112-2113		2113-2114		2114-2115		2115-2116		2116-2117		2117-2118		2118-2119		2119-2120		2120-2121		2121-2122		2122-2123		2123-2124		2124-2125		2125-2126		2126-2127		2127-2128		2128-2129		2129-2130		2130-2131		2131-2132		2132-2133		2133-2134		2134-2135		2135-2136		2136-2137		2137-2138		2138-2139		2139-2140		2140-2141		2141-2142		2142-2143		2143-2144		2144-2145		2145-2146		2146-2147		2147-2148		2148-2149		2149-2150		2150-2151		2151-2152		2152-2153		2153-2154		2154-2155		2155-2156		2156-2157		2157-2158		2158-2159		2159-2160		2160-2161		2161-2162		2162-2163		2163-2164		2164-2165		2165-2166		2166-2167		2167-2168		2168-2169		2169-2170		2170-2171		2171-2172		2172-2173		2173-2174		2174-2175		2175-2176		2176-2177		2177-2178		2178-2179		2179-2180		2180-2181		2181-2182		2182-2183		2183-2184		2184-2185		2185-2186		2186-2187		2187-2188		2188-2189		2189-2190		2190-2191		2191-2192		2192-2193		2193-2194		2194-2195		2195-2196		2196-2197		2197-2198		2198-2199		2199-2200		2200-2201		2201-2202		2202-2203		2203-2204		2204-2205		2205-2206		2206-2207		2207-2208		2208-2209		2209-2210		2210-2211		2211-2212		2212-2213		2213-2214		2214-2215		2215-2216		2216-2217		2217-2218		2218-2219		2219-2220		2220-2221		2221-2222		2222-2223		2223-2224		2224-2225		2225-2226		2226-2227		2227-2228		2228-2229		2229-2230		2230-2231		2231-2232		2232-2233		2233-2234		2234-2235		2235-2236		2236-2237		2237-2238		2238-2239		2239-2240		2240-2241		2241-2242		2242-2243		2243-2244		2244-2245		2245-2246		2246-2247		2247-2248		2248-2249		2249-2250		2250-2251		2251-2252		2252-2253		2253-2254		2254-2255		2255-2256		2256-2257		2257-2258		2258-2259		2259-2260		2260-2261		2261-2262		2262-2263		2263-2264		2264-2265		2265-2266		2266-2267		2267-2268		2268-2269		2269-2270		2270-2271		2271-2272		2272-2273		2273-2274		2274-2275		2275-2276		2276-2277		2277-2278		2278-2279		2279-2280		2280-2281		2281-2282		2282-2283		2283-2284		2284-2285		2285-2286		2286-2287		2287-2288		2288-2289		2289-2290		2290-2291		2291-2292		2292-2293		2293-2294		2294-2295		2295-2296		2296-2297		2297-2298		2298-2299		2299-2300		2300-2301		2301-2302		2302-2303		2303-2304		2304-2305		2305-2306		2306-2307		2307-2308		2308-2309		2309-2310		2310-2311		2311-2312		2312-2313		2313-2314		2314-2315		2315-2316		2316-2317		2317-2318		2318-2319		2319-2320		2320-2321		2321-2322		2322-2323		2323-2324		2324-2325		2325-2326		2326-2327		2327-2328		2328-2329		2329-2330		2330-2331		2331-2332		2332-2333		2333-2334		2334-2335		2335-2336		2336-2337		2337-2338		2338-2339		2339-2340		2340-2341		2341-2342		2342-2343		2343-2344		2344-2345		2345-2346		2346-2347		2347-2348		2348-2349		2349-2350		2350-2351		2351-2352		2352-2353		2353-2354		2354-2355		2355-2356		2356-2357		2357-2358		2358-2359		2359-2360		2360-2361		2361-2362		2362-2363		2363-2364		2364-2365		2365-2366		2366-2367		2367-2368		2368-2369		2369-2370		2370-2371		2371-2372		2372-2373		2373-2374		2374-2375		2375-2376		2376-2377		2377-2378		2378-2379		2379-2380		2380-2381		2381-2382		2382-2383		2383-2384		2384-2385		2385-2386		2386-2387		2387-2388		2388-2389		2389-2390		2390-2391		2391-2392		2392-2393		2393-2394		2394-2395		2395-2396		2396-2397		2397-2398		2398-2399		2399-2400		2400-2401		2401-2402		2402-2403	
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[illegible]

— DANIEL

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2 Year Afti Resilience

[illegible]

Abstracts 1294-1402

[illegible]

ZU YAN: ARI Henslin

[illegible]

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20 Year AMI Results

Line	Part	QTY	UNIT	PRICE	AMOUNT	TAX	TOTAL
1	1000	1.00	EA	10.00	10.00	0.00	10.00
2	2000	2.00	EA	20.00	20.00	0.00	20.00
3	3000	3.00	EA	30.00	30.00	0.00	30.00
4	4000	4.00	EA	40.00	40.00	0.00	40.00
5	5000	5.00	EA	50.00	50.00	0.00	50.00
6	6000	6.00	EA	60.00	60.00	0.00	60.00
7	7000	7.00	EA	70.00	70.00	0.00	70.00
8	8000	8.00	EA	80.00	80.00	0.00	80.00
9	9000	9.00	EA	90.00	90.00	0.00	90.00
10	10000	10.00	EA	100.00	100.00	0.00	100.00
11	11000	11.00	EA	110.00	110.00	0.00	110.00
12	12000	12.00	EA	120.00	120.00	0.00	120.00
13	13000	13.00	EA	130.00	130.00	0.00	130.00
14	14000	14.00	EA	140.00	140.00	0.00	140.00
15	15000	15.00	EA	150.00	150.00	0.00	150.00
16	16000	16.00	EA	160.00	160.00	0.00	160.00
17	17000	17.00	EA	170.00	170.00	0.00	170.00
18	18000	18.00	EA	180.00	180.00	0.00	180.00
19	19000	19.00	EA	190.00	190.00	0.00	190.00
20	20000	20.00	EA	200.00	200.00	0.00	200.00
21	21000	21.00	EA	210.00	210.00	0.00	210.00
22	22000	22.00	EA	220.00	220.00	0.00	220.00
23	23000	23.00	EA	230.00	230.00	0.00	230.00
24	24000	24.00	EA	240.00	240.00	0.00	240.00
25	25000	25.00	EA	250.00	250.00	0.00	250.00
26	26000	26.00	EA	260.00	260.00	0.00	260.00
27	27000	27.00	EA	270.00	270.00	0.00	270.00
28	28000	28.00	EA	280.00	280.00	0.00	280.00
29	29000	29.00	EA	290.00	290.00	0.00	290.00
30	30000	30.00	EA	300.00	300.00	0.00	300.00
31	31000	31.00	EA	310.00	310.00	0.00	310.00
32	32000	32.00	EA	320.00	320.00	0.00	320.00
33	33000	33.00	EA	330.00	330.00	0.00	330.00
34	34000	34.00	EA	340.00	340.00	0.00	340.00
35	35000	35.00	EA	350.00	350.00	0.00	350.00
36	36000	36.00	EA	360.00	360.00	0.00	360.00
37	37000	37.00	EA	370.00	370.00	0.00	370.00
38	38000	38.00	EA	380.00	380.00	0.00	380.00
39	39000	39.00	EA	390.00	390.00	0.00	390.00
40	40000	40.00	EA	400.00	400.00	0.00	400.00
41	41000	41.00	EA	410.00	410.00	0.00	410.00
42	42000	42.00	EA	420.00	420.00	0.00	420.00
43	43000	43.00	EA	430.00	430.00	0.00	430.00
44	44000	44.00	EA	440.00	440.00	0.00	440.00
45	45000	45.00	EA	450.00	450.00	0.00	450.00
46	46000</						

100 Years After Resale

[illegible]

100 Year All Hands

[illegible]

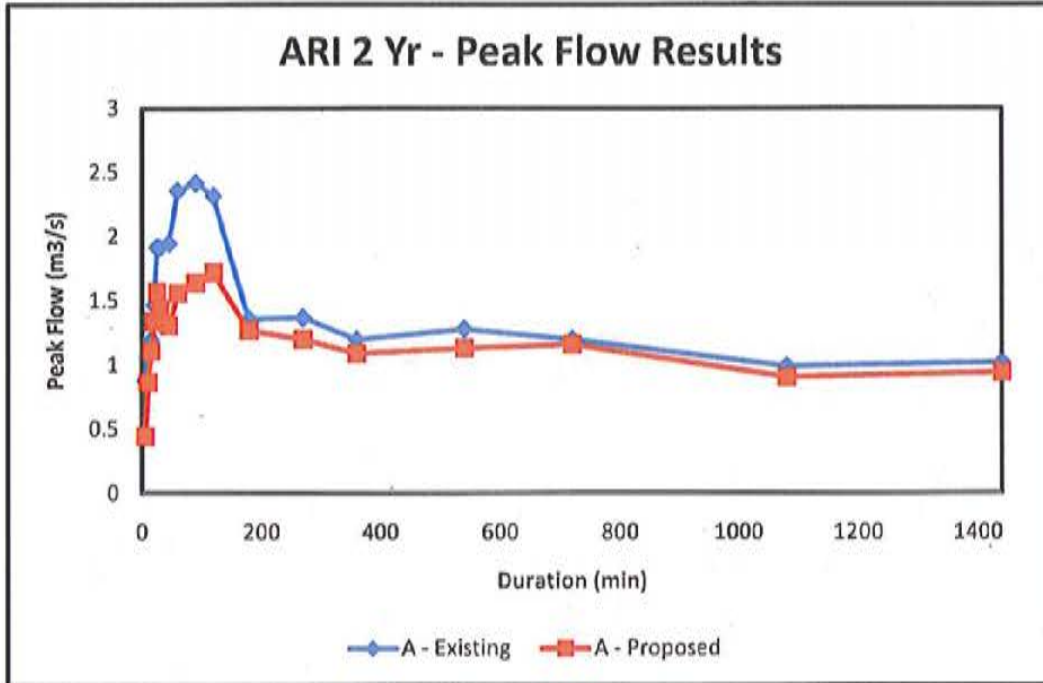
100 Years After Lincoln

[illegible]

100 Years After: Reunion

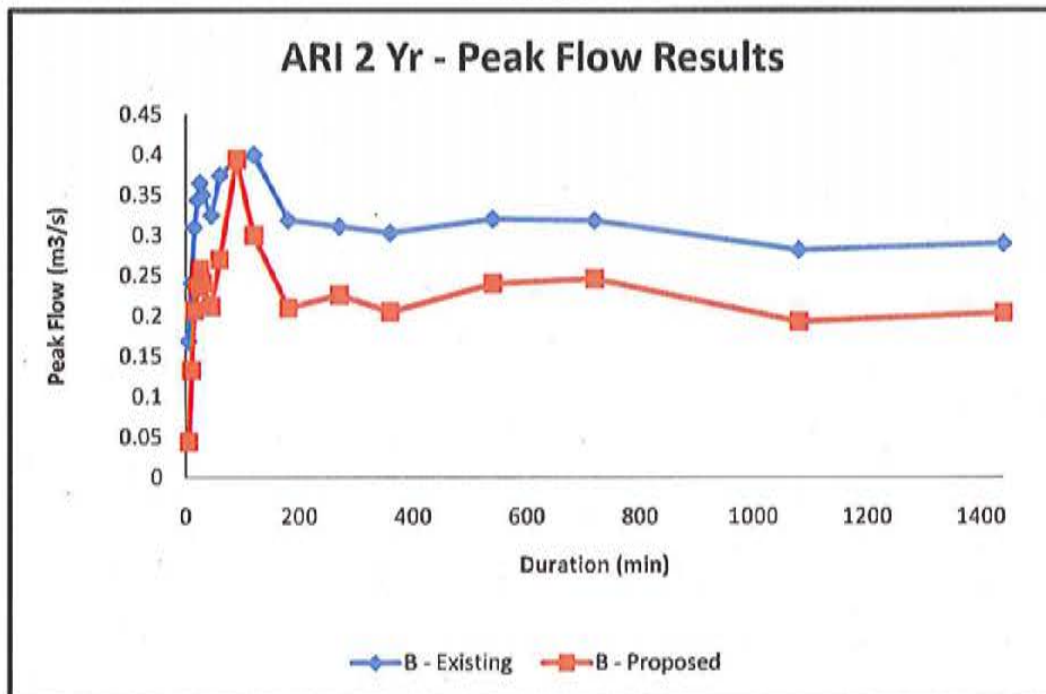
[illegible]

Outlet A



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

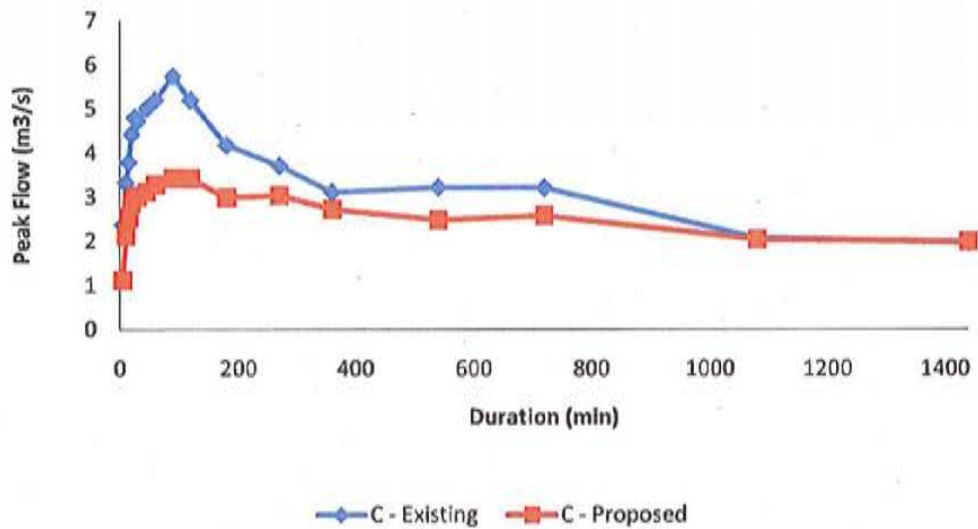
Outlet B



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

Outlet C

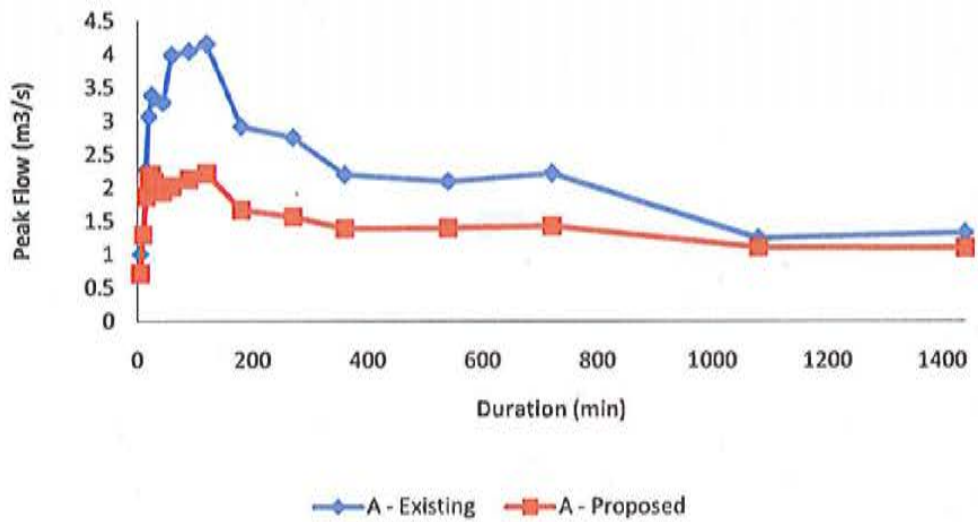
ARI 2 Yr - Peak Flow Results



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

Outlet A

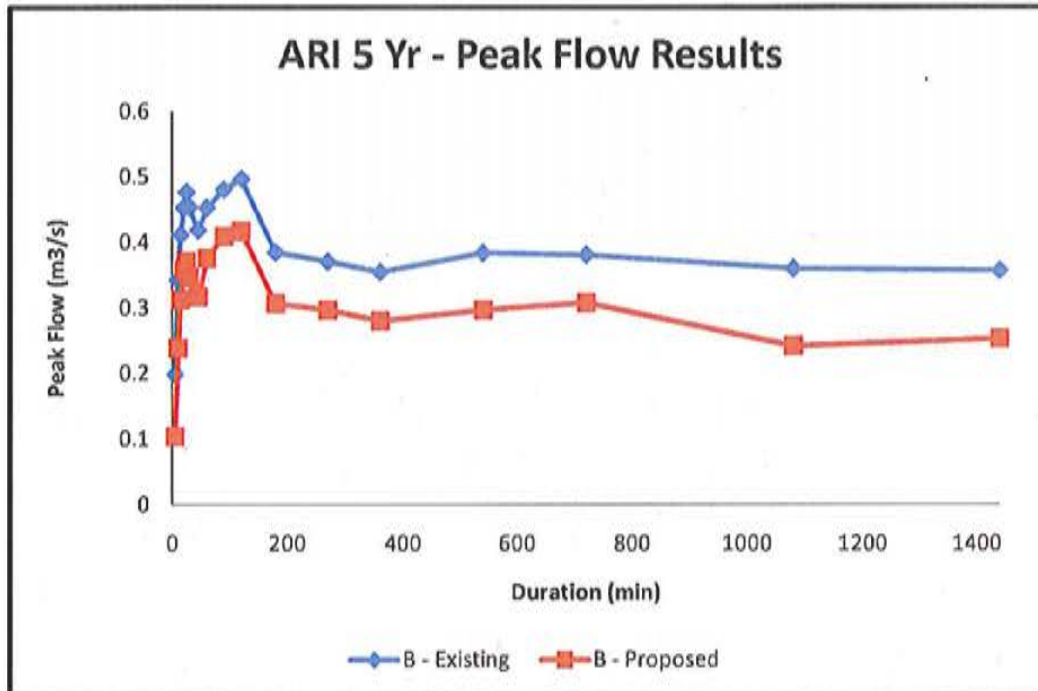
ARI 5 Yr - Peak Flow Results



ARI 5 Yr - Peak Flow Results

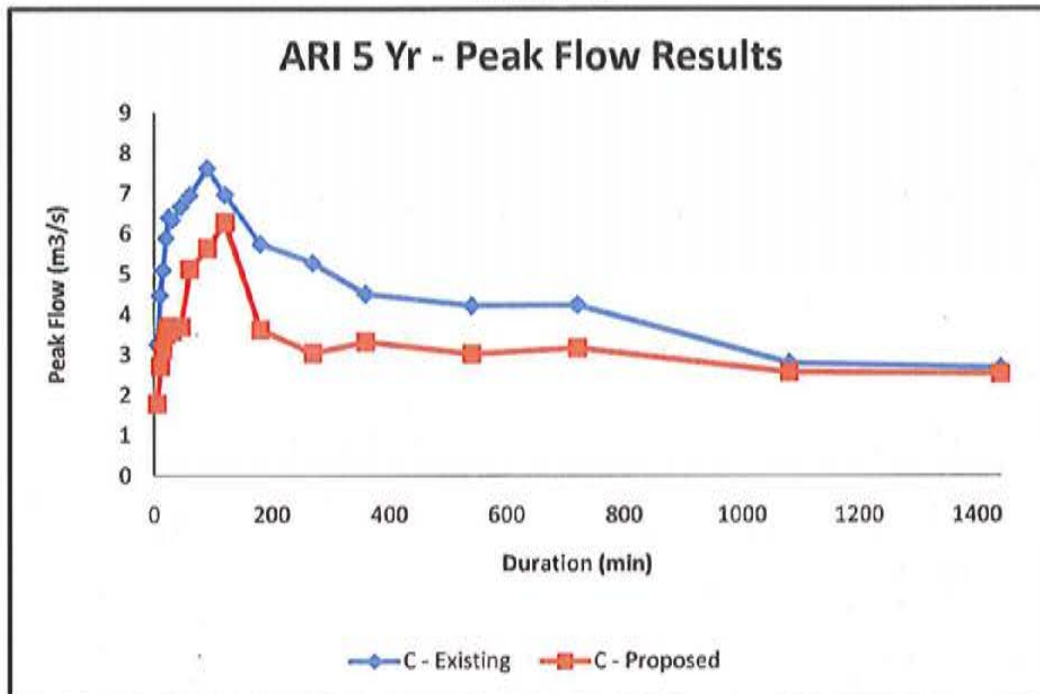
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	1.01	0.72	0.074	14.29
10	1.29	1.3	0.298	14.43
15	2.27	1.87	0.46	14.53
20	3.07	2.15	0.512	14.6
25	3.39	2.2	0.549	14.66
30	3.35	2.08	0.577	14.71
45	3.28	1.94	0.637	14.81
60	3.99	2.02	0.674	14.89
90	4.05	2.13	0.711	14.96
120	4.16	2.22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

Outlet B



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

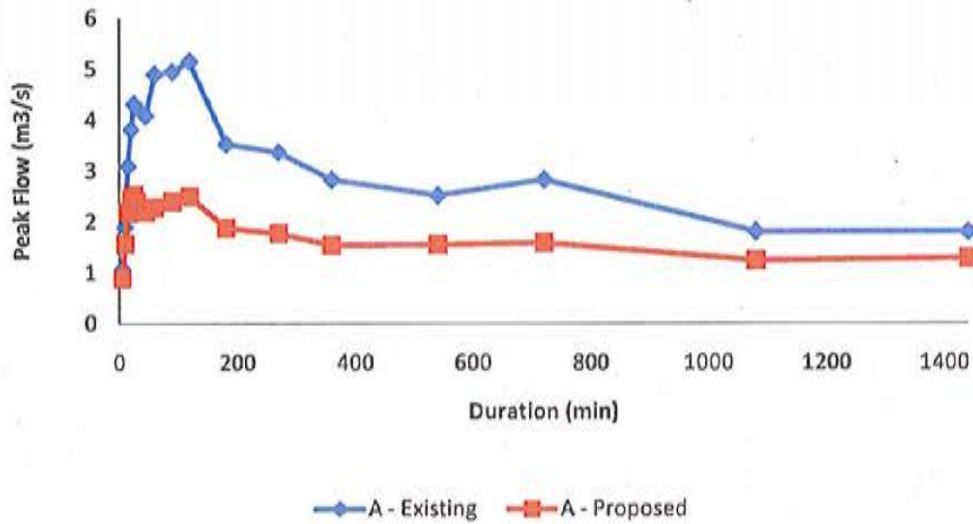
Outlet C



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

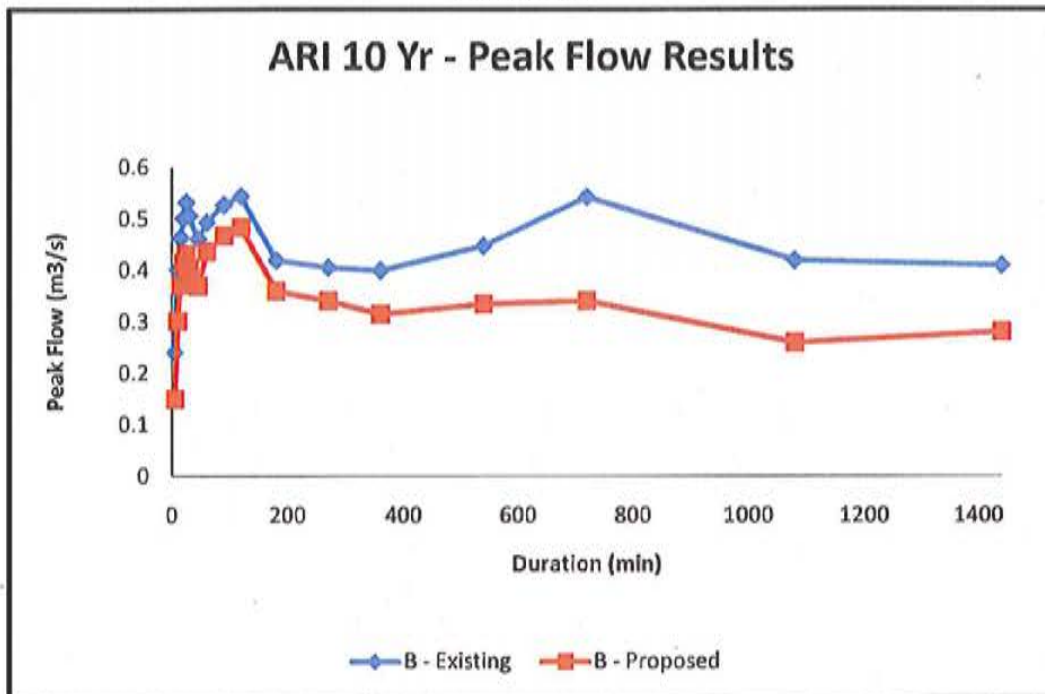
Outlet A

ARI 10 Yr - Peak Flow Results



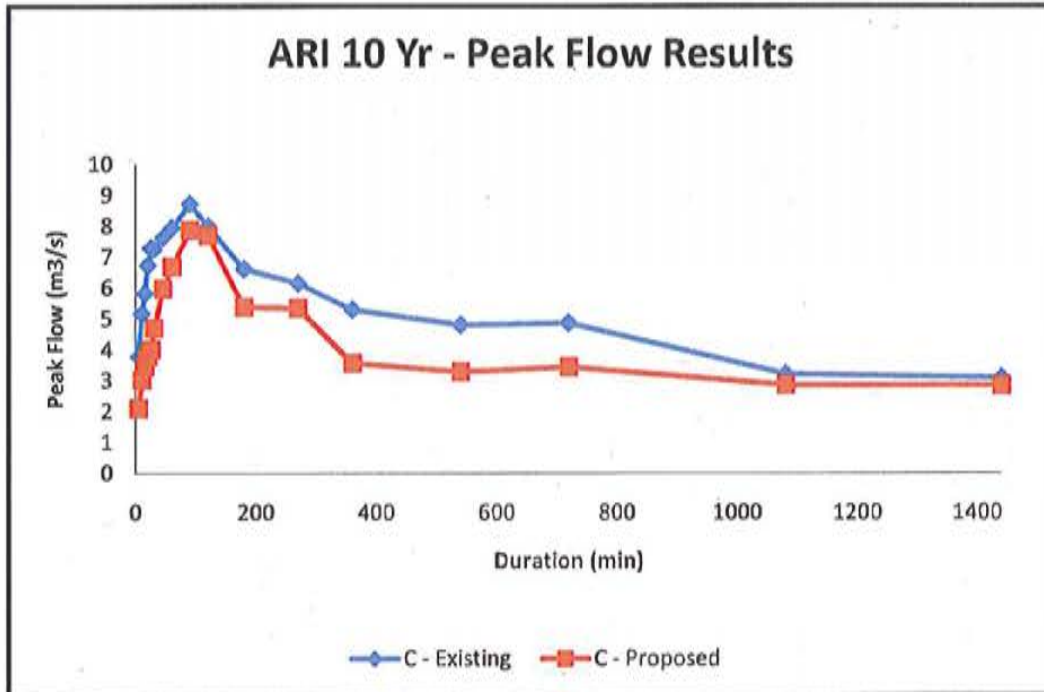
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	1.08	0.887	0.81	14.33
10	1.9	1.57	0.421	14.48
15	3.1	2.18	0.499	14.58
20	3.82	2.44	0.552	14.67
25	4.32	2.53	0.59	14.73
30	4.25	2.4	0.619	14.78
45	4.09	2.2	0.682	14.9
60	4.9	2.28	0.721	14.99
90	4.95	2.4	0.762	15.07
120	5.16	2.5	0.788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

Outlet B



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

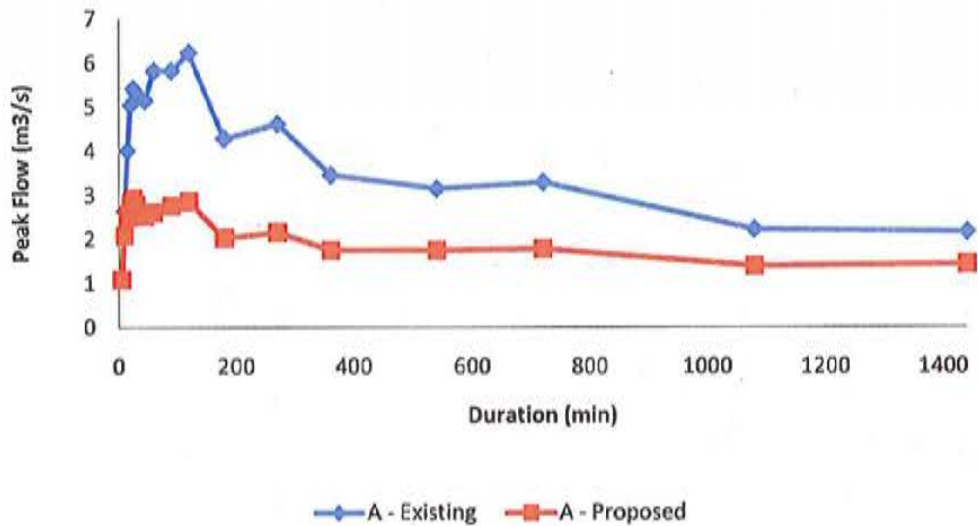
Outlet C



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

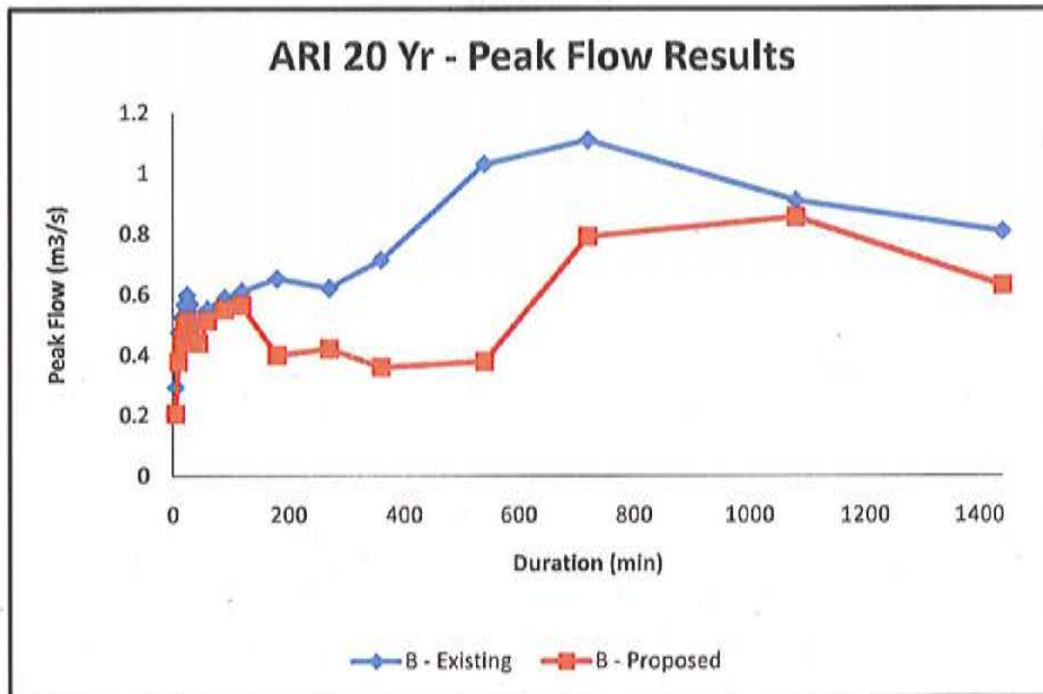
Outlet A

ARI 20 Yr - Peak Flow Results



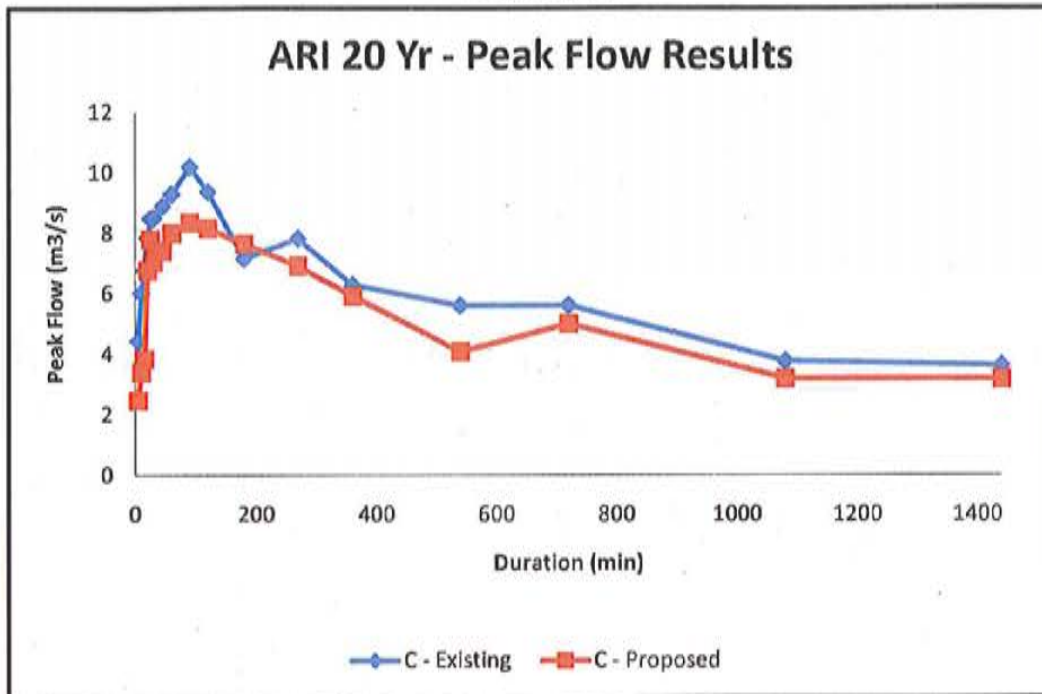
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	1.17	1.09	0.088	14.37
10	2.65	2.09	0.465	14.54
15	4.02	2.51	0.545	14.65
20	5.06	2.81	0.601	14.75
25	5.43	2.93	0.641	14.82
30	5.33	2.78	0.671	14.88
45	5.16	2.54	0.737	15.02
60	5.83	2.62	0.779	15.11
90	5.83	2.76	0.823	15.22
120	6.24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

Outlet B



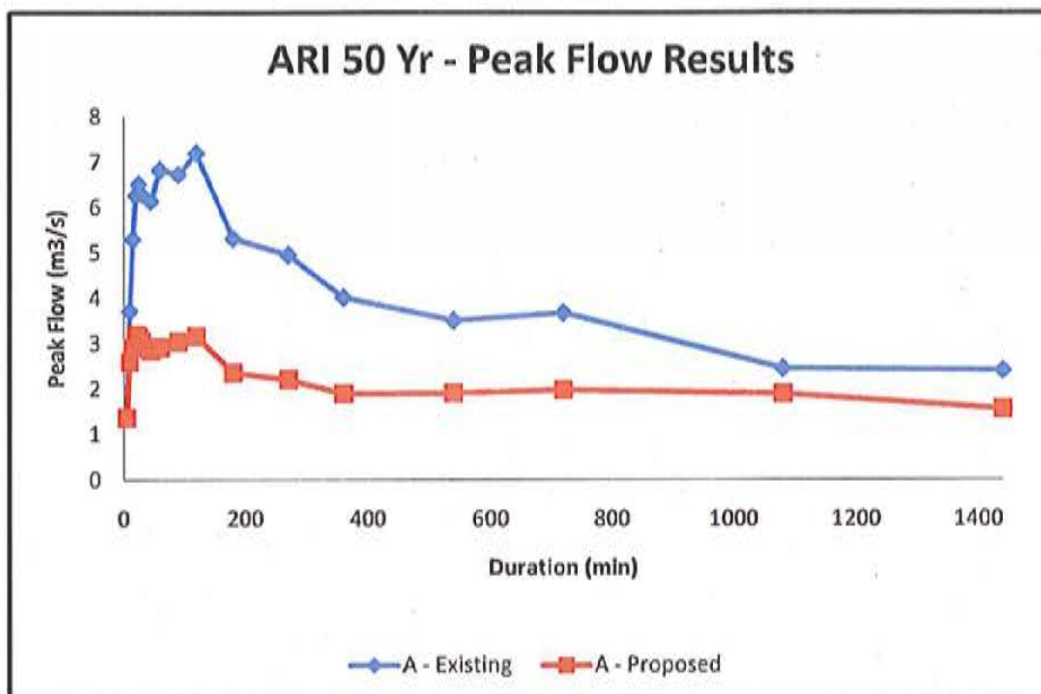
ARI 20 Yr - Peak Flow Results				
Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WL(mAHD)
5	0.294	0.205	0.06	14.25
10	0.475	0.378	0.089	14.39
15	0.524	0.44	0.11	14.5
20	0.567	0.49	0.12	14.59
25	0.598	0.511	0.131	14.65
30	0.569	0.48	0.14	14.71
45	0.52	0.44	0.151	14.85
60	0.551	0.513	0.162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

Outlet C



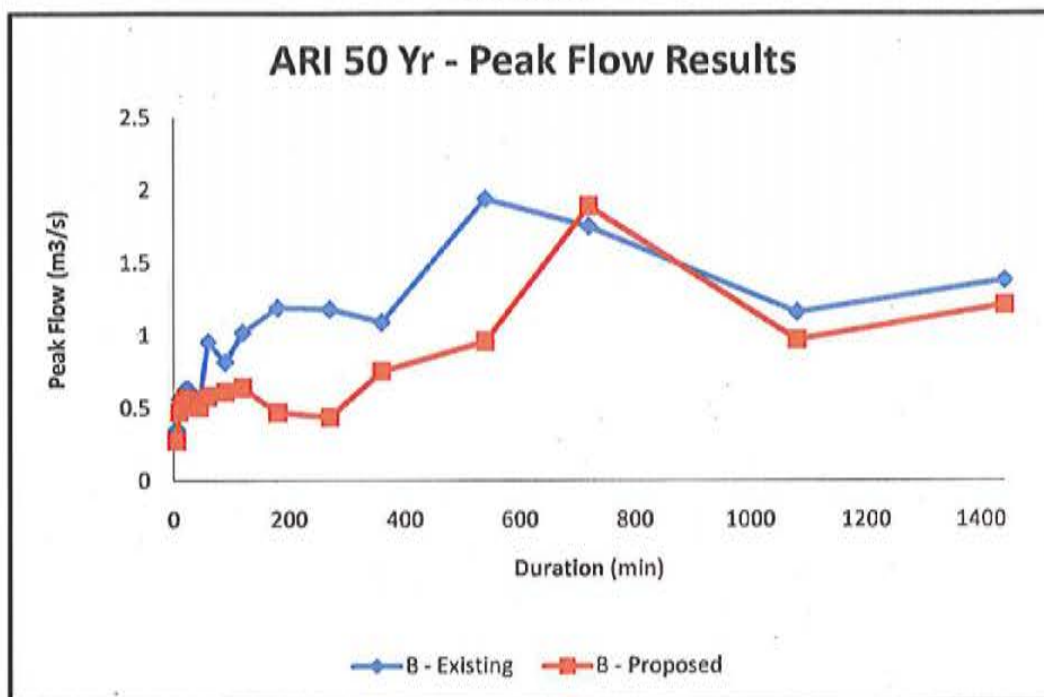
ARI 20 Yr - Peak Flow Results				
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	4.45	2.47	1.96	14.78
10	6.03	3.4	2.78	15.2
15	6.78	3.84	3.1	15.4
20	7.86	6.77	5.93	15.49
25	8.49	7.8	6.75	15.51
30	8.51	7.05	6.14	15.49
45	8.9	7.41	6.57	15.5
60	9.3	8	6.93	15.57
90	10.2	8.35	7.15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

Outlet A



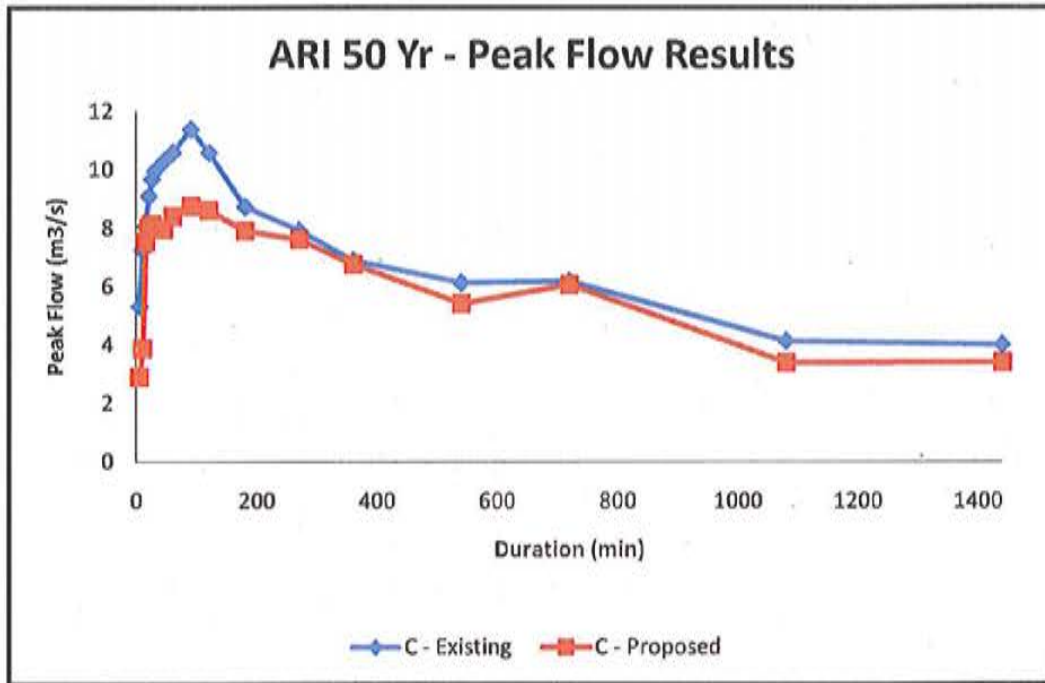
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	1.43	1.37	0.235	14.42
10	3.72	2.6	0.519	14.61
15	5.3	2.91	0.601	14.75
20	6.27	3.19	0.66	14.86
25	6.52	3.16	0.701	14.94
30	6.3	3.04	0.732	15.01
45	6.14	2.85	0.803	15.17
60	6.83	2.92	0.847	15.28
90	6.73	3.04	0.896	15.4
120	7.2	3.16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

Outlet B



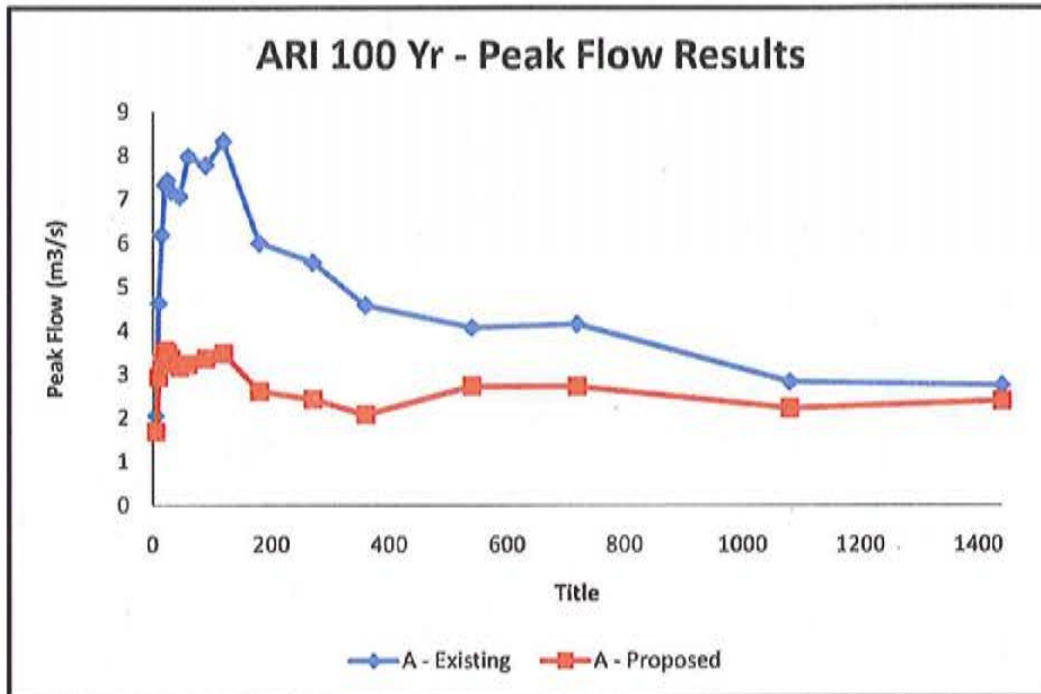
ARI 50 Yr - Peak Flow Results				
Duration (min)	B - Existing	B - Proposed	Basin B Outlet	B - WL(mAHD)
5	0.358	0.279	0.069	14.3
10	0.565	0.474	0.103	14.46
15	0.588	0.514	0.12	14.58
20	0.628	0.568	0.137	14.68
25	0.632	0.558	0.143	14.76
30	0.609	0.533	0.15	14.83
45	0.572	0.507	0.17	15
60	0.957	0.581	0.18	15.12
90	0.817	0.613	0.19	15.3
120	1.02	0.64	0.207	15.43
180	1.19	0.47	0.22	15.62
270	1.18	0.437	0.23	15.81
360	1.09	0.753	0.711	15.86
540	1.94	0.958	0.898	15.87
720	1.75	1.89	1.75	15.9
1080	1.16	0.971	0.911	15.87
1440	1.38	1.21	1.13	15.88
Peak	1.94	1.89	1.75	15.9

Outlet C



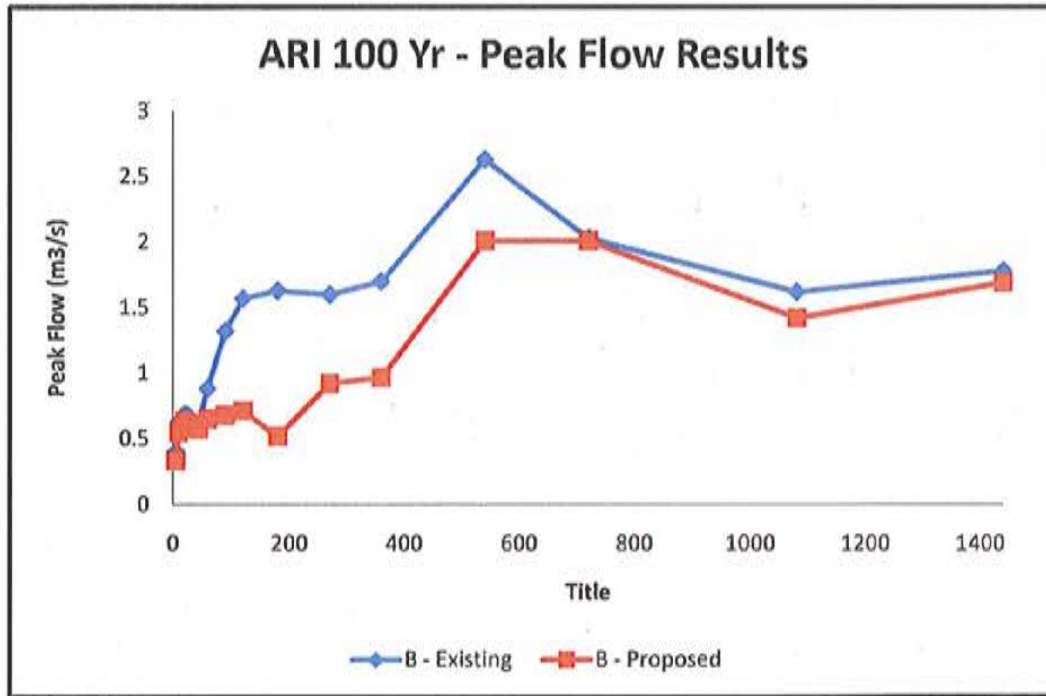
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	5.33	2.9	2.26	14.92
10	7.26	3.88	3.04	15.37
15	8.08	7.54	6.72	15.5
20	9.11	8.02	6.95	15.58
25	9.69	8.14	6.98	15.59
30	9.98	8	6.89	15.56
45	10.3	7.97	6.98	15.59
60	10.6	8.41	7.26	15.69
90	11.4	8.76	7.45	15.76
120	10.6	8.61	7.48	15.77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

Outlet A



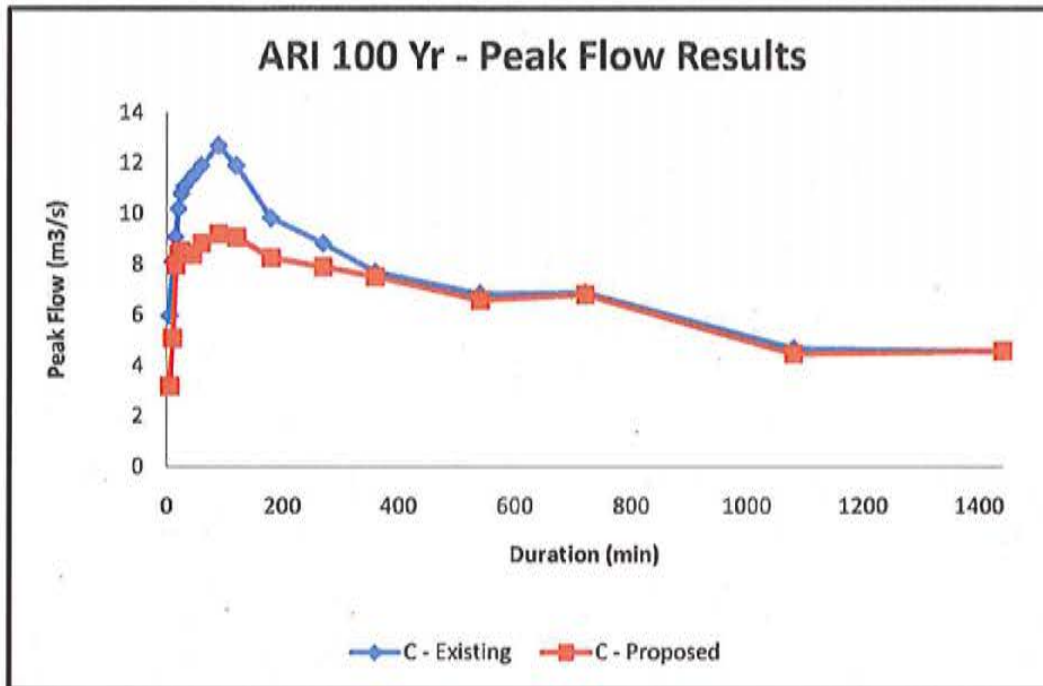
ARI 100 Yr - Peak Flow Results				
Duration (min)	A - Existing	A - Proposed	Basin A Outlet	A - WL(mAHD)
5	2.06	1.69	0.404	14.46
10	4.63	2.94	0.555	14.67
15	6.19	3.24	0.641	14.82
20	7.33	3.54	0.7	14.94
25	7.43	3.49	0.74	15.03
30	7.19	3.37	0.774	15.1
45	7.07	3.16	0.848	15.28
60	7.98	3.23	0.894	15.4
90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

Outlet B



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

Outlet C

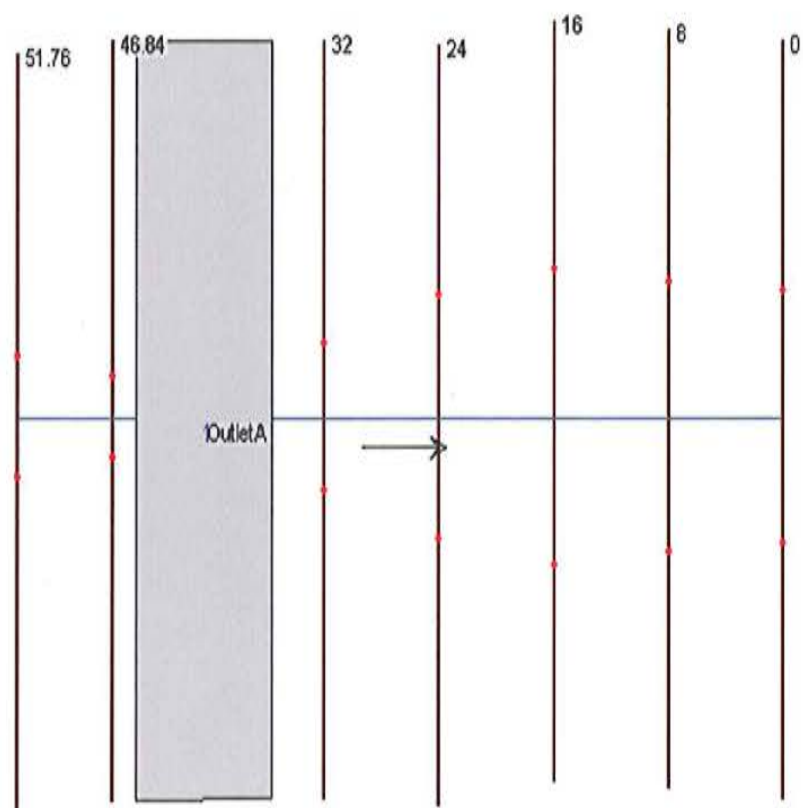


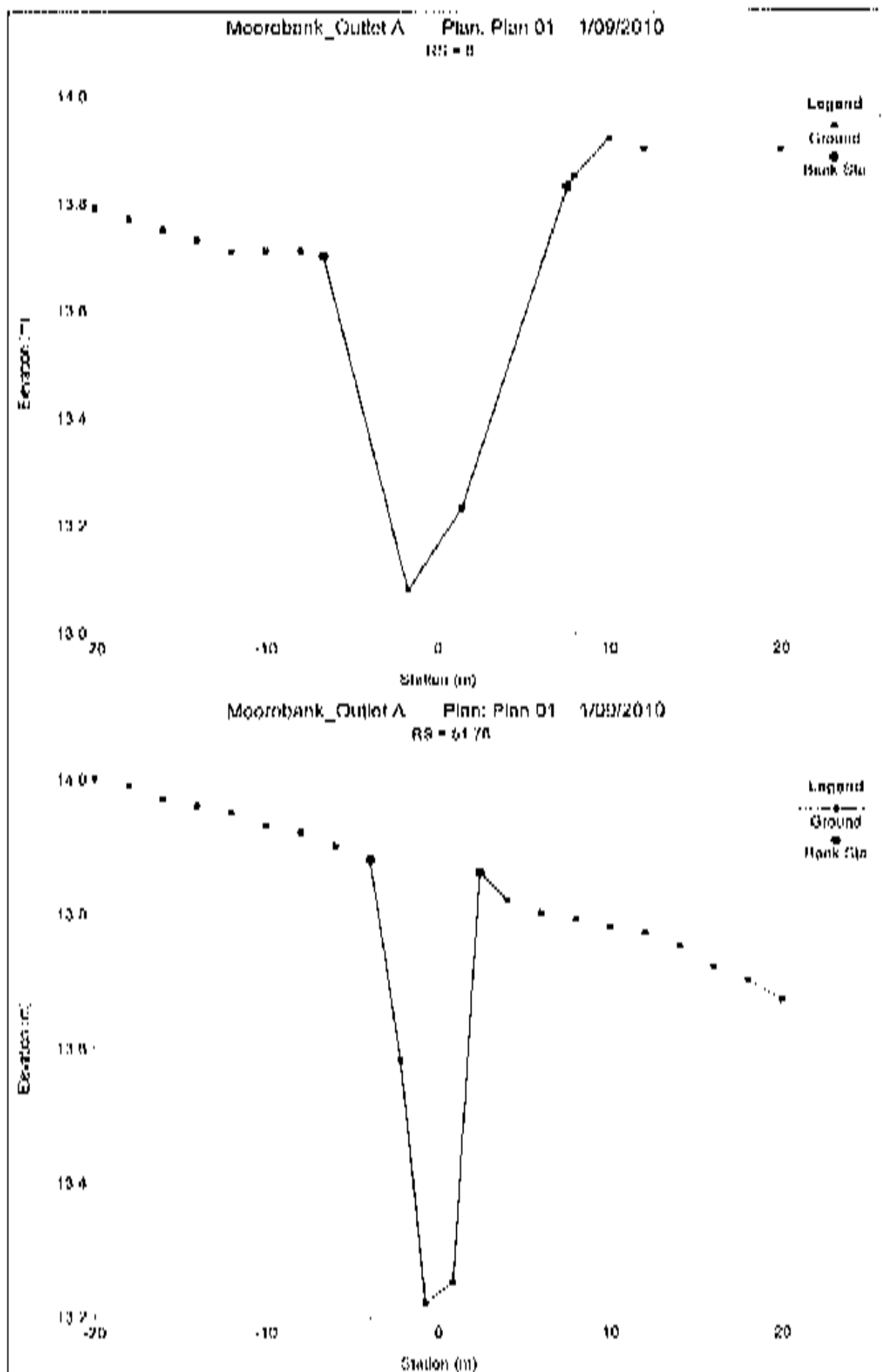
ARI 100 Yr - Peak Flow Results				
Duration (min)	C - Existing	C - Proposed	Basin D Outlet	D - WL(mAHD)
5	5.98	3.18	2.47	15.02
10	8.12	5.08	4.33	15.47
15	9.09	7.97	6.93	15.57
20	10.2	8.4	7.22	15.67
25	10.8	8.52	7.24	15.68
30	11.1	8.37	7.16	15.65
45	11.5	8.39	7.3	15.7
60	11.9	8.83	7.6	15.81
90	12.7	9.2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

APPENDIX B

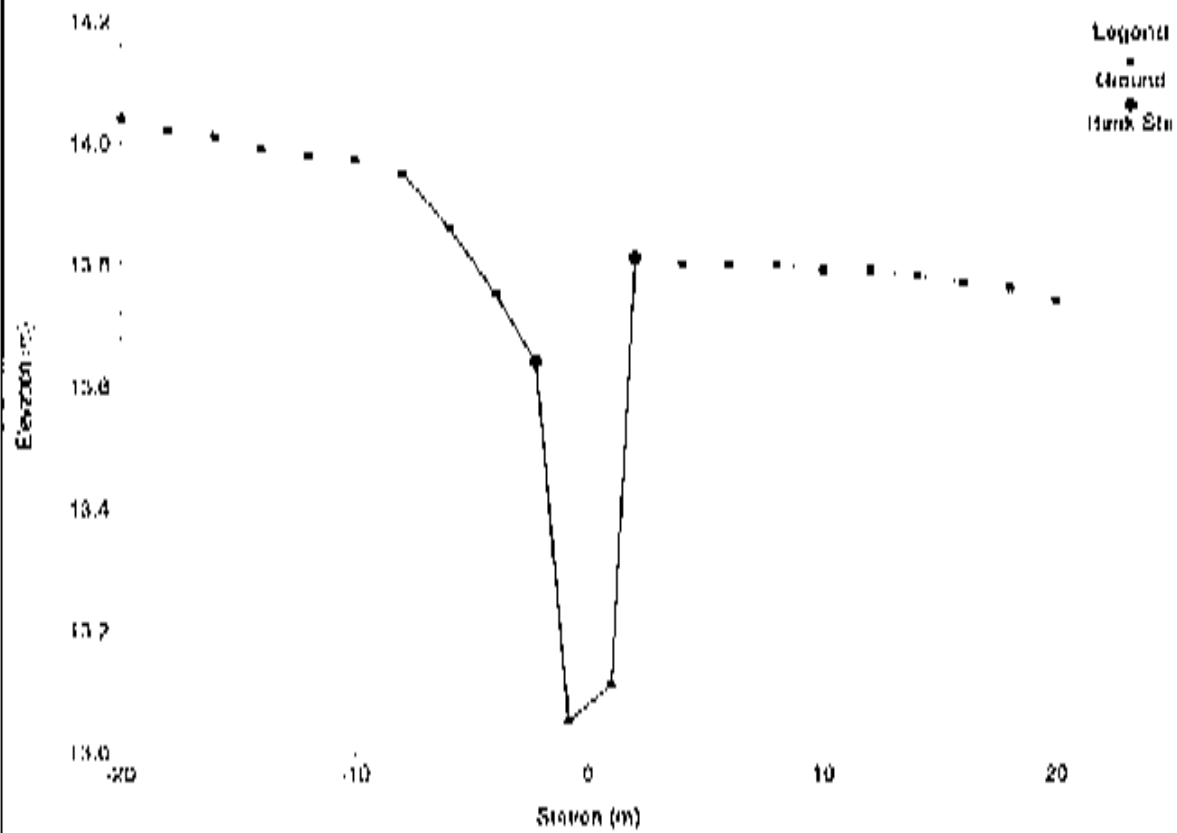
HEC-RAS MODEL INPUT AND OUTPUT DATA – EXISTING AND PROPOSED CONDITIONS

OUTLET A EXISTING CASE – HEC-RAS MODEL FILES

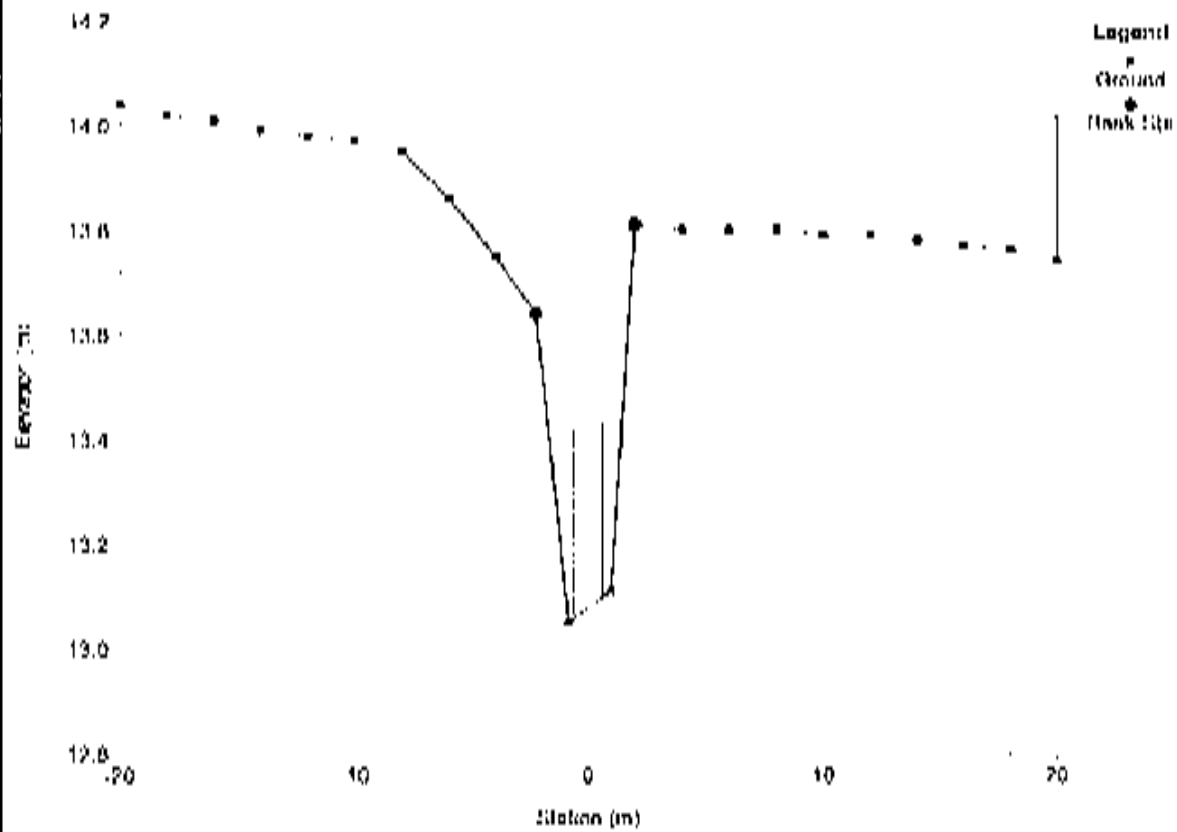


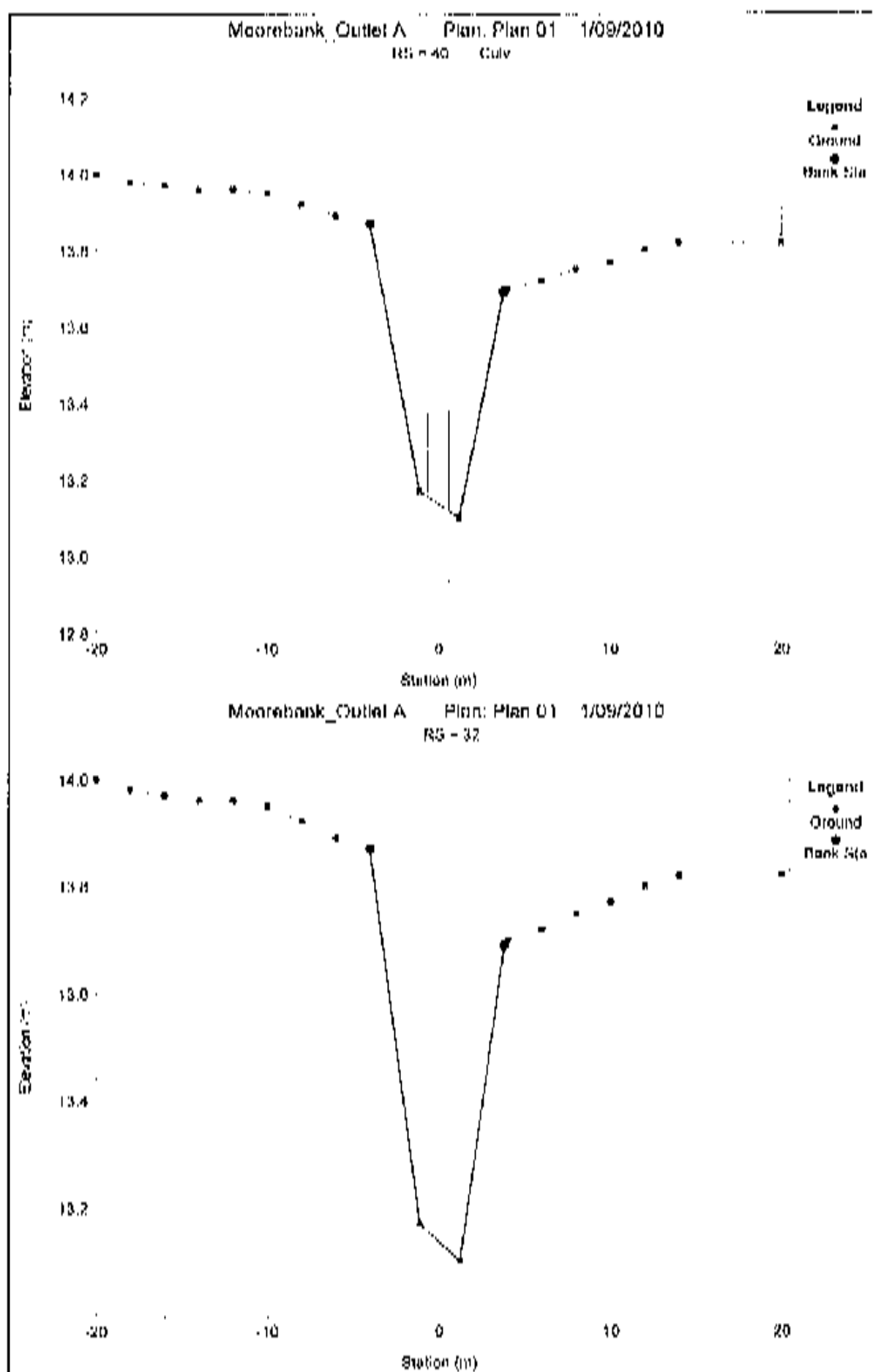


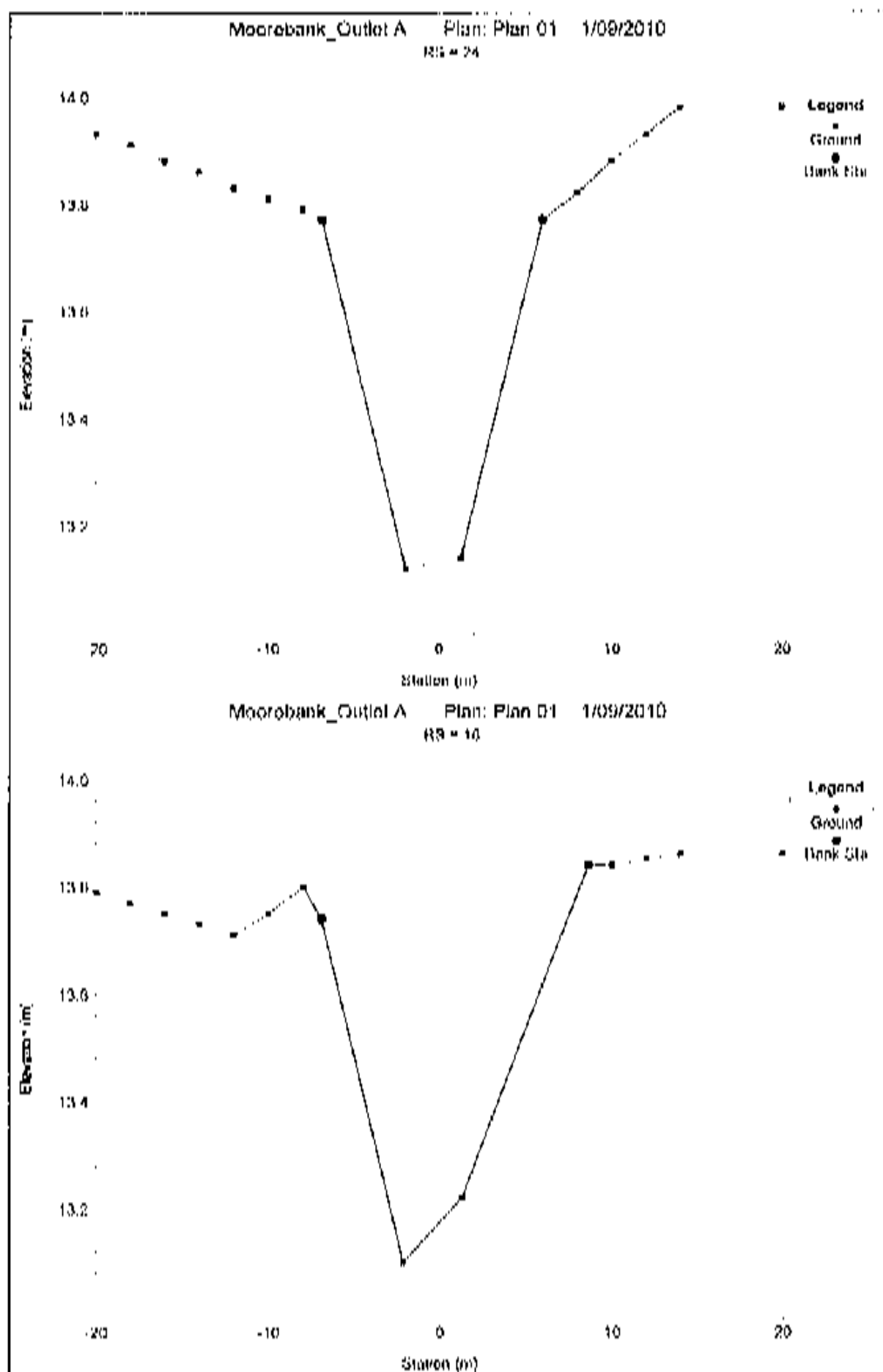
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 40.84



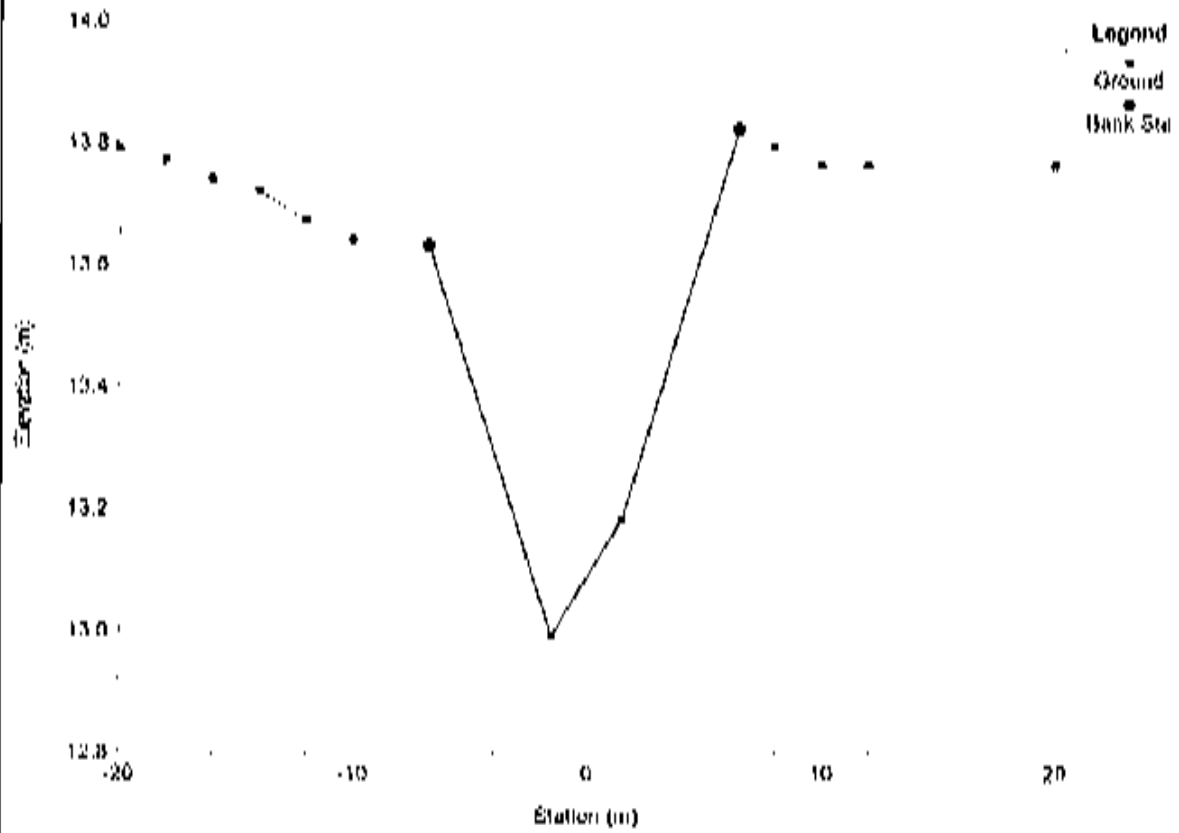
Moorebank_Outlet A Plan: Plan 01 1/09/2010
RS = 40 Culv





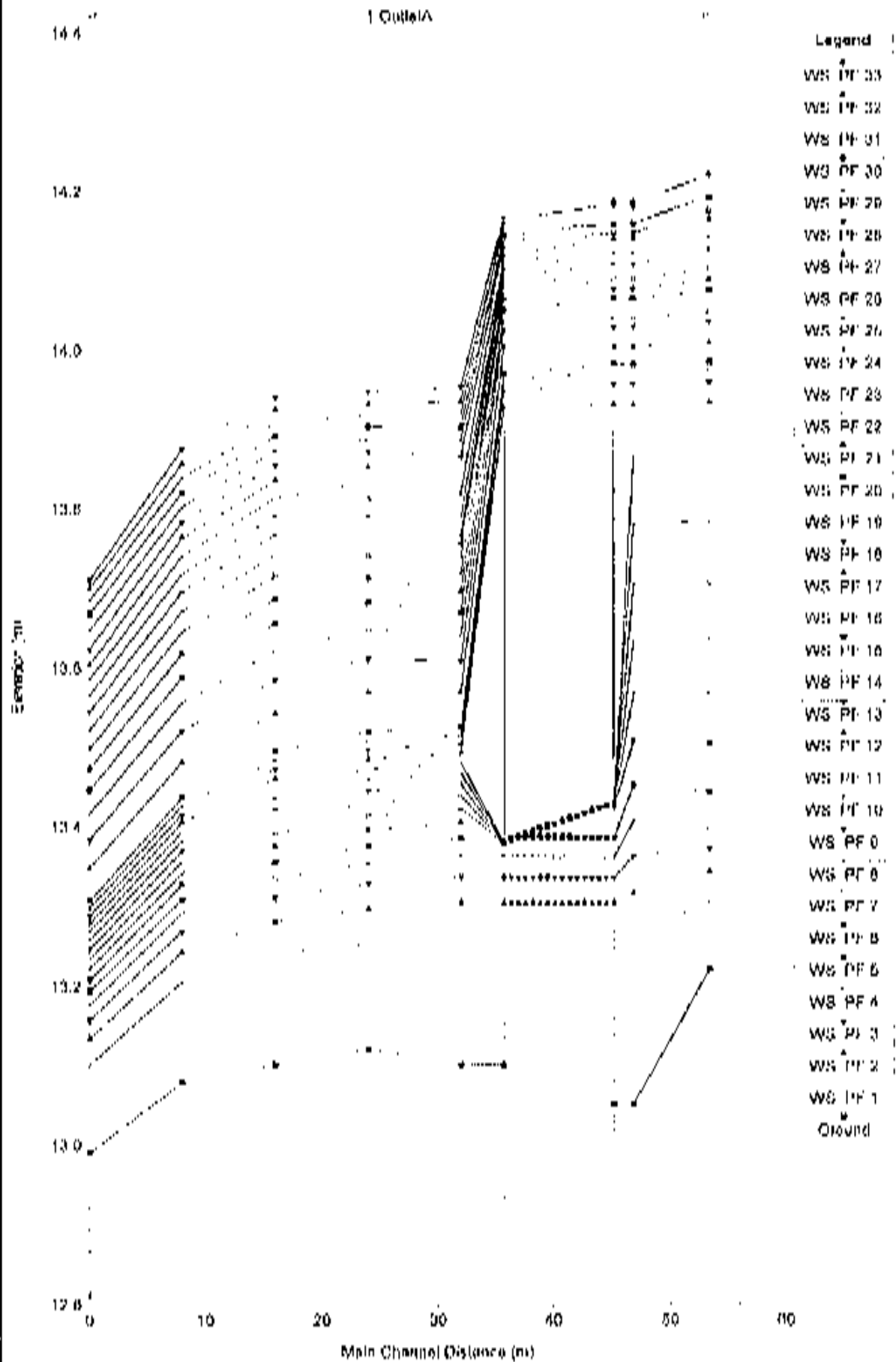


Moorebank, Outlet A Plan: Plan 01 1/09/2010
R21 = 0

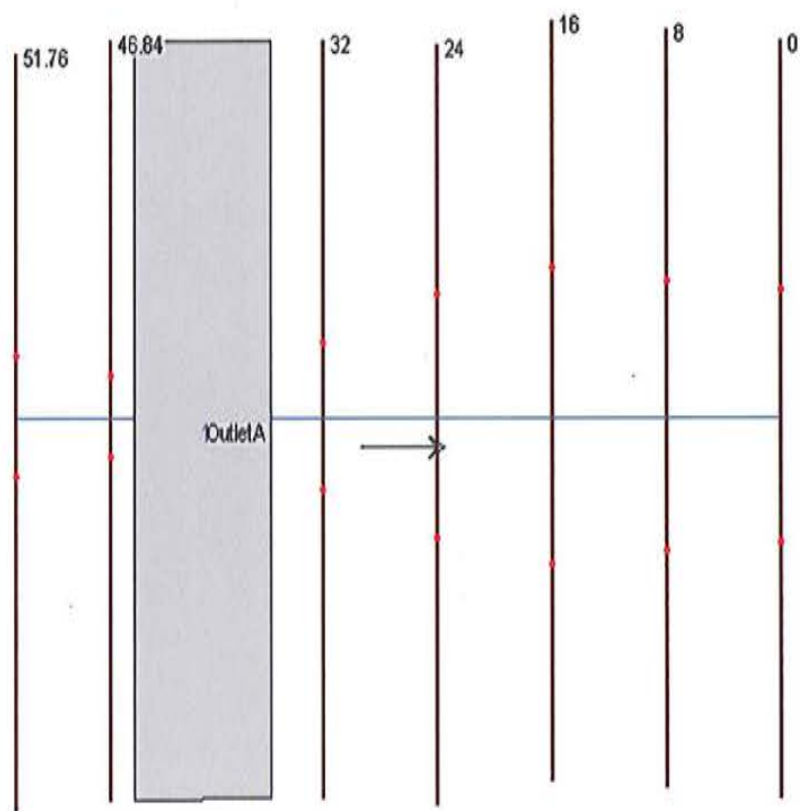


Moorebank_Outlet A Plan Plan 01 1/09/2010

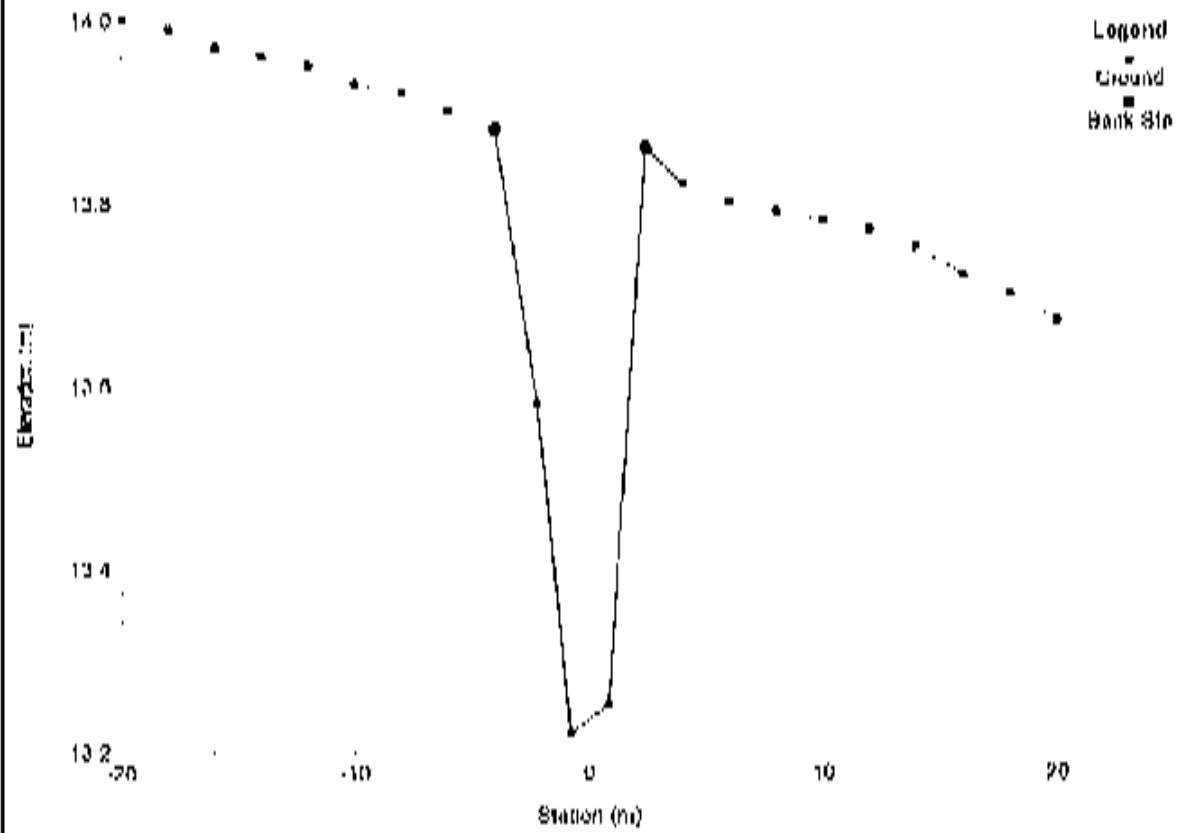
1 Outlet



OUTLET A PROPOSED – HEC-RAS MODEL FILES



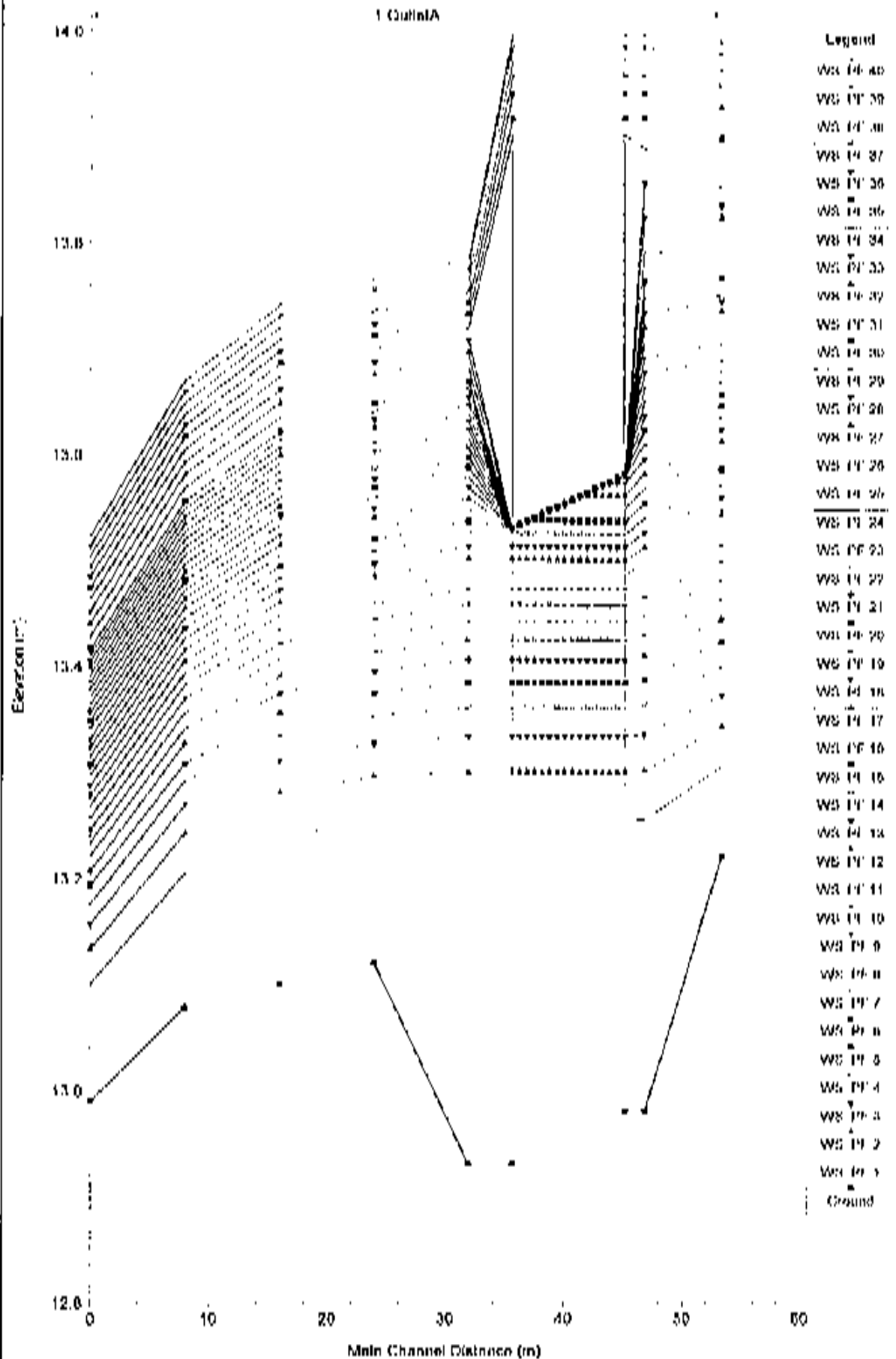
Moorebank Outlet A Proposed Plan, Plan 02 25/08/2010
185 = 51 75



Moorebank_Outfall A Proposed

Plan: Plan 02 25/08/2010

1 OutfallA



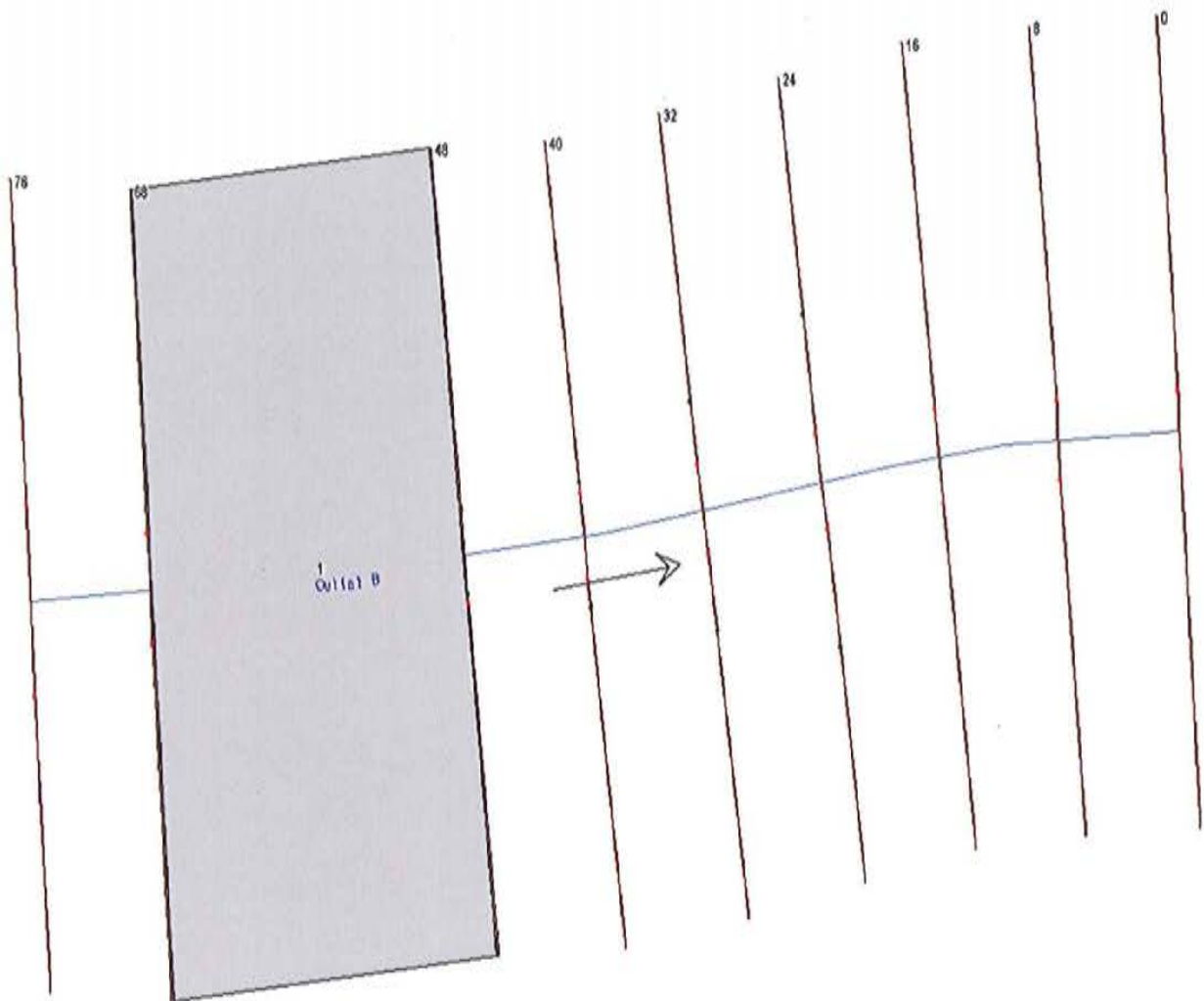
Is'el: HAH I'auu I'auu? Hymz I Hanyu q'it'auk q' uuuuuuu

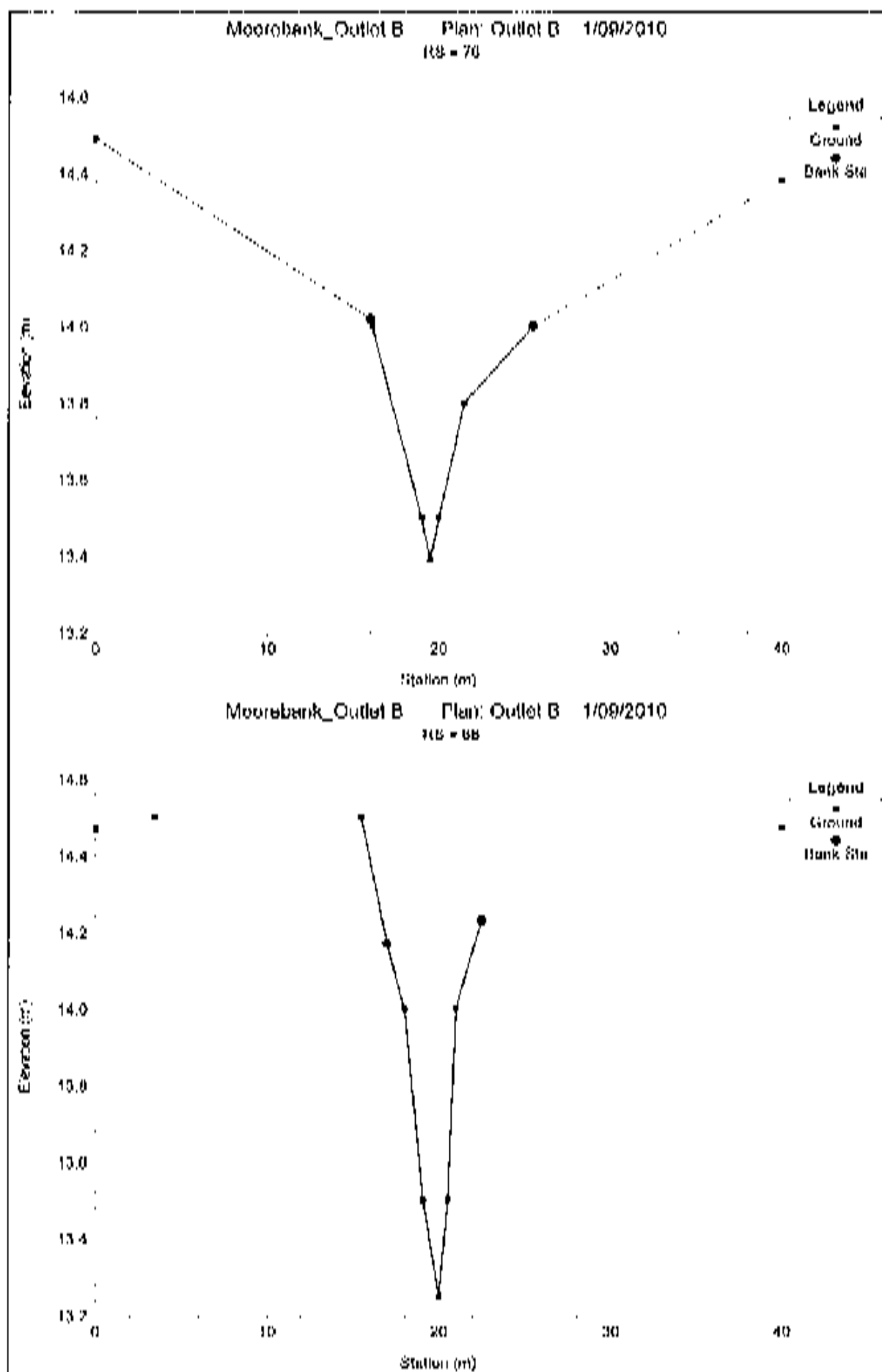
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Run 001	2023-01-01	10:00	Normal	Success	Lab 1	Test 1	10.00	10.00	10.00	10.00	2023-01-01	10:00	Normal	Success	Lab 1	Test 1	10.00	10.00	10.00	10.00
Run 002	2023-01-01	10:05	Normal	Success	Lab 1	Test 2	10.05	10.05	10.05	10.05	2023-01-01	10:05	Normal	Success	Lab 1	Test 2	10.05	10.05	10.05	10.05
Run 003	2023-01-01	10:10	Normal	Success	Lab 1	Test 3	10.10	10.10	10.10	10.10	2023-01-01	10:10	Normal	Success	Lab 1	Test 3	10.10	10.10	10.10	10.10
Run 004	2023-01-01	10:15	Normal	Success	Lab 1	Test 4	10.15	10.15	10.15	10.15	2023-01-01	10:15	Normal	Success	Lab 1	Test 4	10.15	10.15	10.15	10.15
Run 005	2023-01-01	10:20	Normal	Success	Lab 1	Test 5	10.20	10.20	10.20	10.20	2023-01-01	10:20	Normal	Success	Lab 1	Test 5	10.20	10.20	10.20	10.20
Run 006	2023-01-01	10:25	Normal	Success	Lab 1	Test 6	10.25	10.25	10.25	10.25	2023-01-01	10:25	Normal	Success	Lab 1	Test 6	10.25	10.25	10.25	10.25
Run 007	2023-01-01	10:30	Normal	Success	Lab 1	Test 7	10.30	10.30	10.30	10.30	2023-01-01	10:30	Normal	Success	Lab 1	Test 7	10.30	10.30	10.30	10.30
Run 008	2023-01-01	10:35	Normal	Success	Lab 1	Test 8	10.35	10.35	10.35	10.35	2023-01-01	10:35	Normal	Success	Lab 1	Test 8	10.35	10.35	10.35	10.35
Run 009	2023-01-01	10:40	Normal	Success	Lab 1	Test 9	10.40	10.40	10.40	10.40	2023-01-01	10:40	Normal	Success	Lab 1	Test 9	10.40	10.40	10.40	10.40
Run 010	2023-01-01	10:45	Normal	Success	Lab 1	Test 10	10.45	10.45	10.45	10.45	2023-01-01	10:45	Normal	Success	Lab 1	Test 10	10.45	10.45	10.45	10.45
Run 011	2023-01-01	10:50	Normal	Success	Lab 1	Test 11	10.50	10.50	10.50	10.50	2023-01-01	10:50	Normal	Success	Lab 1	Test 11	10.50	10.50	10.50	10.50
Run 012	2023-01-01	10:55	Normal	Success	Lab 1	Test 12	10.55	10.55	10.55	10.55	2023-01-01	10:55	Normal	Success	Lab 1	Test 12	10.55	10.55	10.55	10.55
Run 013	2023-01-01	11:00	Normal	Success	Lab 1	Test 13	11.00	11.00	11.00	11.00	2023-01-01	11:00	Normal	Success	Lab 1	Test 13	11.00	11.00	11.00	11.00
Run 014	2023-01-01	11:05	Normal	Success	Lab 1	Test 14	11.05	11.05	11.05	11.05	2023-01-01	11:05	Normal	Success	Lab 1	Test 14	11.05	11.05	11.05	11.05
Run 015	2023-01-01	11:10	Normal	Success	Lab 1	Test 15	11.10	11.10	11.10	11.10	2023-01-01	11:10	Normal	Success	Lab 1	Test 15	11.10	11.10	11.10	11.10
Run 016	2023-01-01	11:15	Normal	Success	Lab 1	Test 16	11.15	11.15	11.15	11.15	2023-01-01	11:15	Normal	Success	Lab 1	Test 16	11.15	11.15	11.15	11.15
Run 017	2023-01-01	11:20	Normal	Success	Lab 1	Test 17	11.20	11.20	11.20	11.20	2023-01-01	11:20	Normal	Success	Lab 1	Test 17	11.20	11.20	11.20	11.20
Run 018	2023-01-01	11:25	Normal	Success	Lab 1	Test 18	11.25	11.25	11.25	11.25	2023-01-01	11:25	Normal	Success	Lab 1	Test 18	11.25	11.25	11.25	11.25
Run 019	2023-01-01	11:30	Normal	Success	Lab 1	Test 19	11.30	11.30	11.30	11.30	2023-01-01	11:30	Normal	Success	Lab 1	Test 19	11.30	11.30	11.30	11.30
Run 020	2023-01-01	11:35	Normal	Success	Lab 1	Test 20	11.35	11.35												

FILE NAME: 07-01-02 - 08-01-02 - 09-01-02 - 10-01-02 - 11-01-02

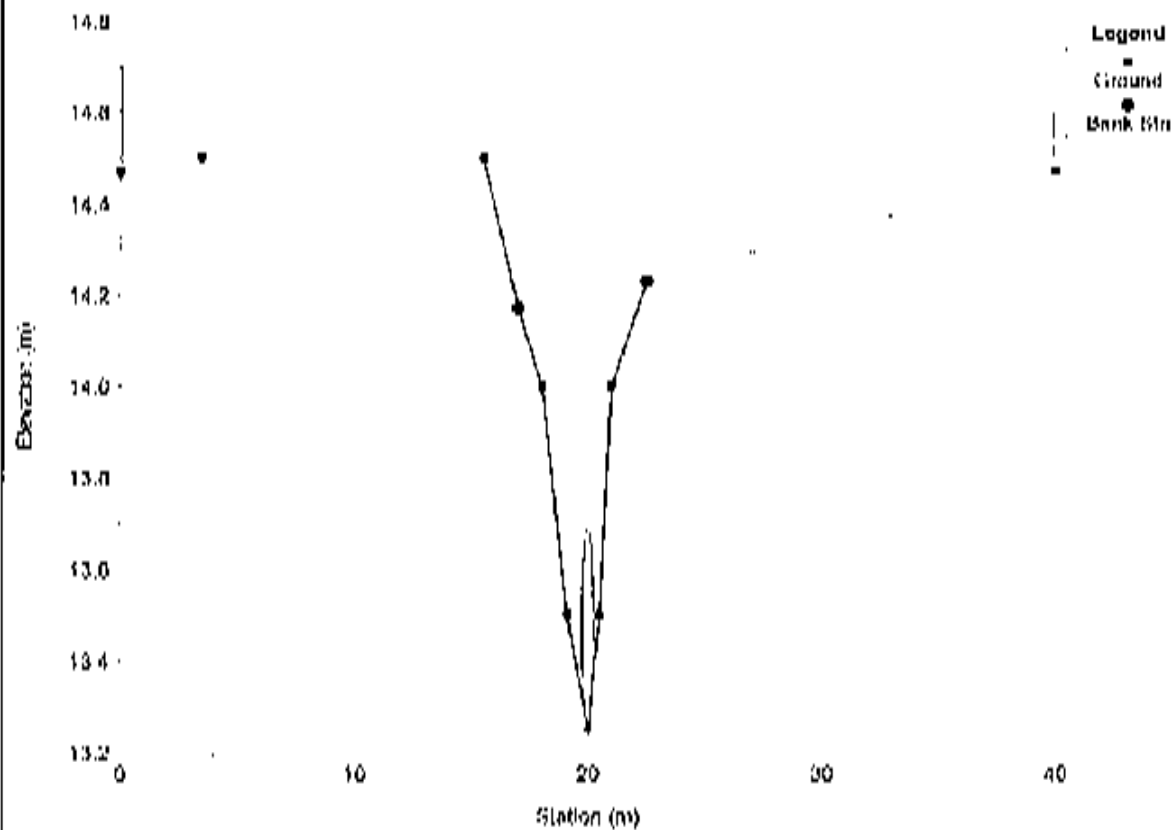
Branch	Flow ID	Flow ID	Q Total (m³/s)	Max Vel (m/s)	Vel Elev (m)	Q1 Vel (m³/s)	Q2 Vel (m³/s)	Q3 Vel (m³/s)	Q4 Vel (m³/s)	Vel Elev (m)	Flow Area (m²)	Top Width (m)	Formula #
Branch	01	01	0.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	0.00	3.43	0.01
Branch	02	02	0.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	0.00	4.00	0.00
Branch	03	03	0.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	0.00	4.49	1.01
Branch	04	04	0.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	0.00	4.75	1.00
Branch	05	05	0.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	0.00	4.98	1.02
Branch	06	06	0.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	0.00	5.21	1.01
Branch	07	07	0.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	0.00	5.41	1.01
Branch	08	08	0.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	0.00	5.60	1.01
Branch	09	09	1.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.00	5.79	1.01
Branch	10	10	1.10	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.10	5.97	1.01
Branch	11	11	1.20	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.20	6.12	1.01
Branch	12	12	1.30	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.30	6.29	1.01
Branch	13	13	1.40	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.40	6.43	1.01
Branch	14	14	1.50	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.50	6.58	1.01
Branch	15	15	1.60	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.60	6.72	1.01
Branch	16	16	1.70	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.70	6.88	1.01
Branch	17	17	1.80	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.80	7.01	1.01
Branch	18	18	1.90	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	1.90	7.14	1.00
Branch	19	19	2.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.00	7.28	1.00
Branch	20	20	2.10	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.10	7.40	1.00
Branch	21	21	2.20	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.20	7.52	1.00
Branch	22	22	2.30	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.30	7.64	1.00
Branch	23	23	2.40	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.40	7.75	1.00
Branch	24	24	2.50	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.50	7.87	1.00
Branch	25	25	2.60	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.60	7.98	1.00
Branch	26	26	2.70	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.70	8.09	1.00
Branch	27	27	2.80	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.80	8.20	1.00
Branch	28	28	2.90	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	2.90	8.31	1.00
Branch	29	29	3.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.00	8.42	1.00
Branch	30	30	3.10	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.10	8.53	1.00
Branch	31	31	3.20	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.20	8.64	1.00
Branch	32	32	3.30	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.30	8.75	1.00
Branch	33	33	3.40	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.40	8.86	1.00
Branch	34	34	3.50	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.50	8.97	1.00
Branch	35	35	3.60	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.60	9.08	1.00
Branch	36	36	3.70	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.70	9.19	1.00
Branch	37	37	3.80	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.80	9.30	1.00
Branch	38	38	3.90	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	3.90	9.41	1.00
Branch	39	39	4.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.00	9.52	1.00
Branch	40	40	4.10	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.10	9.63	1.00
Branch	41	41	4.20	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.20	9.74	1.00
Branch	42	42	4.30	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.30	9.85	1.00
Branch	43	43	4.40	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.40	9.96	1.00
Branch	44	44	4.50	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.50	10.07	1.00
Branch	45	45	4.60	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.60	10.18	1.00
Branch	46	46	4.70	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.70	10.29	1.00
Branch	47	47	4.80	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.80	10.40	1.00
Branch	48	48	4.90	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	4.90	10.51	1.00
Branch	49	49	5.00	12.00	12.12	12.12	12.12	12.12	12.12	0.000000	5.00	10.62	1.00

OUTLET B EXISTING – HEC-RAS MODEL FILES

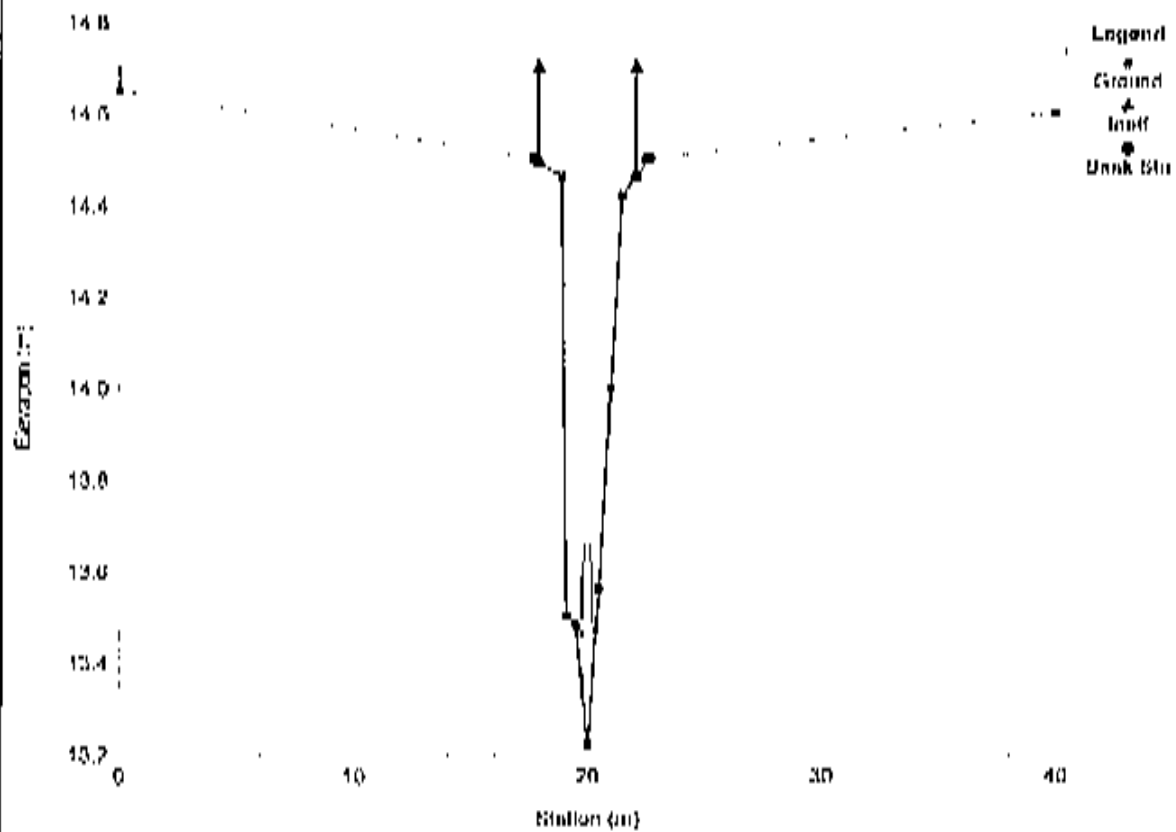




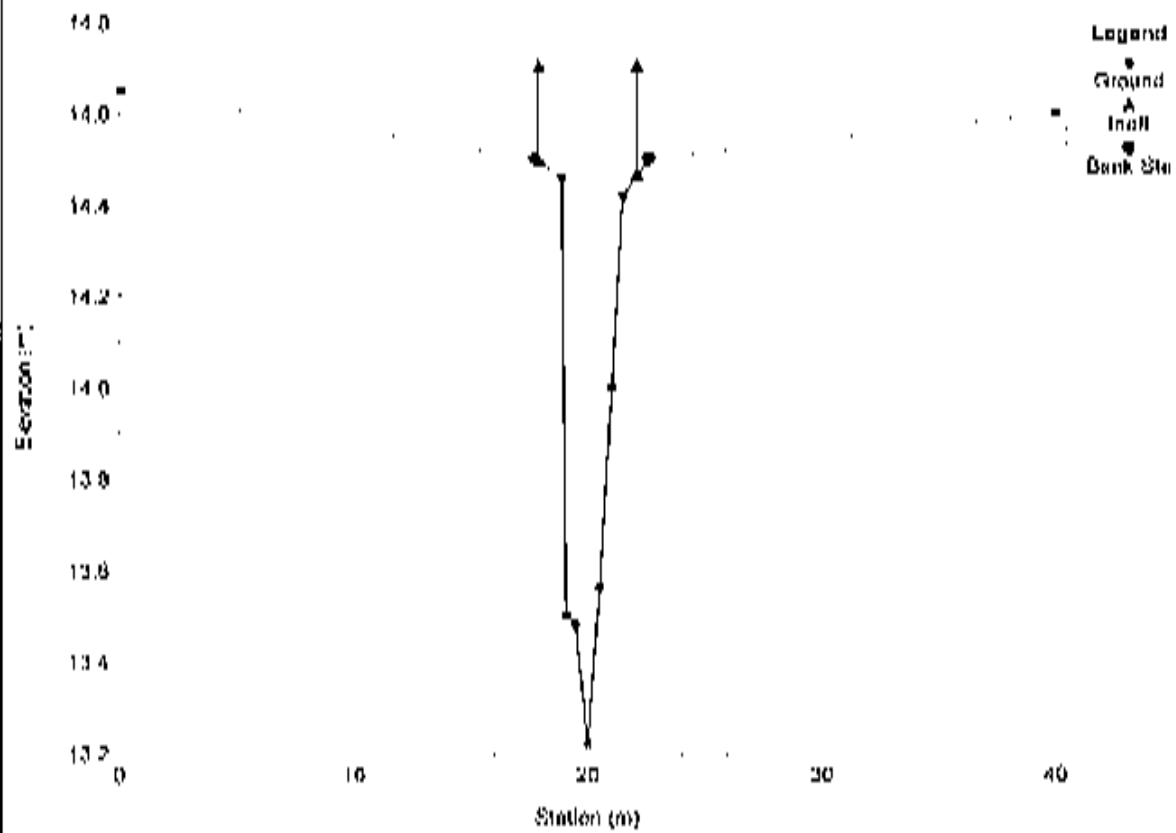
Moorebank,,Outlet B Plan, Outlet B 1/09/2010
RS = 87 Culv. Culvert under CHHd



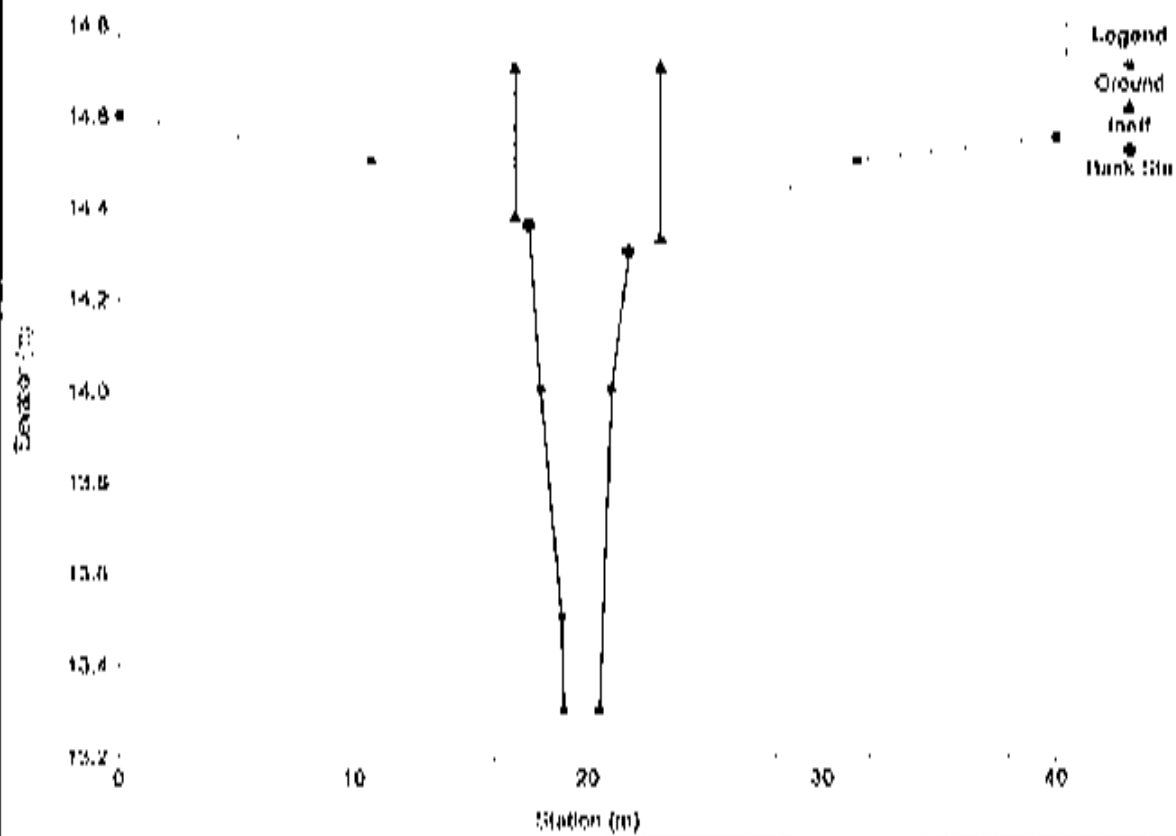
Moorebank Outlet B Plan, Outlet B 1/09/2010
RS = 87 Culv. Culvert under CHHd



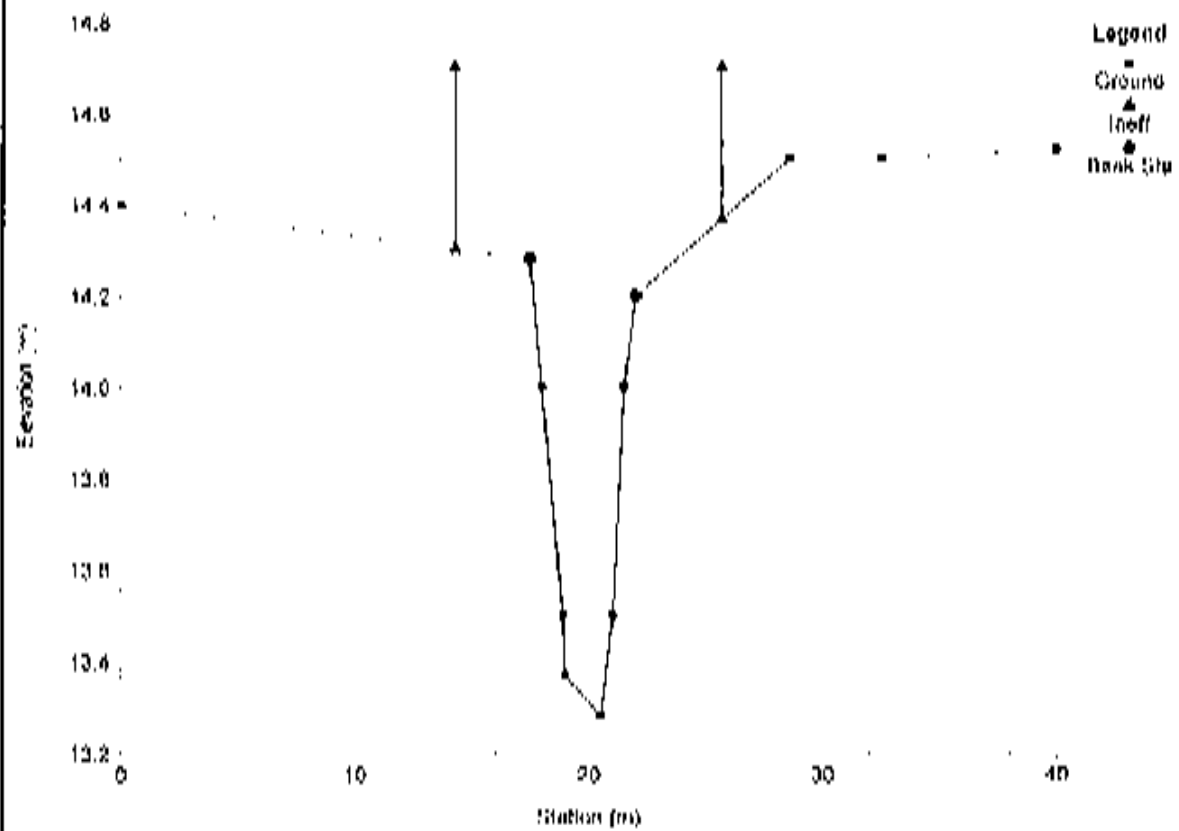
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 40 Immediately DSI of Culvert



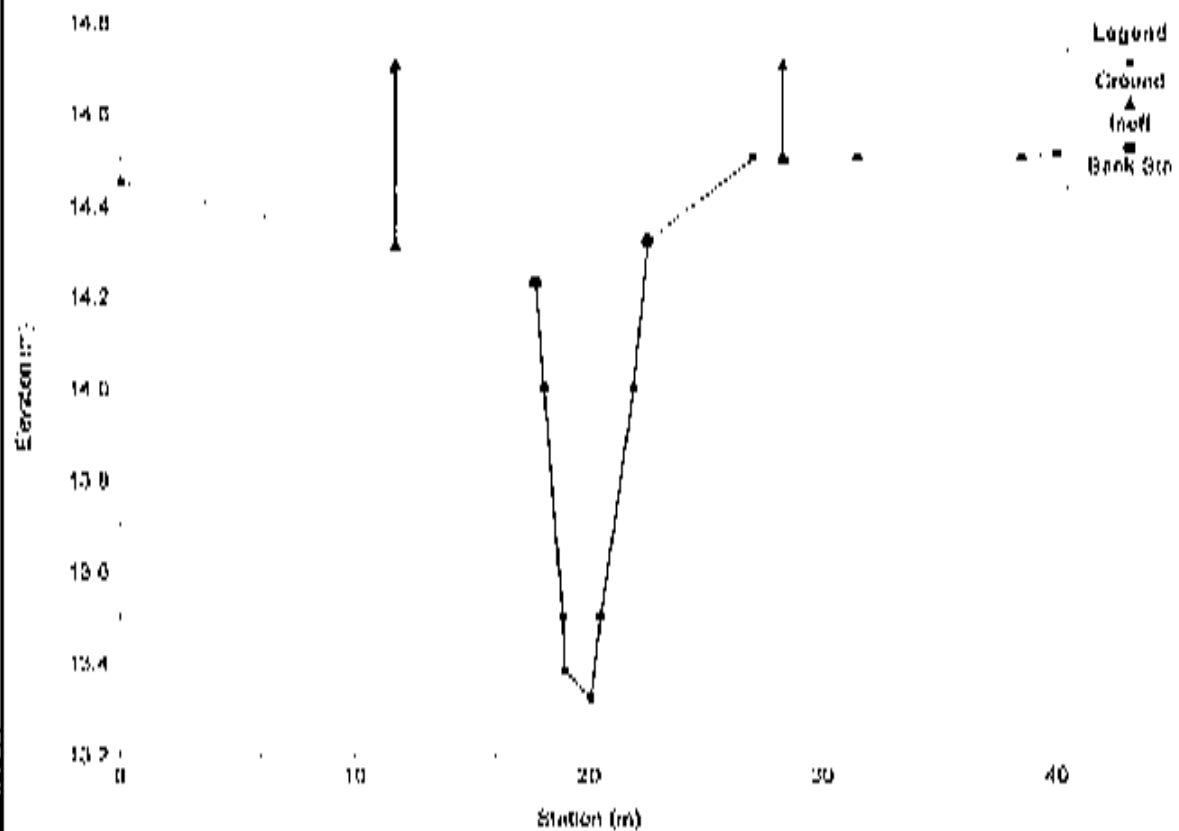
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 40



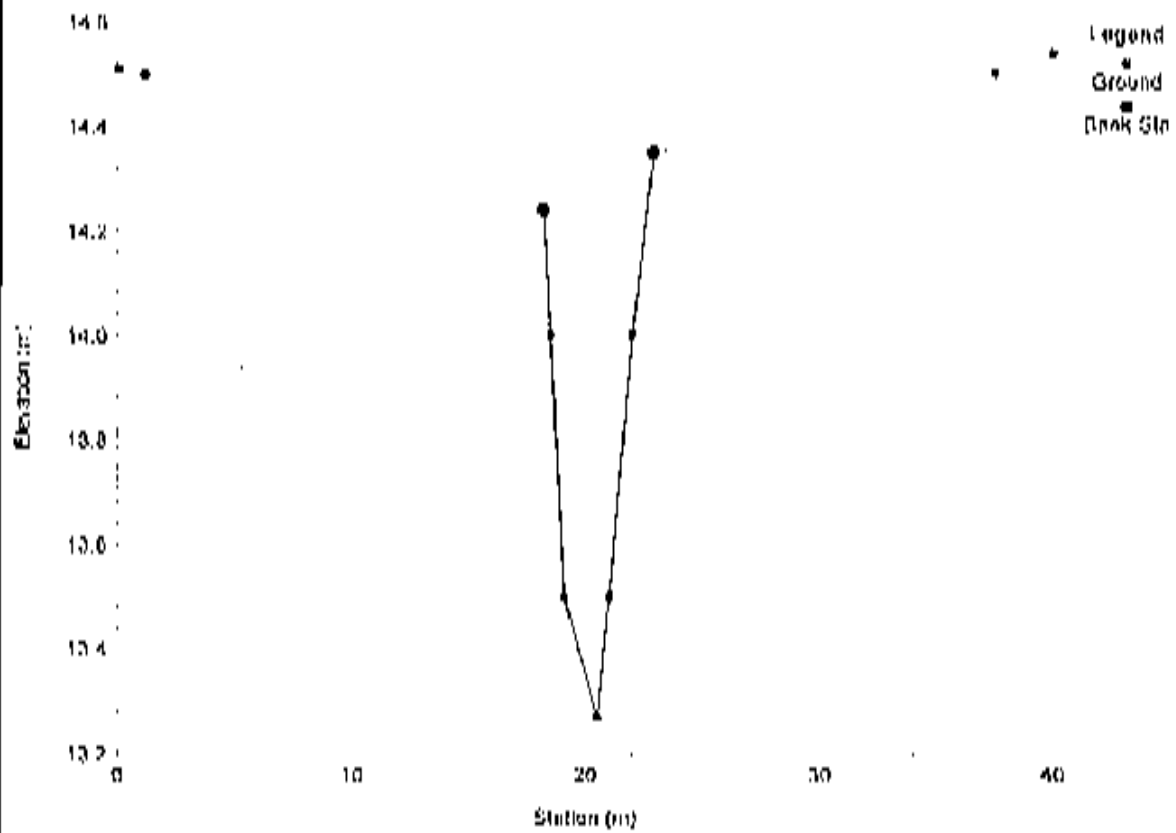
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 32



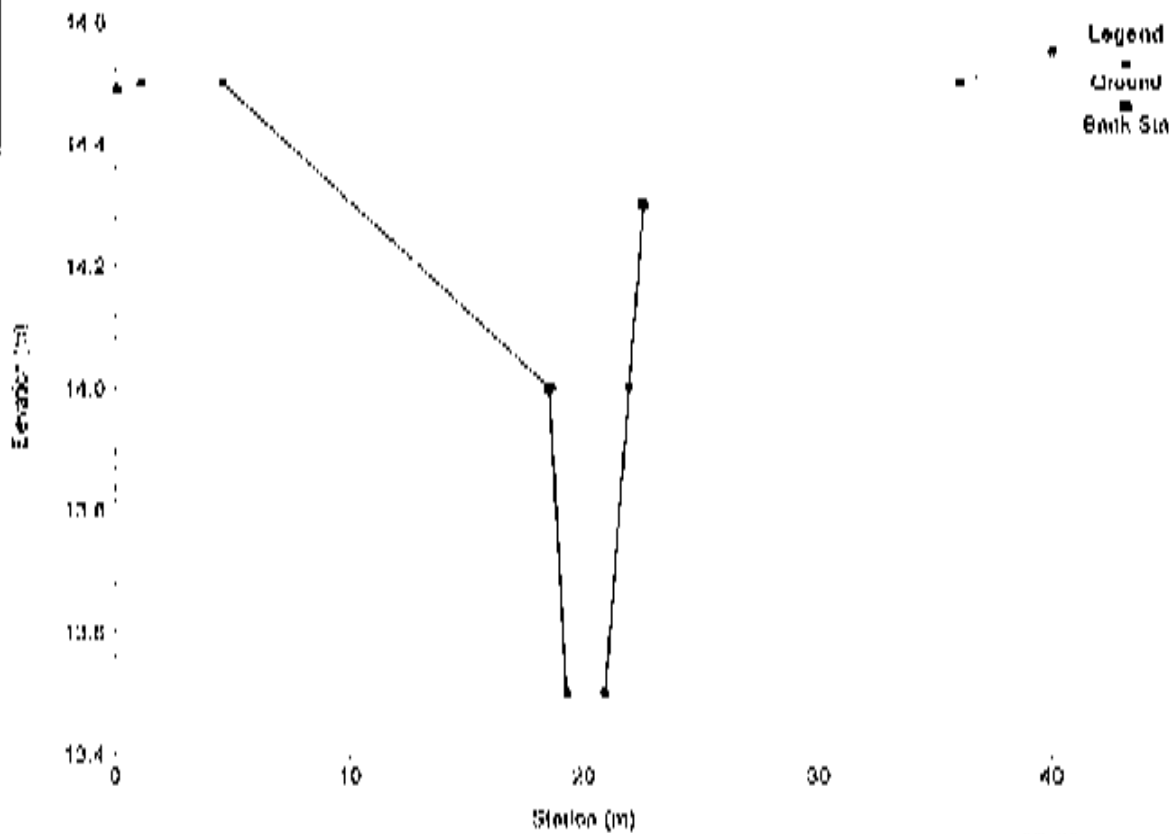
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RS = 24



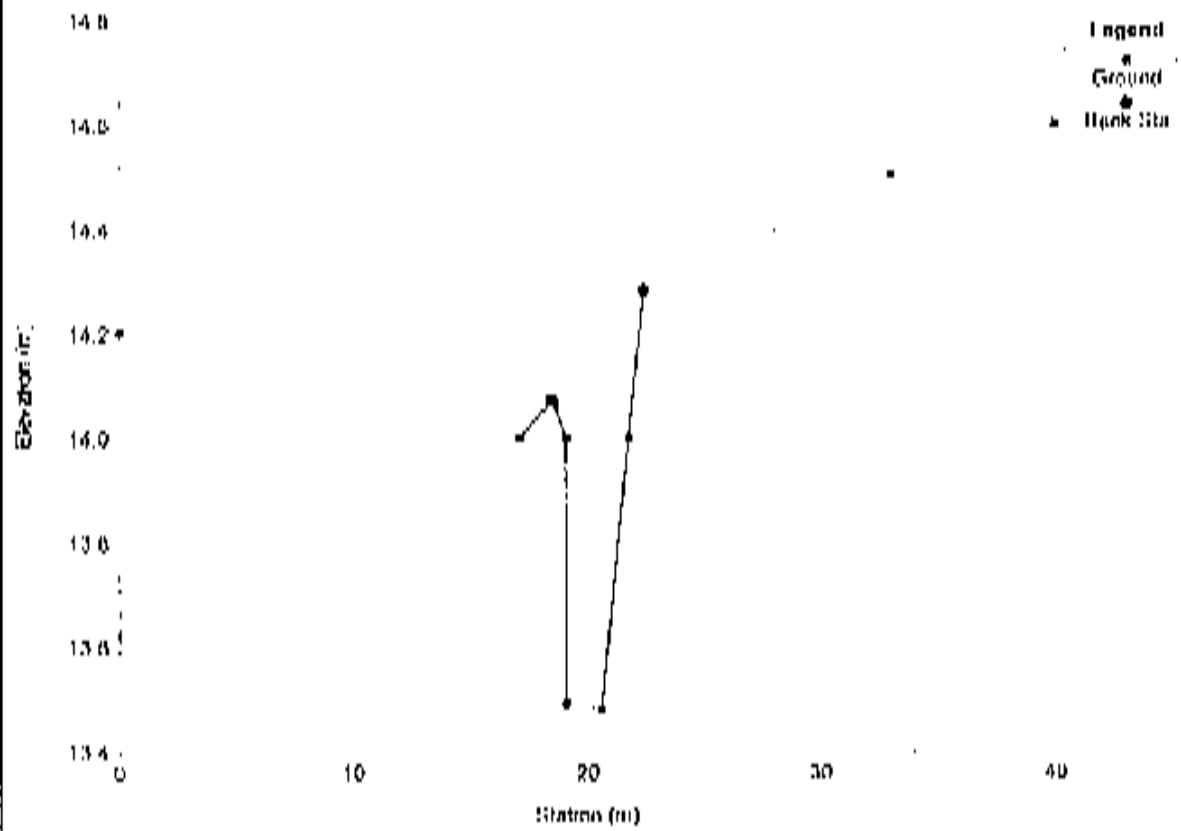
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 16



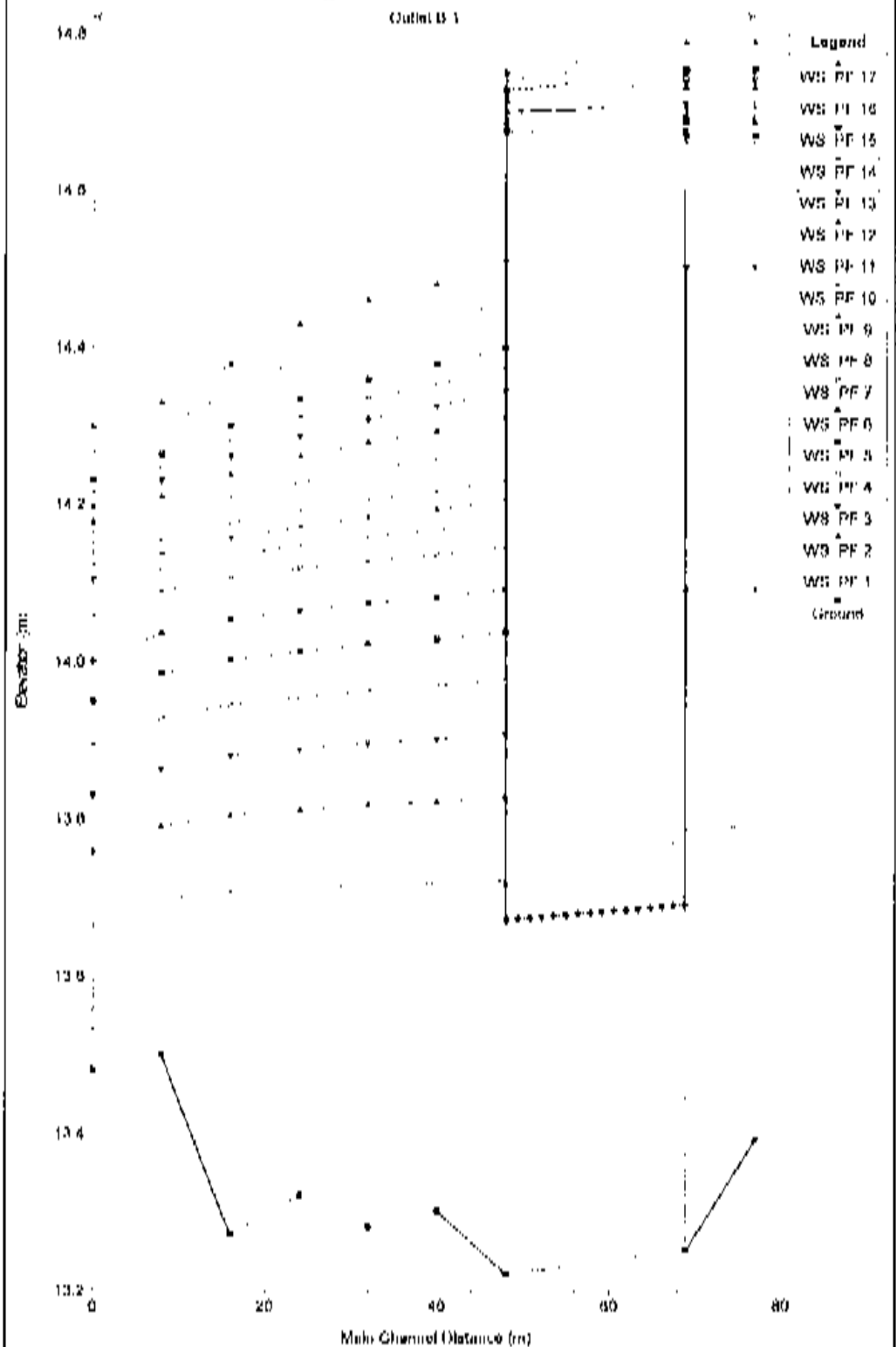
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 6



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



Moorebank_Outlet B Plan: Outlet B 1/09/2010



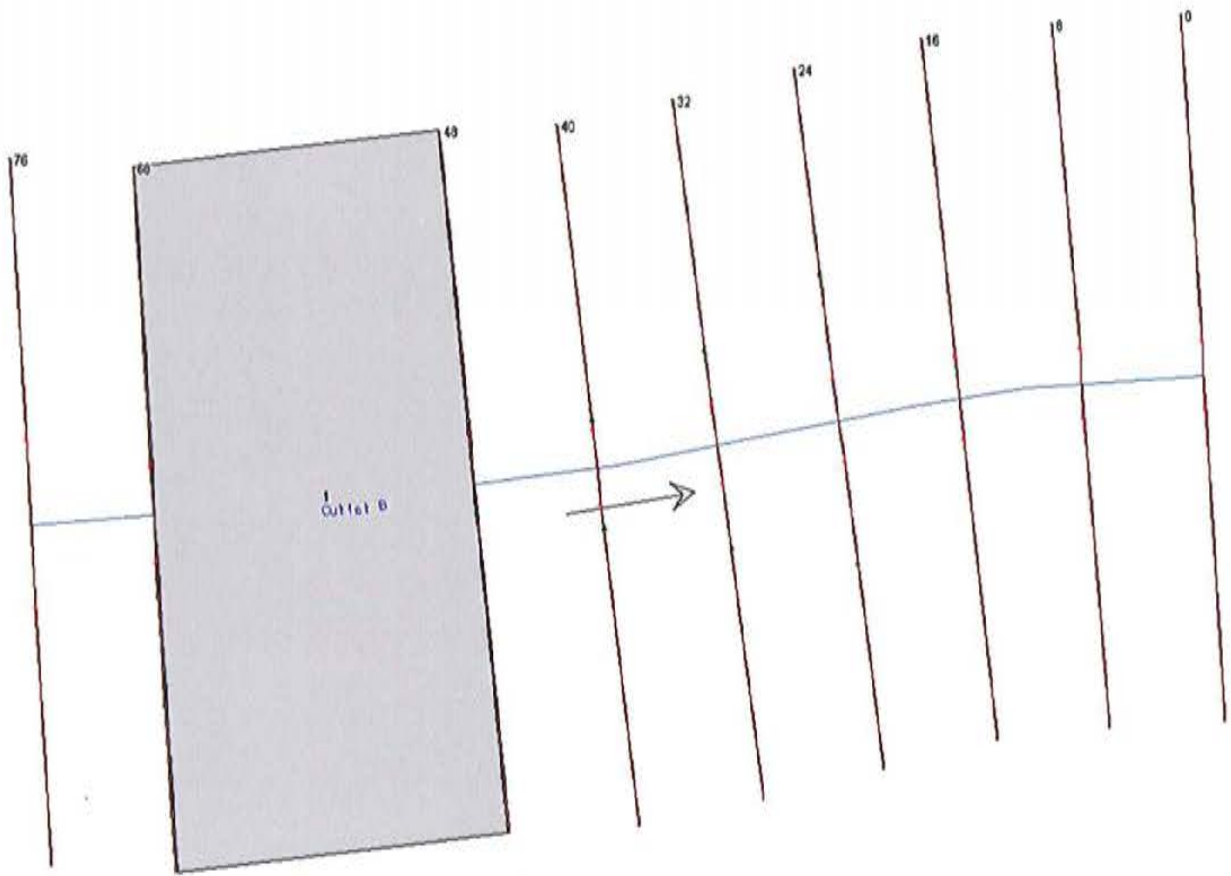
በቀሪ ባለፈው ዓመት ውስጥ የተካሄዱት የፍትሕ ስልጠናዎች በጥቅም ላይ የዋሉት ሰራተኛው ሰዎች ቁጥር 100 ሆኖ ተመዝግቧል፡፡

Stream	Stream Mile	Post Mile	U (FPS)	W (FPS)	Vy (FPS)	Cross W (m)	P (FPS)	C.D. Slope	Val (CFS)	Flow Area (sq ft)	Top (Feet)	Remarks (CFS)
20	PP 1	0.10	11.10	11.10	11.10	11.10	0.000001	0.10	0.10	0.10	11.10	0.10
20	PP 2	0.20	11.10	11.10	11.10	11.10	0.000001	0.20	0.20	0.20	11.10	0.20
20	PP 3	0.30	11.10	11.10	11.10	11.10	0.000001	0.30	0.30	0.30	11.10	0.30
20	PP 4	0.40	11.10	11.10	11.10	11.10	0.000001	0.40	0.40	0.40	11.10	0.40
20	PP 5	0.50	11.10	11.10	11.10	11.10	0.000001	0.50	0.50	0.50	11.10	0.50
20	PP 6	0.60	11.10	11.10	11.10	11.10	0.000001	0.60	0.60	0.60	11.10	0.60
20	PP 7	0.70	11.10	11.10	11.10	11.10	0.000001	0.70	0.70	0.70	11.10	0.70
20	PP 8	0.80	11.10	11.10	11.10	11.10	0.000001	0.80	0.80	0.80	11.10	0.80
20	PP 9	0.90	11.10	11.10	11.10	11.10	0.000001	0.90	0.90	0.90	11.10	0.90
20	PP 10	1.00	11.10	11.10	11.10	11.10	0.000001	1.00	1.00	1.00	11.10	1.00
20	PP 11	1.10	11.10	11.10	11.10	11.10	0.000001	1.10	1.10	1.10	11.10	1.10
20	PP 12	1.20	11.10	11.10	11.10	11.10	0.000001	1.20	1.20	1.20	11.10	1.20
20	PP 13	1.30	11.10	11.10	11.10	11.10	0.000001	1.30	1.30	1.30	11.10	1.30
20	PP 14	1.40	11.10	11.10	11.10	11.10	0.000001	1.40	1.40	1.40	11.10	1.40
20	PP 15	1.50	11.10	11.10	11.10	11.10	0.000001	1.50	1.50	1.50	11.10	1.50
20	PP 16	1.60	11.10	11.10	11.10	11.10	0.000001	1.60	1.60	1.60	11.10	1.60
20	PP 17	1.70	11.10	11.10	11.10	11.10	0.000001	1.70	1.70	1.70	11.10	1.70
20	PP 18	1.80	11.10	11.10	11.10	11.10	0.000001	1.80	1.80	1.80	11.10	1.80
20	PP 19	1.90	11.10	11.10	11.10	11.10	0.000001	1.90	1.90	1.90	11.10	1.90
20	PP 20	2.00	11.10	11.10	11.10	11.10	0.000001	2.00	2.00	2.00	11.10	2.00
20	PP 21	2.10	11.10	11.10	11.10	11.10	0.000001	2.10	2.10	2.10	11.10	2.10
20	PP 22	2.20	11.10	11.10	11.10	11.10	0.000001	2.20	2.20	2.20	11.10	2.20
20	PP 23	2.30	11.10	11.10	11.10	11.10	0.000001	2.30	2.30	2.30	11.10	2.30
20	PP 24	2.40	11.10	11.10	11.10	11.10	0.000001	2.40	2.40	2.40	11.10	2.40
20	PP 25	2.50	11.10	11.10	11.10	11.10	0.000001	2.50	2.50	2.50	11.10	2.50
20	PP 26	2.60	11.10	11.10	11.10	11.10	0.000001	2.60	2.60	2.60	11.10	2.60
20	PP 27	2.70	11.10	11.10	11.10	11.10	0.000001	2.70	2.70	2.70	11.10	2.70
20	PP 28	2.80	11.10	11.10	11.10	11.10	0.000001	2.80	2.80	2.80	11.10	2.80
20	PP 29	2.90	11.10	11.10	11.10	11.10	0.000001	2.90	2.90	2.90	11.10	2.90
20	PP 30	3.00	11.10	11.10	11.10	11.10	0.000001	3.00	3.00	3.00	11.10	3.00
20	PP 31	3.10	11.10	11.10	11.10	11.10	0.000001	3.10	3.10	3.10	11.10	3.10
20	PP 32	3.20</										

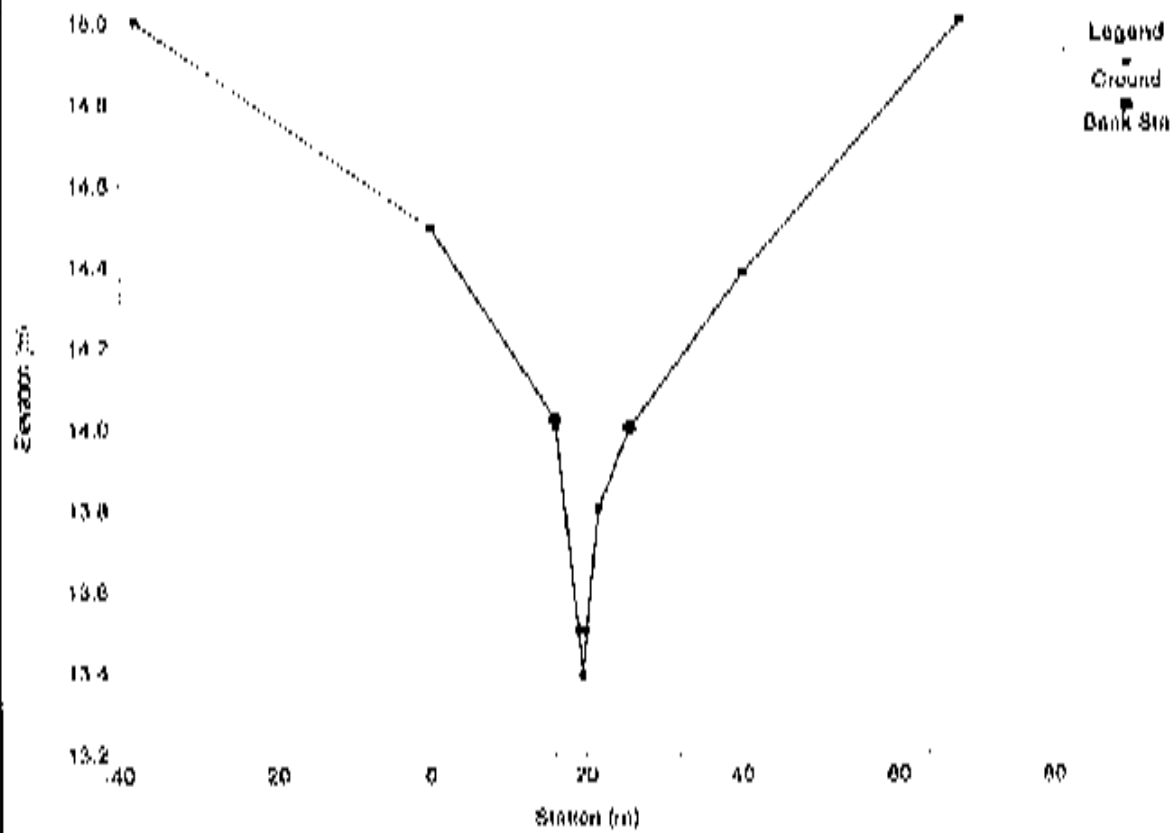
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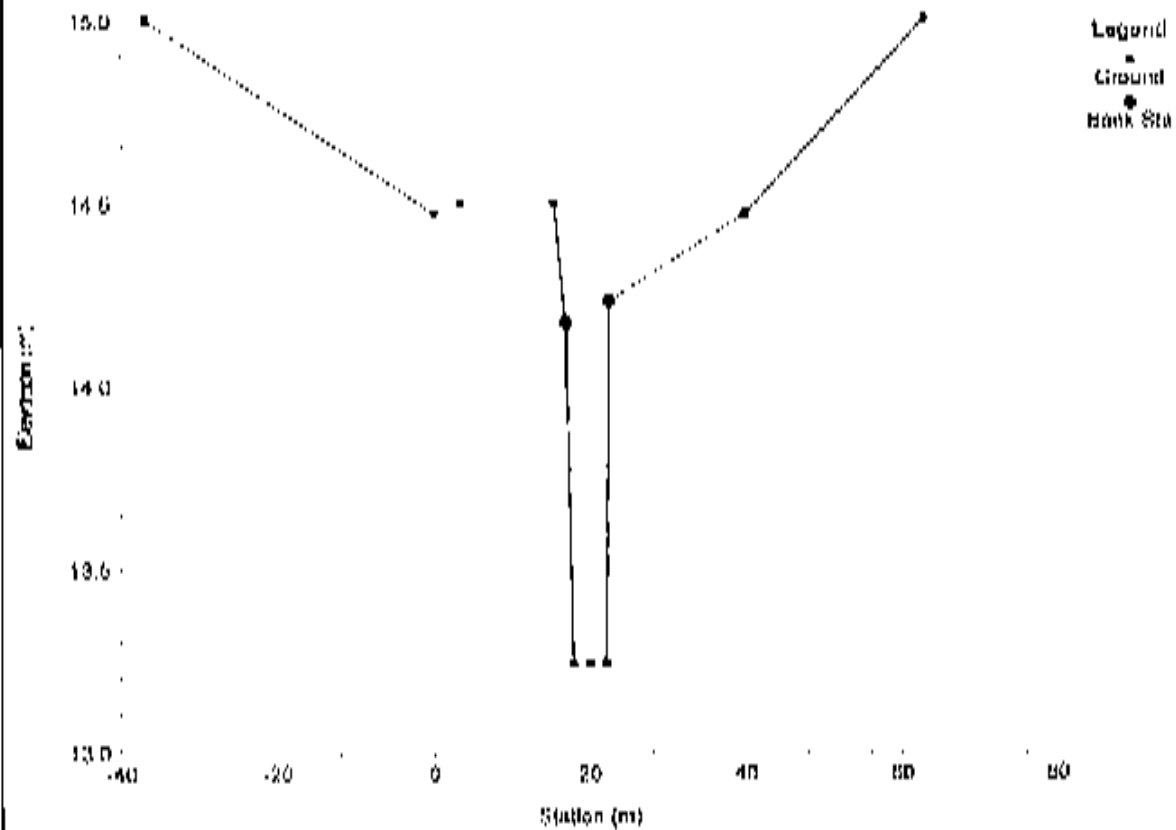
OUTLET B PROPOSED – HEC-RAS MODEL FILES

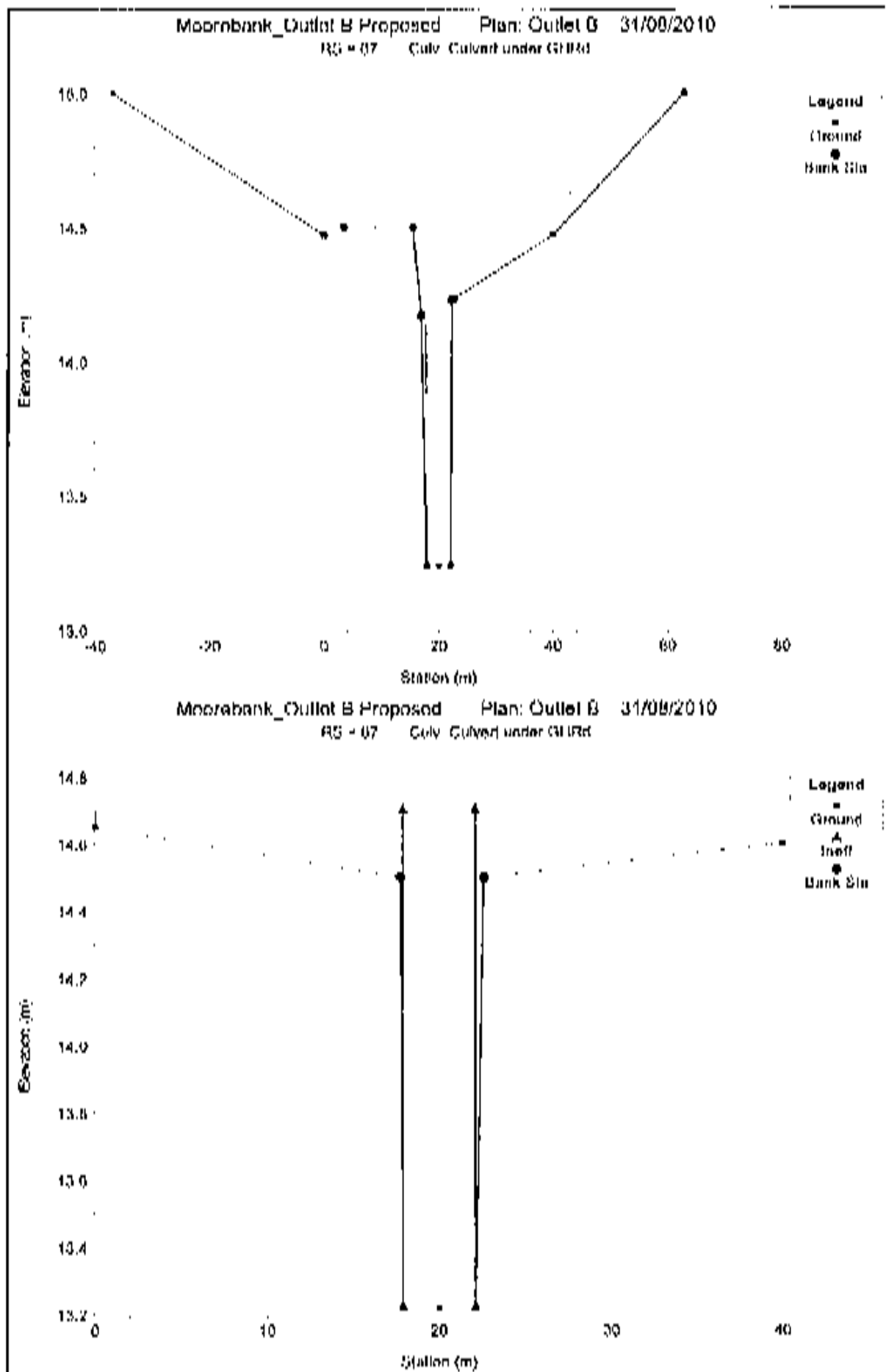


Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 70

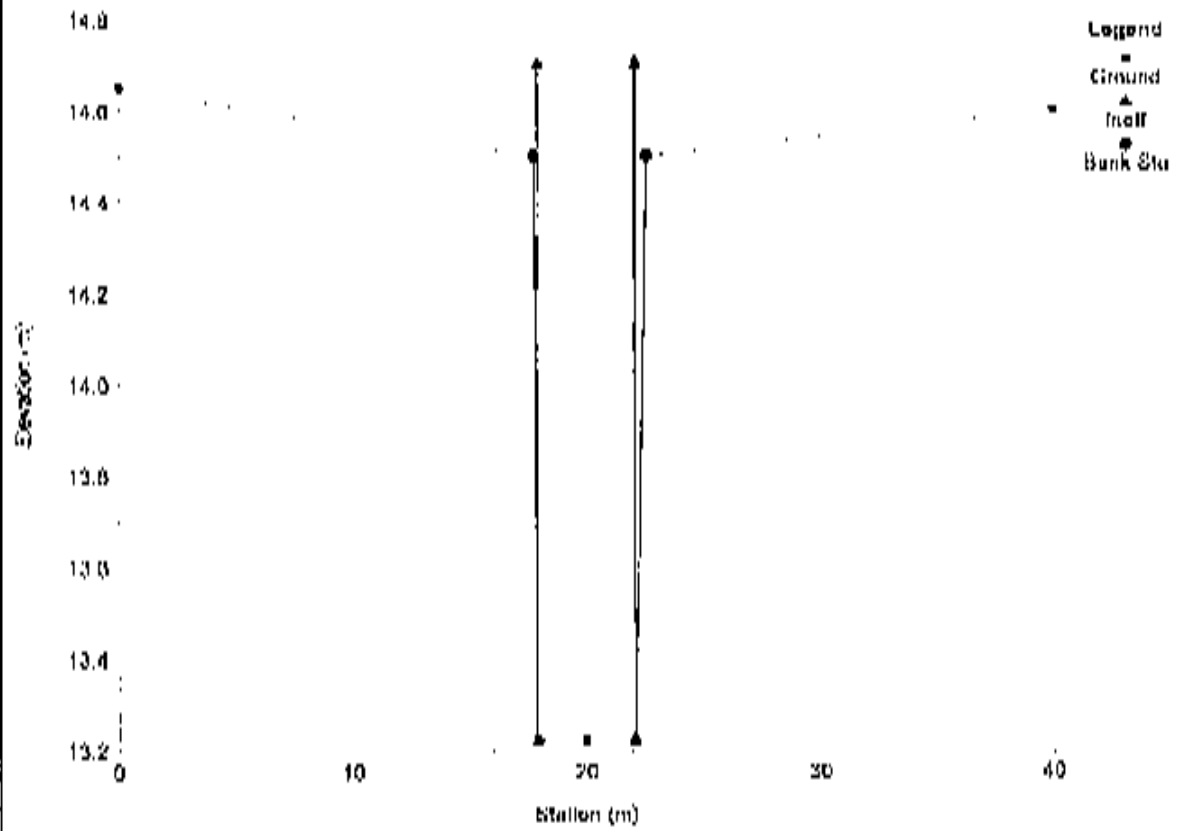


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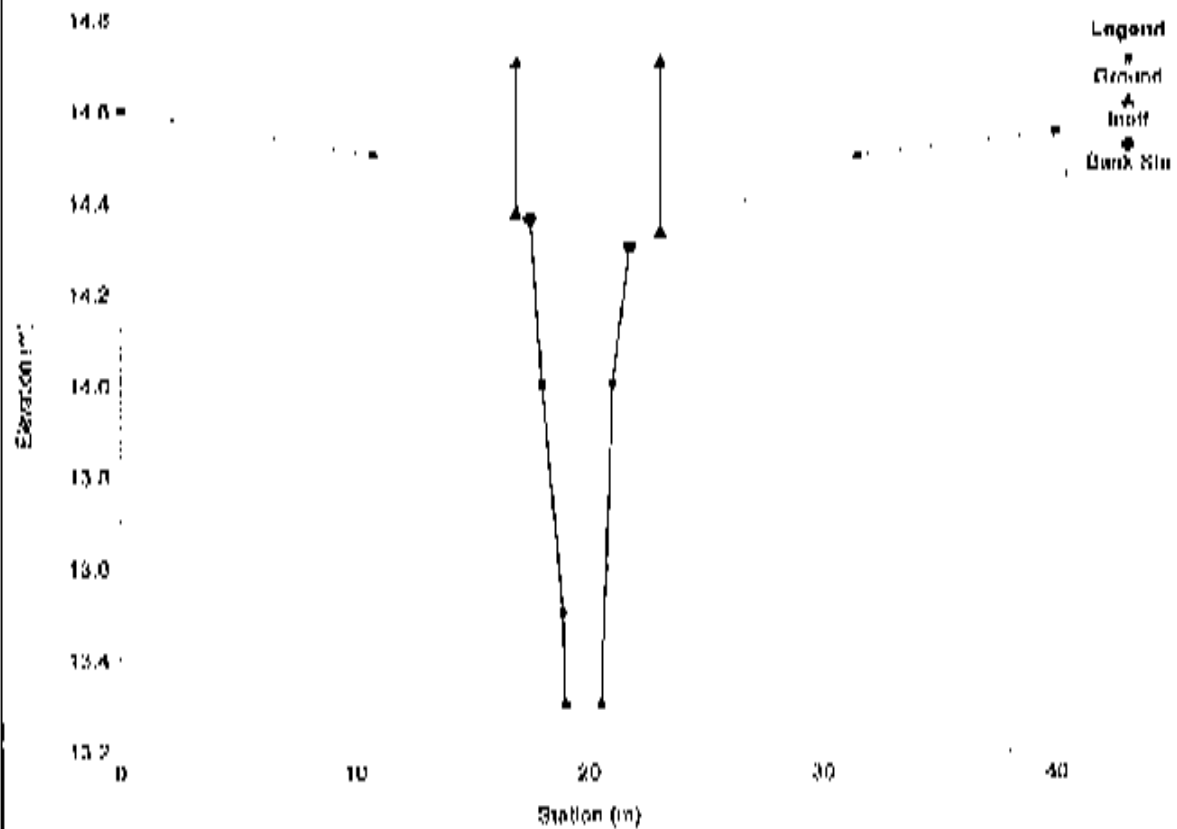




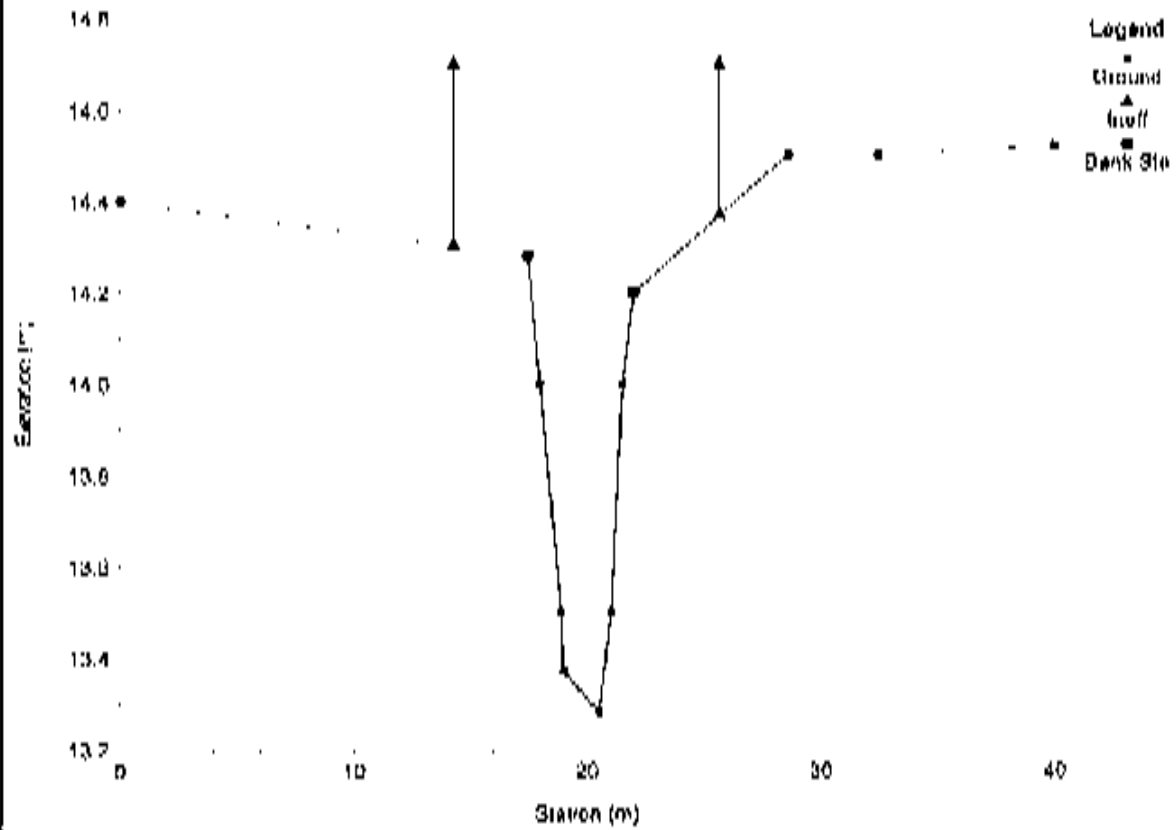
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 40 Immediately DS of Culvert



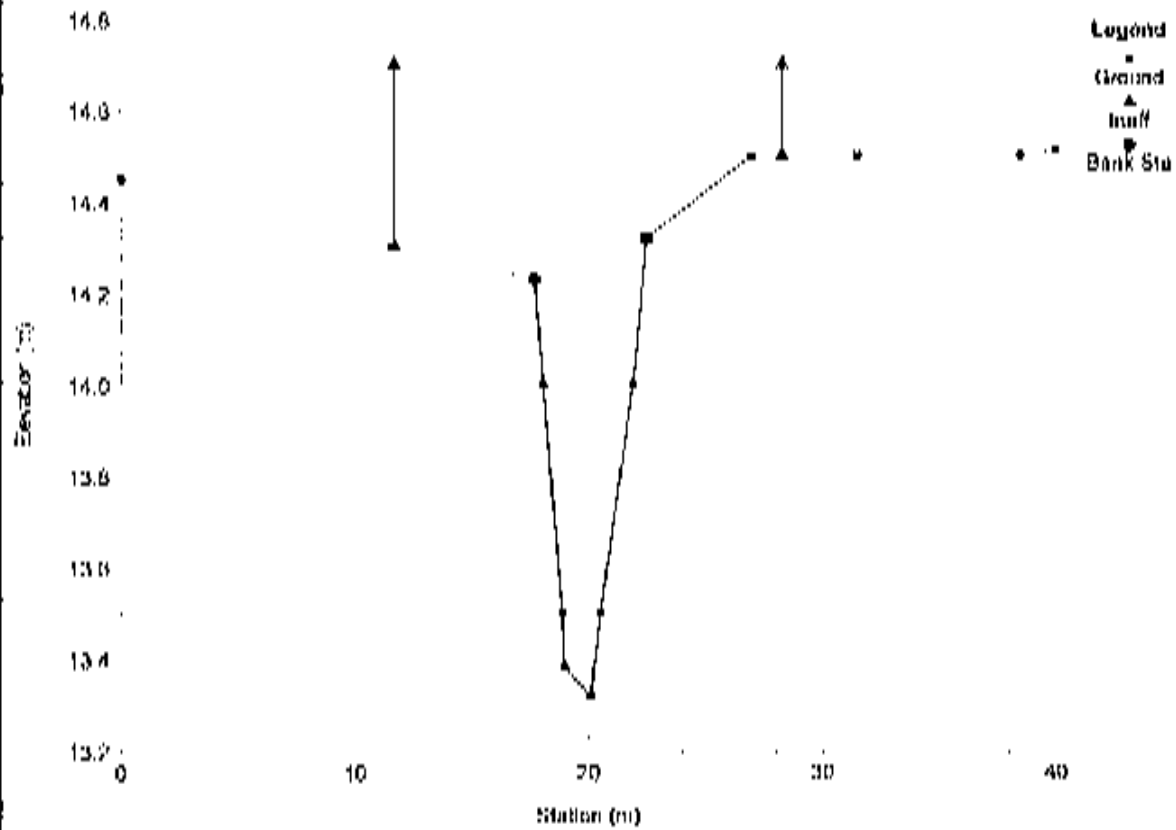
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RS = 40



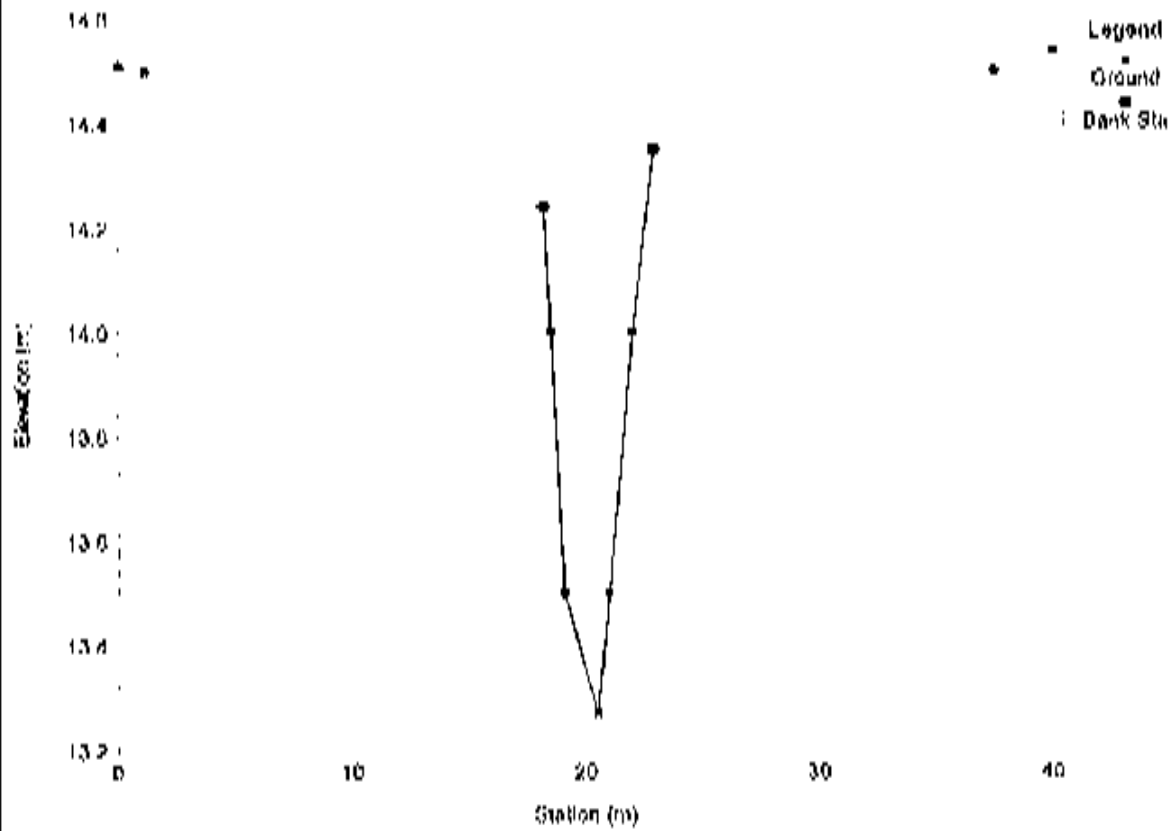
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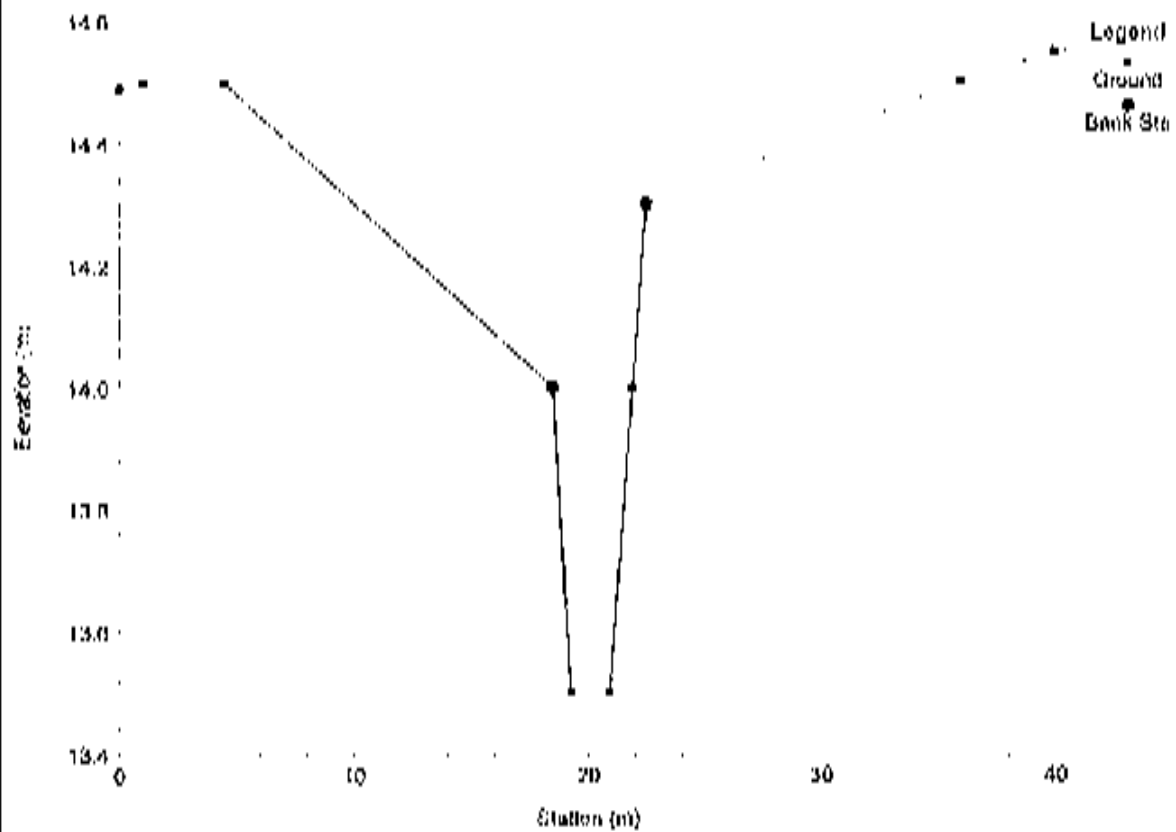
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RS = 24



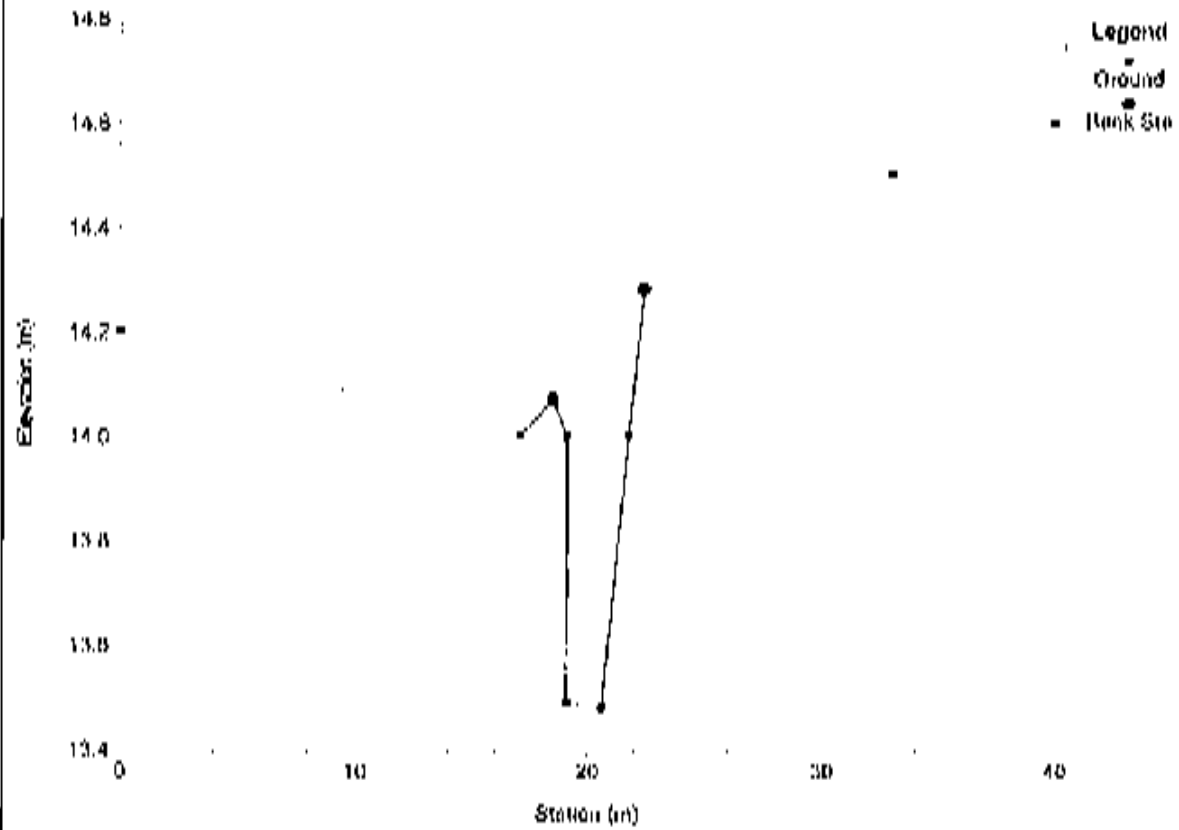
Moorebank, Outlet B Proposed Plan: Outlet B 31/08/2010
 IIS = 10



Moorebank, Outlet B Proposed Plan: Outlet B 31/08/2010
 IIS = 10

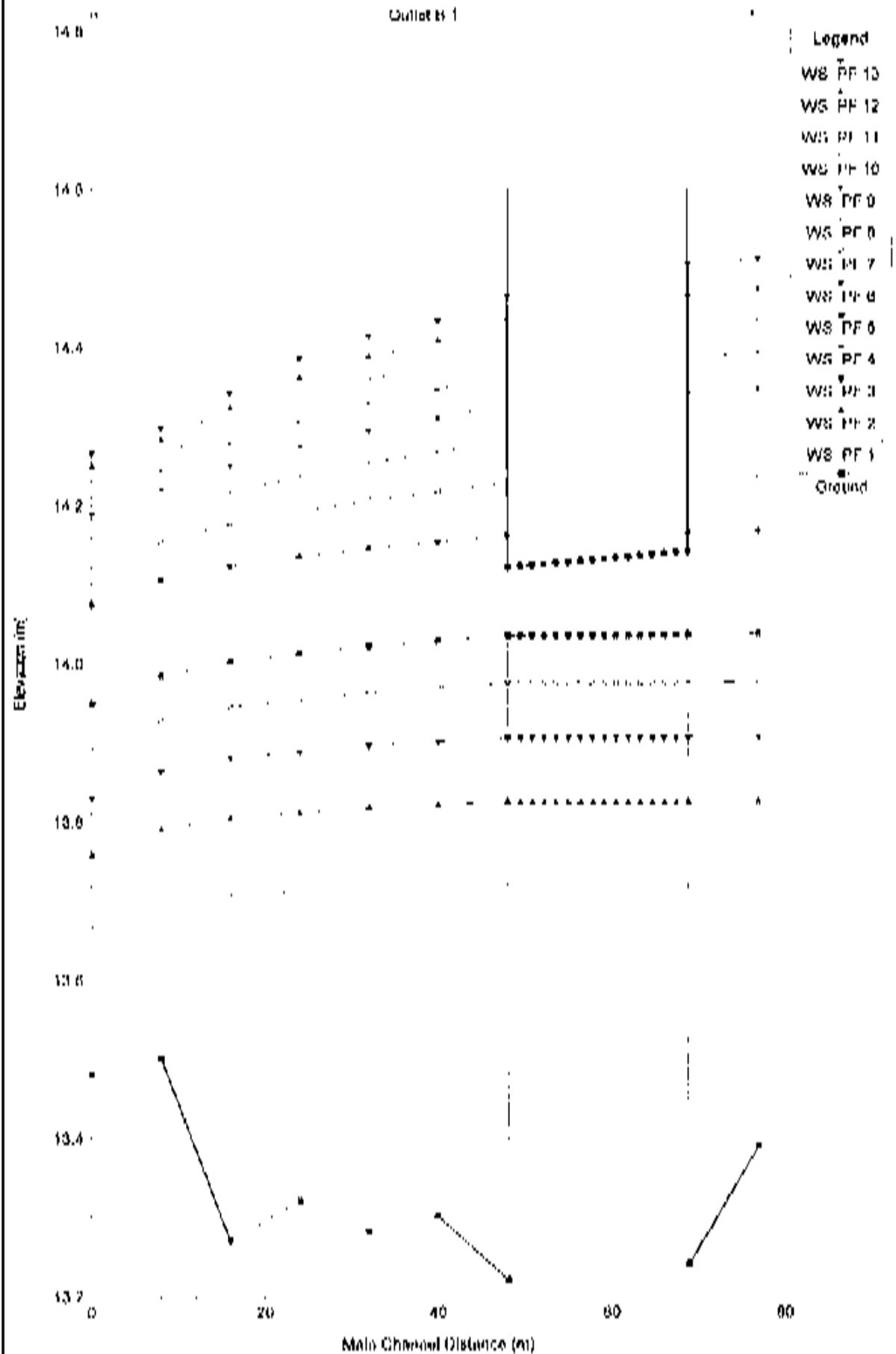


Moorebank Outlot B Proposed Plan: Outlot B 31/08/2010
101 - 0



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

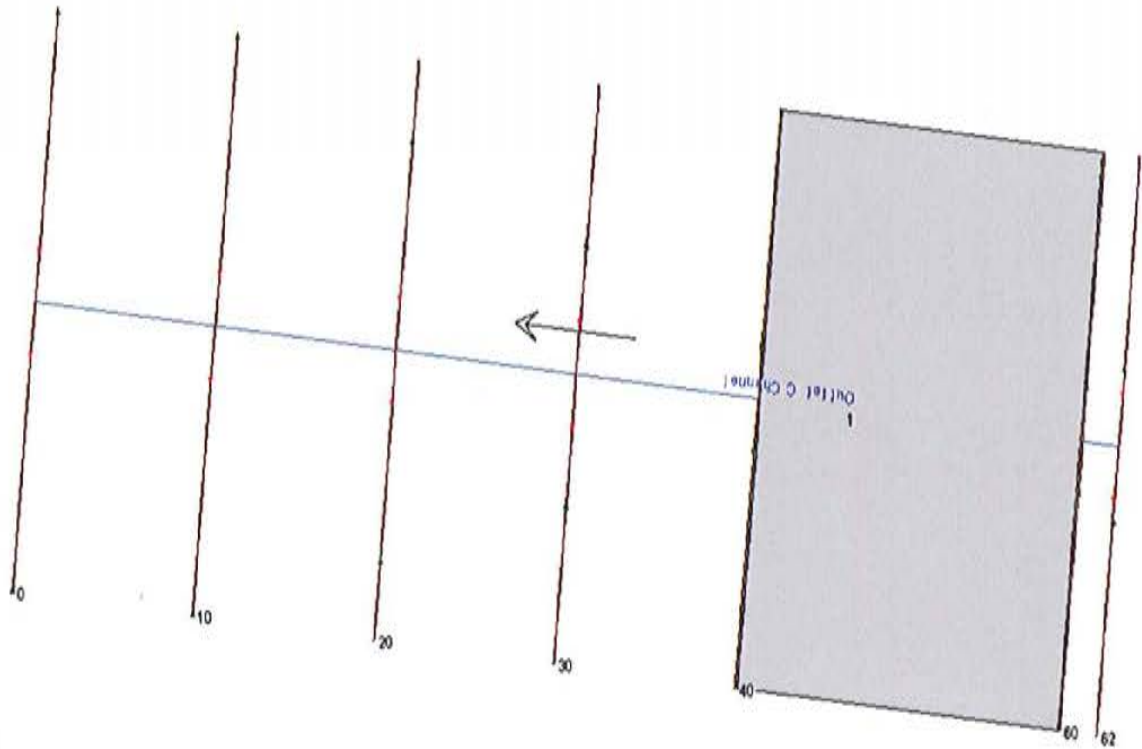
Outlet B 1



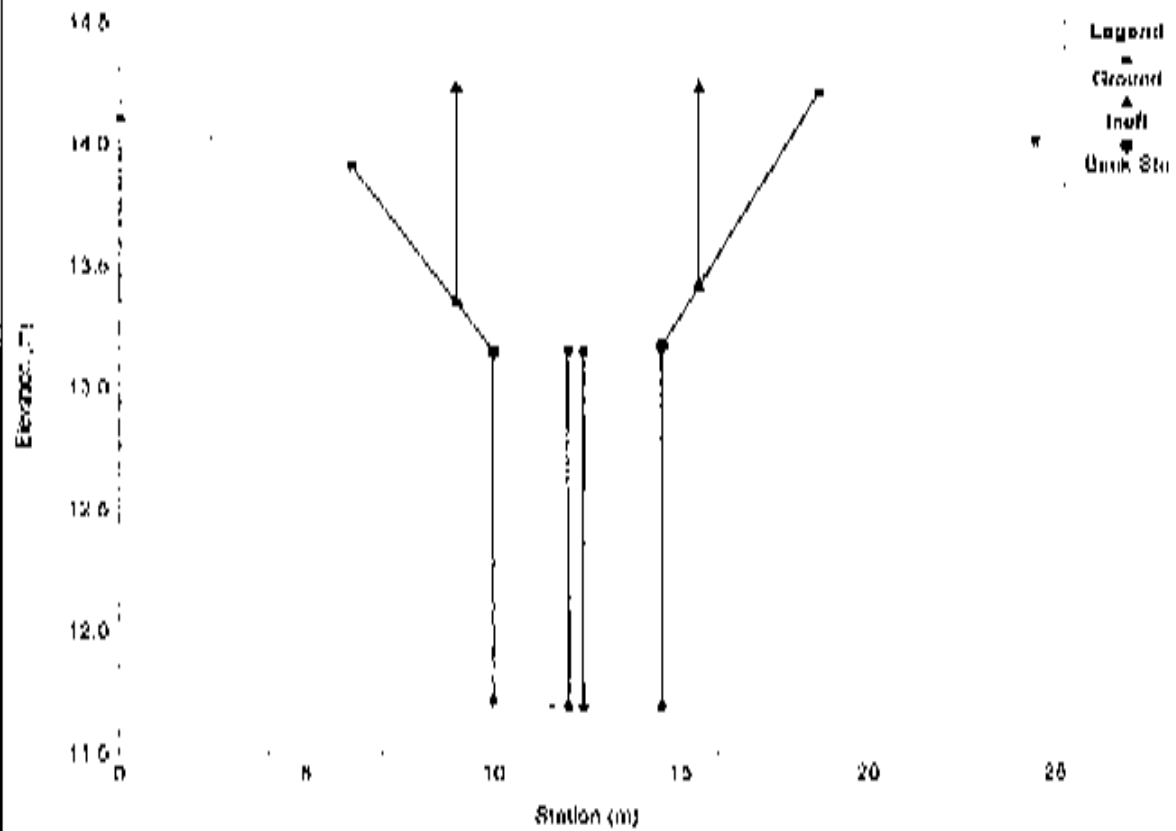
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[illegible]

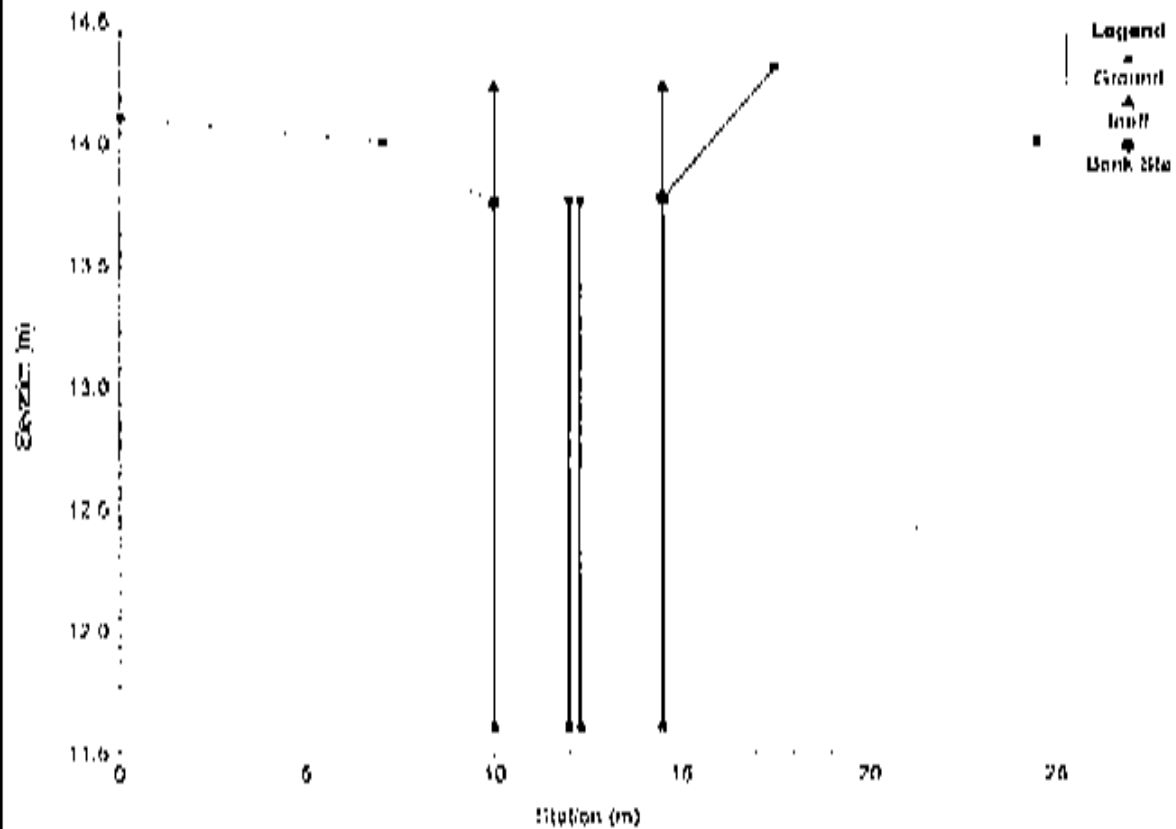
OUTLET C – HEC-RAS MODEL FILES



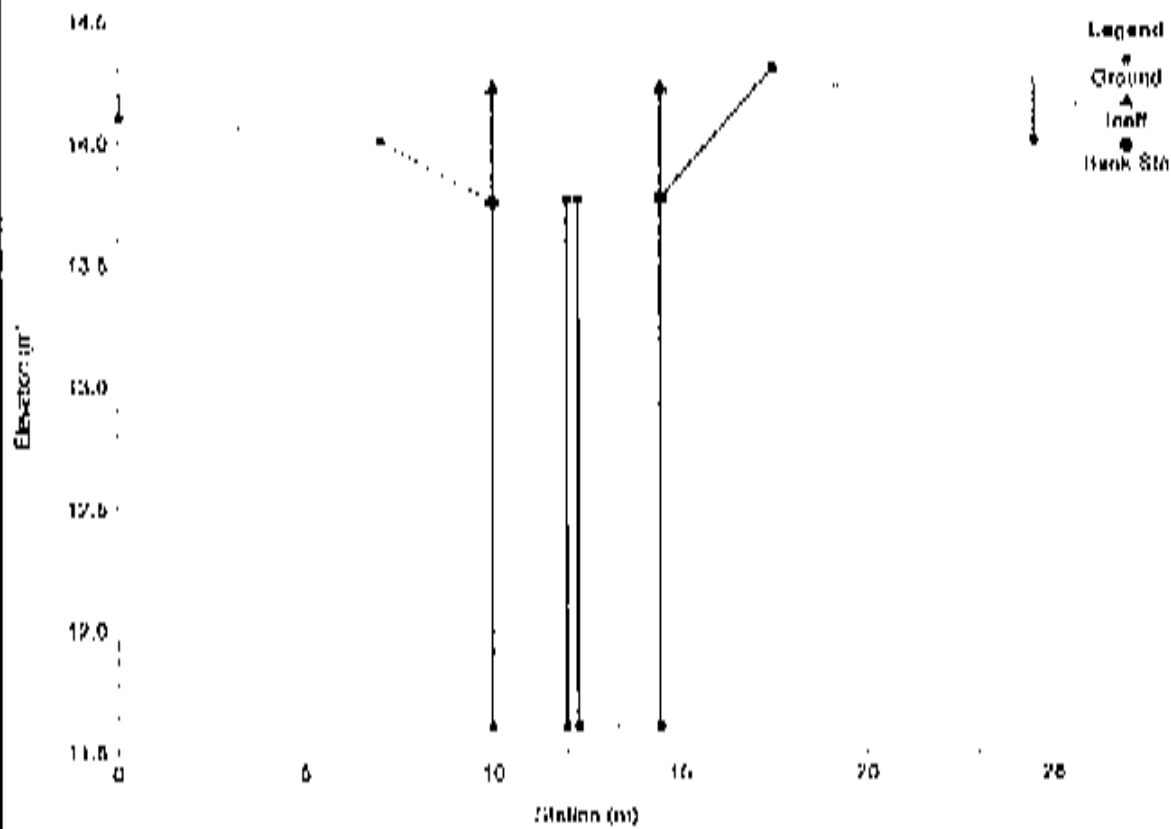
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 62



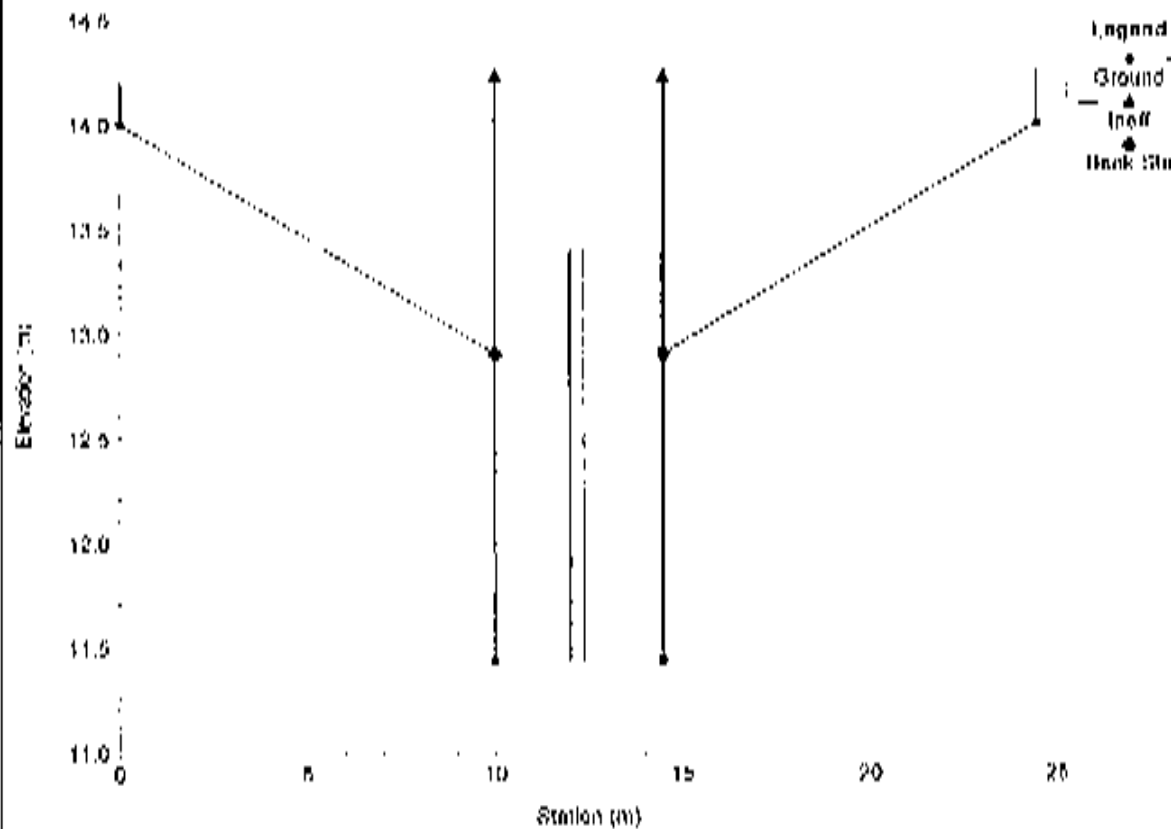
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 60



Moorebank Outlot C Plan: Plan 02 20/08/2010
 1:8 = 50 Culv. Moorebank Ave Culvert NW corner of site

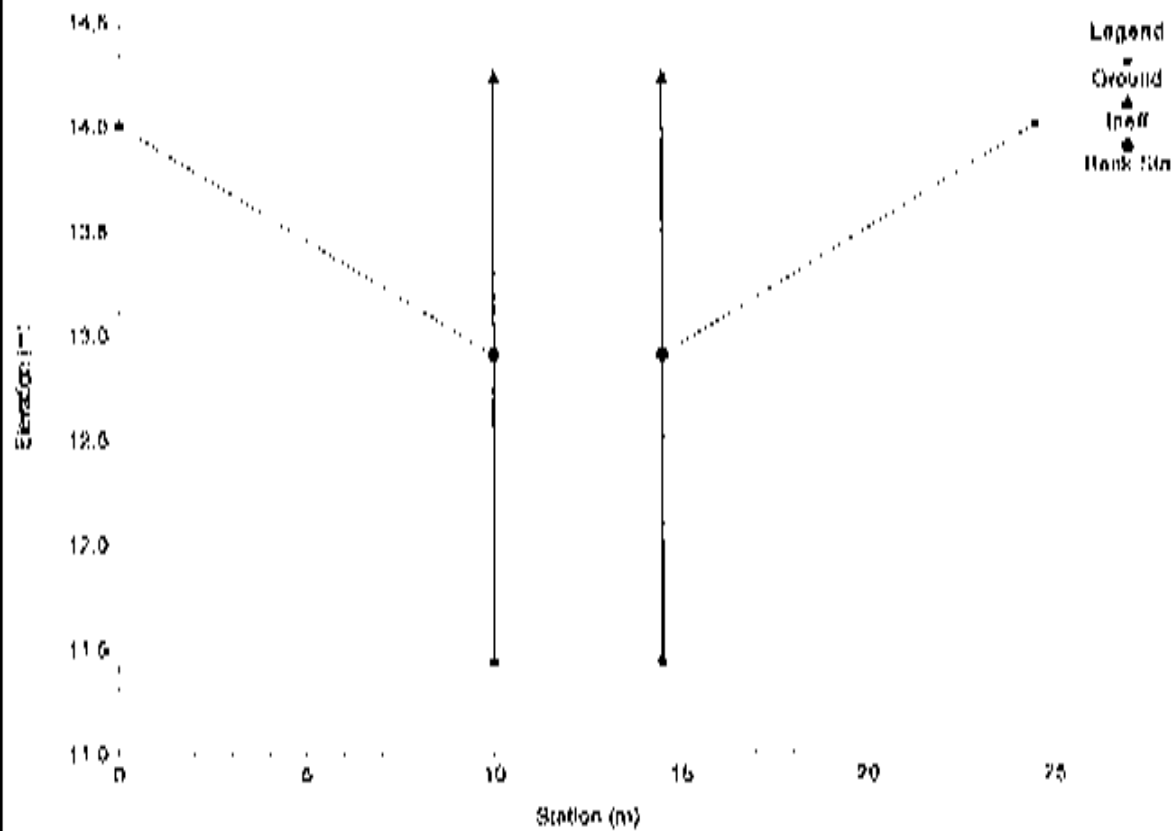


Moorebank Outlot C Plan: Plan 02 20/08/2010
 1:8 = 50 Culv. Moorebank Ave Culvert NW corner of site



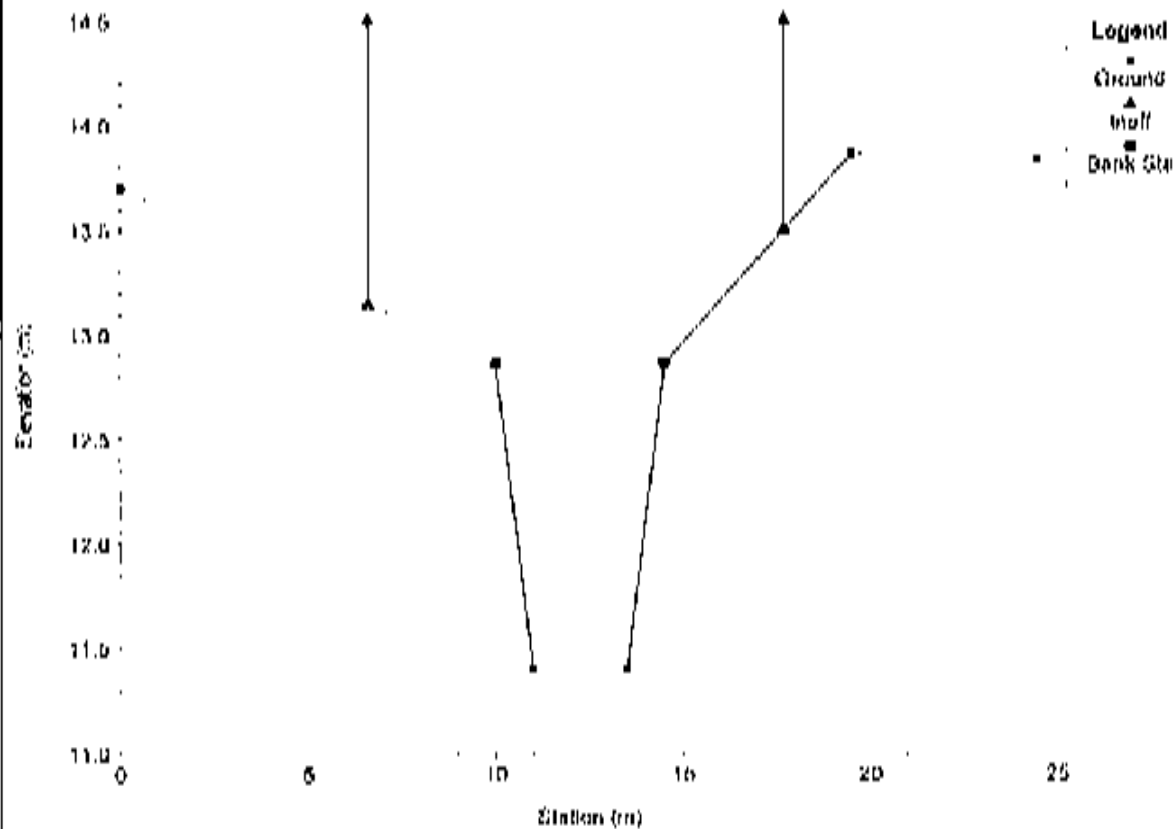
Moorebank Outlet C

Plan: Plan 02 20/08/2010
RS = 40

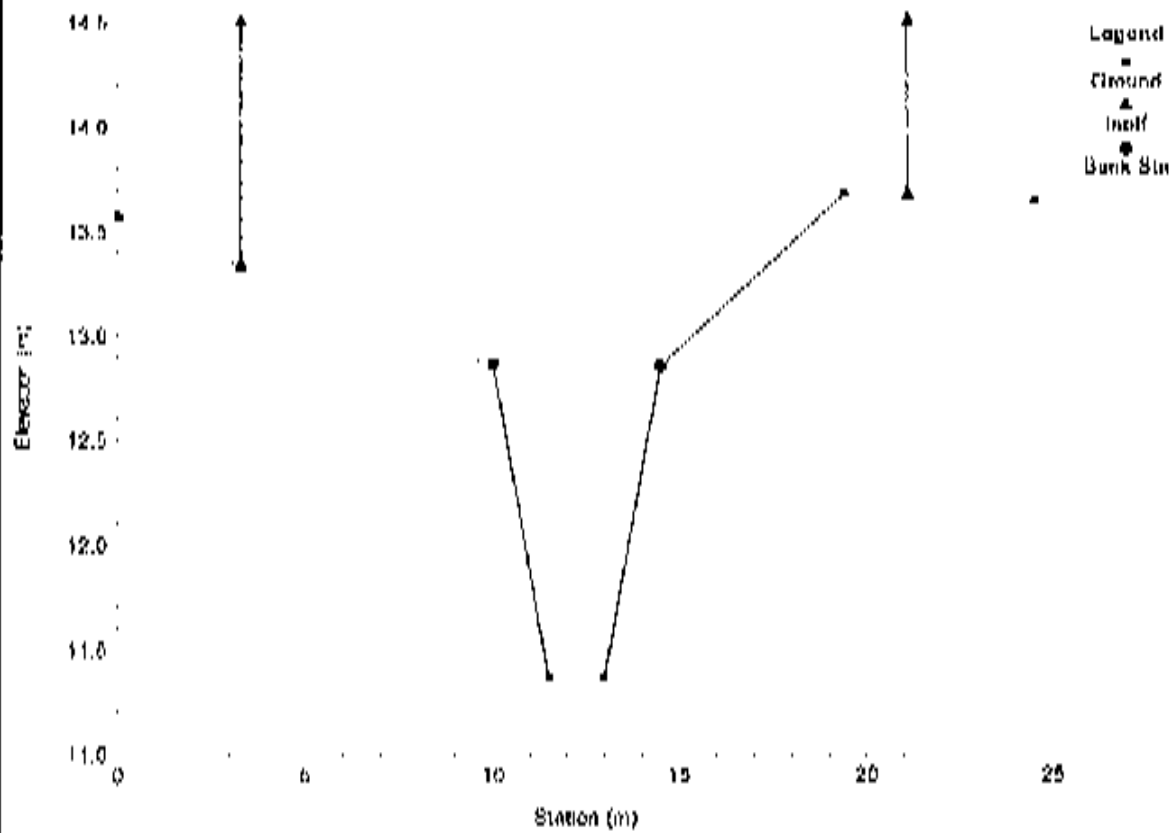


Moorebank Outlet C

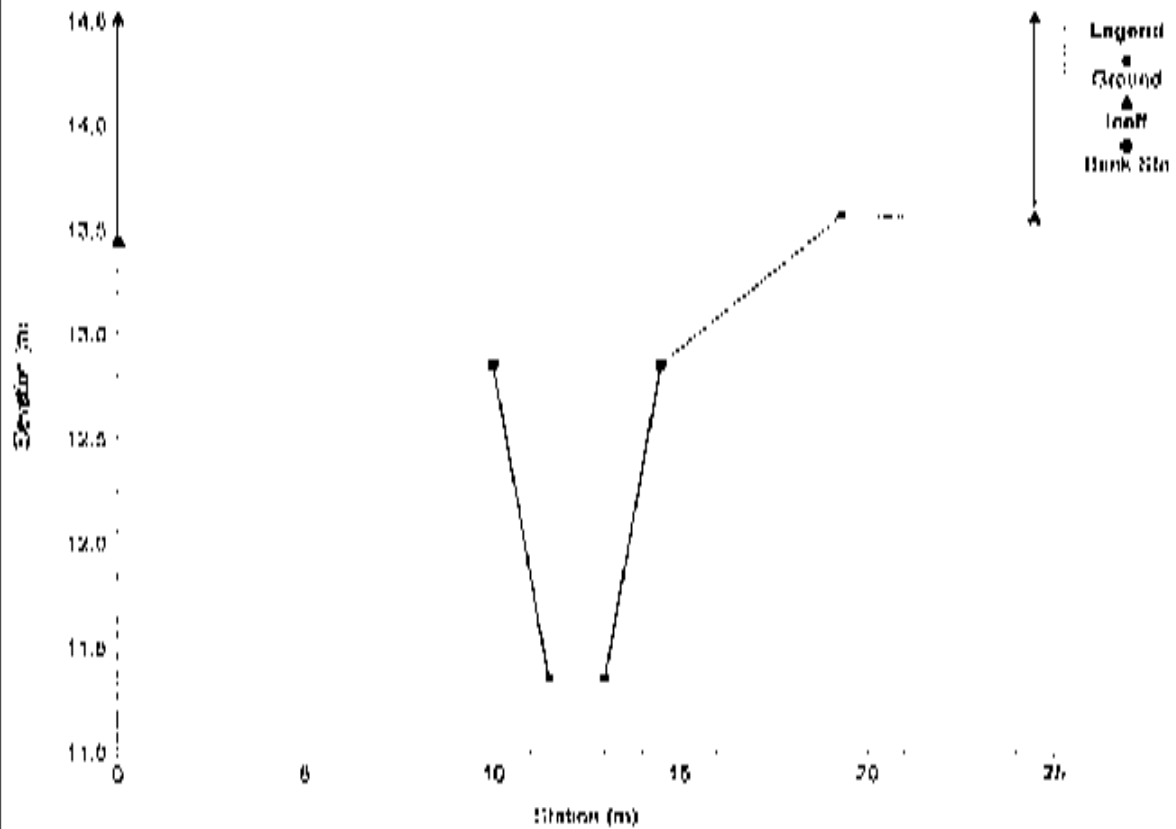
Plan: Plan 02 20/08/2010
RS = 30



Maarabank Outlet C Plan: Plan 02 20/00/2010
 RSI = 20



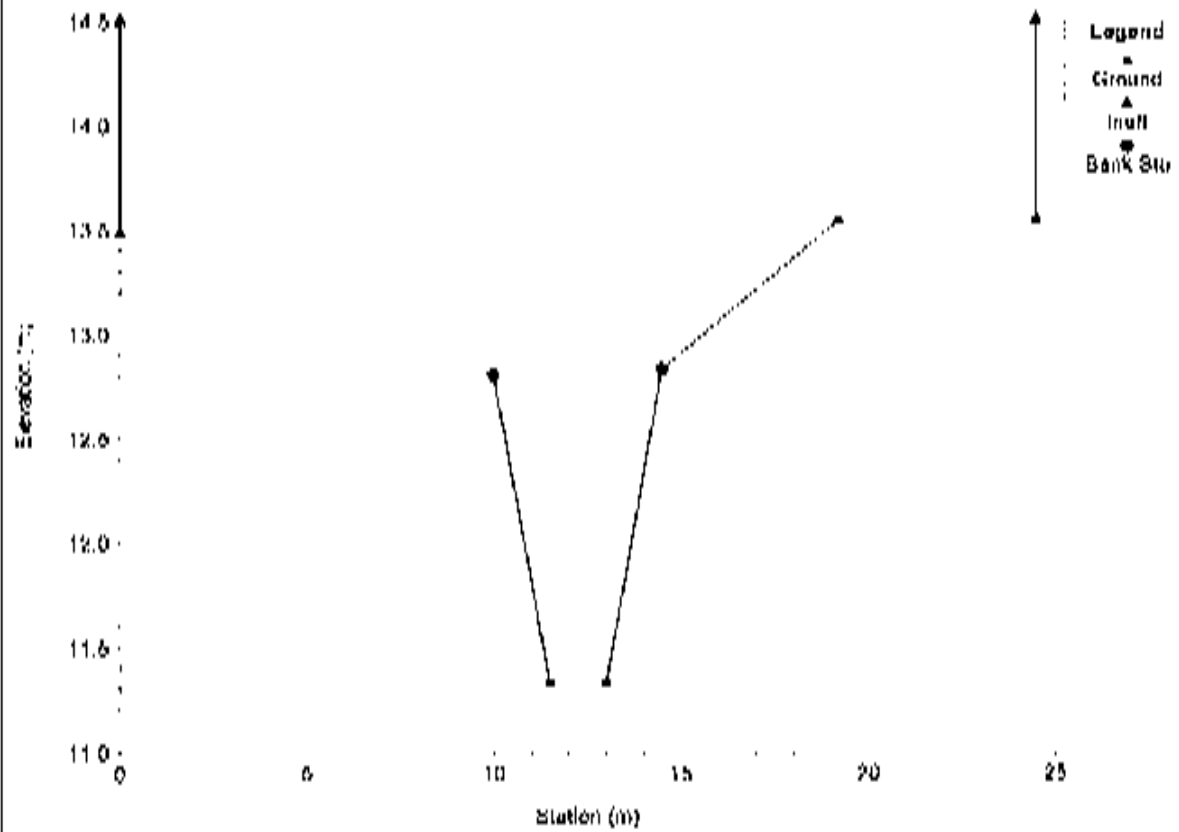
Maarabank Outlet C Plan: Plan 02 20/00/2010
 RSI = 10



Moorebank Outlet C

Plan: Plan 02 20/08/2010

R/L = 0



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

Outlet C Channel 1

Legend

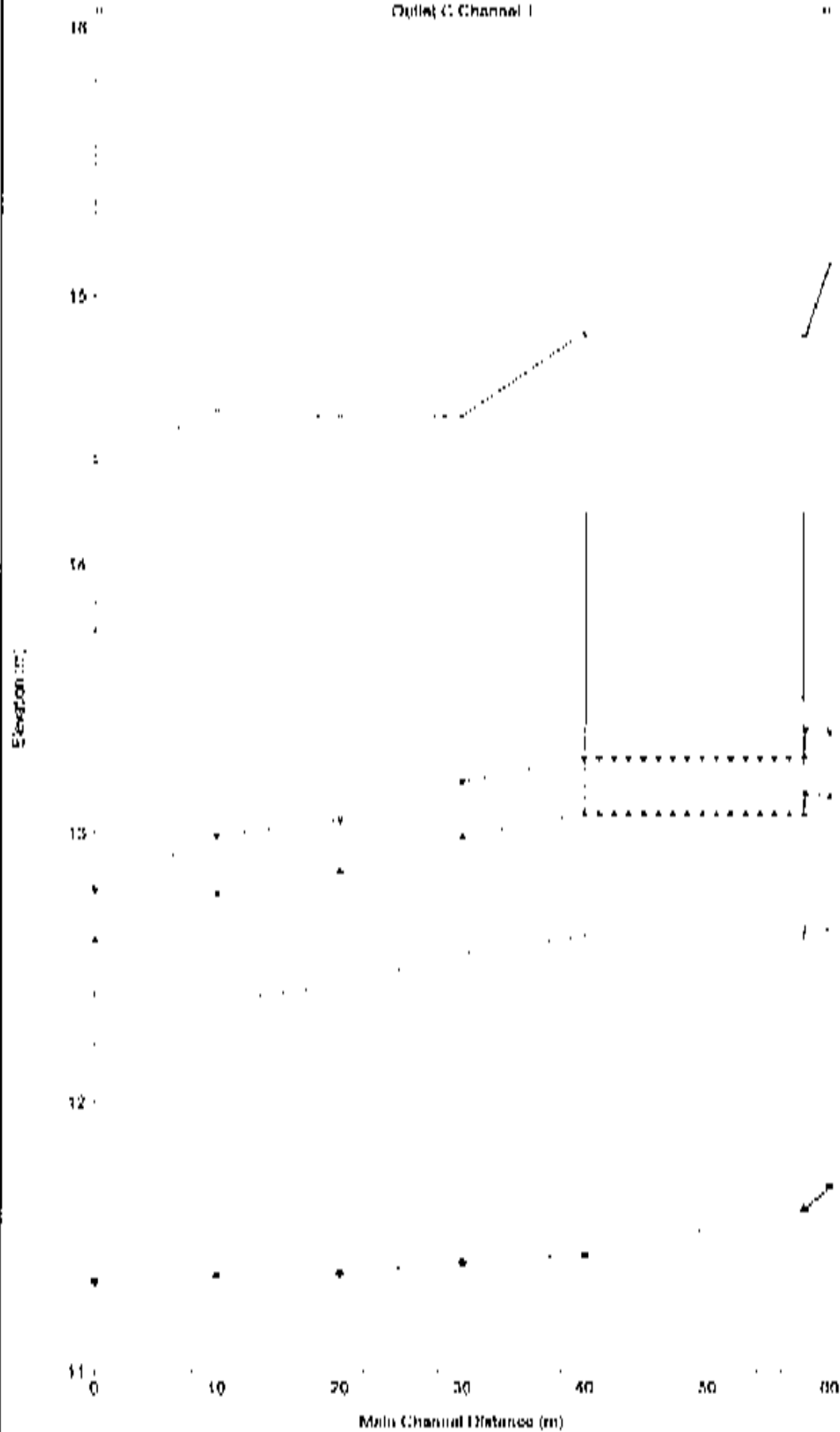
WS PMP

WS 100yr

WS 20yr

WS 2Yr

Ground



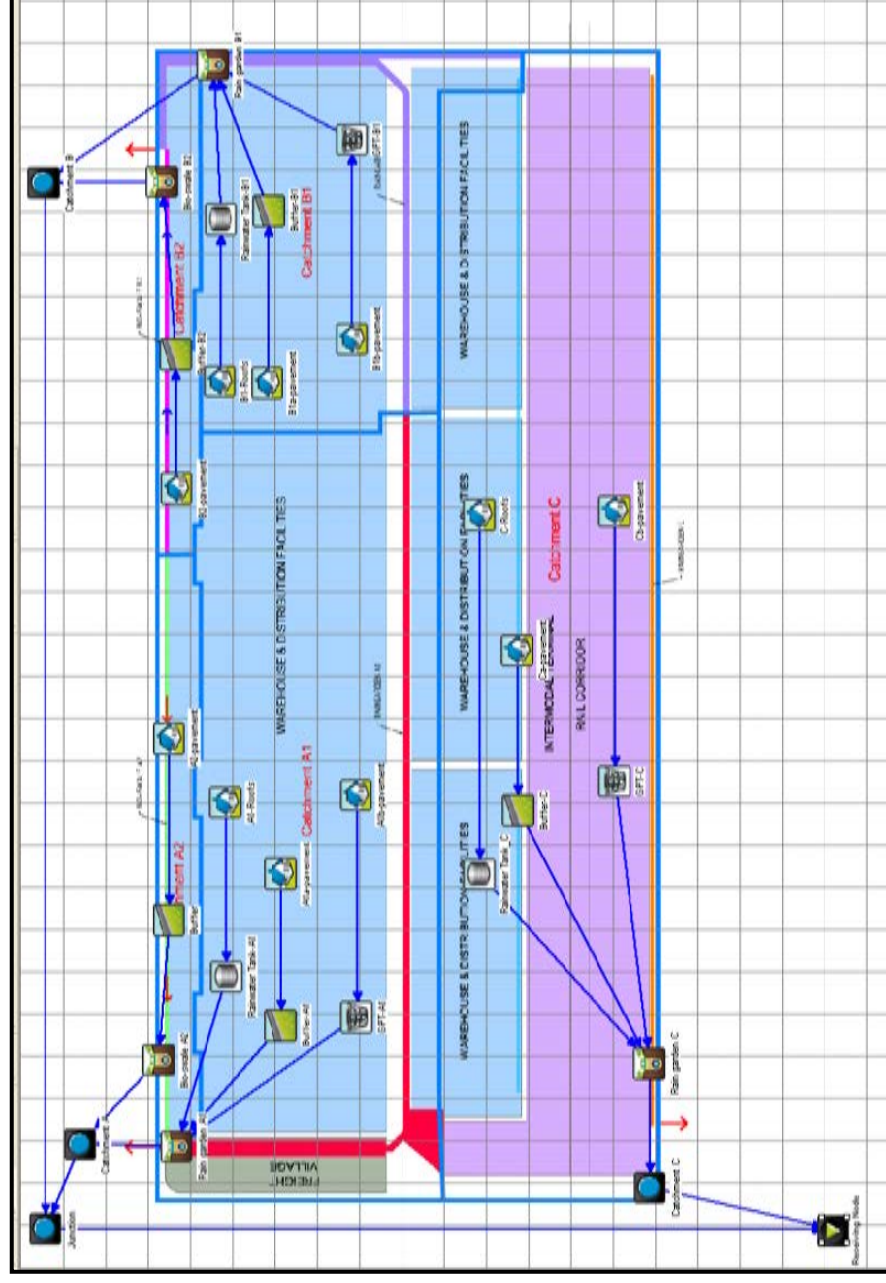
1970 PLAN (Fig. 1) River Channel Channel Head

Reach	River Class	Profile	Ca Total (m2/s)	Min. Cell (m)	WAB Class (m)	Gen. W. (m)	1st Ca. Class (m)	2nd Ca. Class (m)	Val. Class (m/s)	Flow Area (m2)	Top Width (m)	Friction R CH
1	27	2Vr	8.40	11.88	12.81	12.25	12.24	0.001010	1.58	3.81	4.10	0.45
1	28	28Vr	10.20	11.88	13.13	12.81	13.20	0.001172	1.73	5.04	4.10	0.46
1	27	100Vr	12.40	11.88	13.58	12.71	13.18	0.001413	1.80	7.36	6.20	0.49
1	27	PUMP	21.00	11.88	18.12	14.70	18.40	0.001605	3.24	20.78	24.40	0.57
1	30	2Vr	8.40	11.88	12.65	12.18	12.23	0.001414	1.23	4.41	4.20	0.38
1	30	28Vr	10.20	11.88	13.18	12.44	13.18	0.001878	1.88	6.80	4.20	0.41
1	30	100Vr	13.40	11.88	13.39	12.61	13.31	0.002210	1.76	7.90	4.20	0.43
1	30	PUMP	21.00	11.88	14.85	14.84	18.47	0.003078	3.02	20.60	28.40	0.71
1	30	Columns										
1	40	2Vr	8.40	11.42	12.63	11.95	12.87	0.000573	1.81	5.34	4.60	0.30
1	40	28Vr	10.20	11.42	12.67	12.24	13.17	0.001805	1.20	7.30	7.80	0.35
1	40	100Vr	13.40	11.42	12.38	12.40	12.41	0.000805	1.81	8.52	11.32	0.38
1	40	PUMP	21.00	11.42	14.67	14.57	18.23	0.001033	3.18	41.70	24.60	0.55
1	30	2Vr	8.40	11.40	12.81	12.13	12.81	0.001273	1.43	3.70	4.05	0.47
1	30	28Vr	10.20	11.40	12.89	12.40	13.10	0.001420	1.81	5.61	6.92	0.51
1	30	100Vr	13.40	11.40	13.10	12.87	13.20	0.001428	2.80	7.87	10.00	0.52
1	30	PUMP	21.00	11.40	14.87	14.60	18.10	0.002478	4.09	24.62	21.60	0.70
1	20	2Vr	8.40	11.35	12.42	12.20	12.81	0.001038	1.83	2.77	3.00	0.71
1	20	28Vr	10.20	11.35	12.80	12.82	13.12	0.001806	2.20	4.60	4.02	0.72
1	20	100Vr	13.40	11.35	13.05	12.82	13.20	0.001800	2.48	5.75	6.40	0.73
1	20	PUMP	21.00	11.35	14.87	14.60	15.15	0.001084	4.09	26.31	24.00	0.80
1	10	2Vr	8.40	11.35	12.37	12.24	12.80	0.001068	2.08	2.68	3.04	0.70
1	10	28Vr	10.20	11.35	12.70	12.82	13.00	0.001013	2.47	4.17	4.25	0.80
1	10	100Vr	13.40	11.35	12.80	12.81	13.12	0.001809	2.61	5.24	7.95	0.78
1	10	PUMP	21.00	11.35	14.87	14.30	15.11	0.002244	2.02	20.22	24.00	0.76
1	0	2Vr	8.40	11.33	12.32	12.22	12.80	0.001041	2.82	2.14	3.20	1.00
1	0	28Vr	10.20	11.33	12.80	12.80	13.02	0.001048	2.81	3.04	4.07	1.00
1	0	100Vr	13.40	11.33	12.70	12.70	13.27	0.001801	3.08	4.23	4.45	1.00
1	0	PUMP	21.00	11.33	14.18	14.30	15.02	0.001083	4.35	23.82	24.00	0.87

APPENDIX C

MUSIC MODEL LAYOUT AND PARAMETERS

Figure C1: MUSIC model layout



Rainfall

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

Potential Evapotranspiration

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

Table C1 - MUSIC Model Potential Evapotranspiration (PET) Data

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

Input parameters

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

Table C2 - MUSIC Model MUSIC Model Pollutant Load Parameters

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

Note: SD = Standard Deviation

Table C3 - MUSIC Model Stormwater Treatment Parameters

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

Table C4 - MUSIC Model Rainfall-Runoff Parameters

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

APPENDIX D

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



LEGEND

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

Notes

Aerial Imagery by NearMap 2011 ©

Client
SYDNEY INTERMODAL
TERMINAL ALLIANCE

Scale: 1 : 7,000 @ A3

TUFLOW Grid Size: 5m

Datum: GDA94

Projection: MGA56

Project
MOOREBANK INTERMODAL
TERMINAL FACILITY

Title
HYDER ADJUSTED
RAFTS CATCHMENT



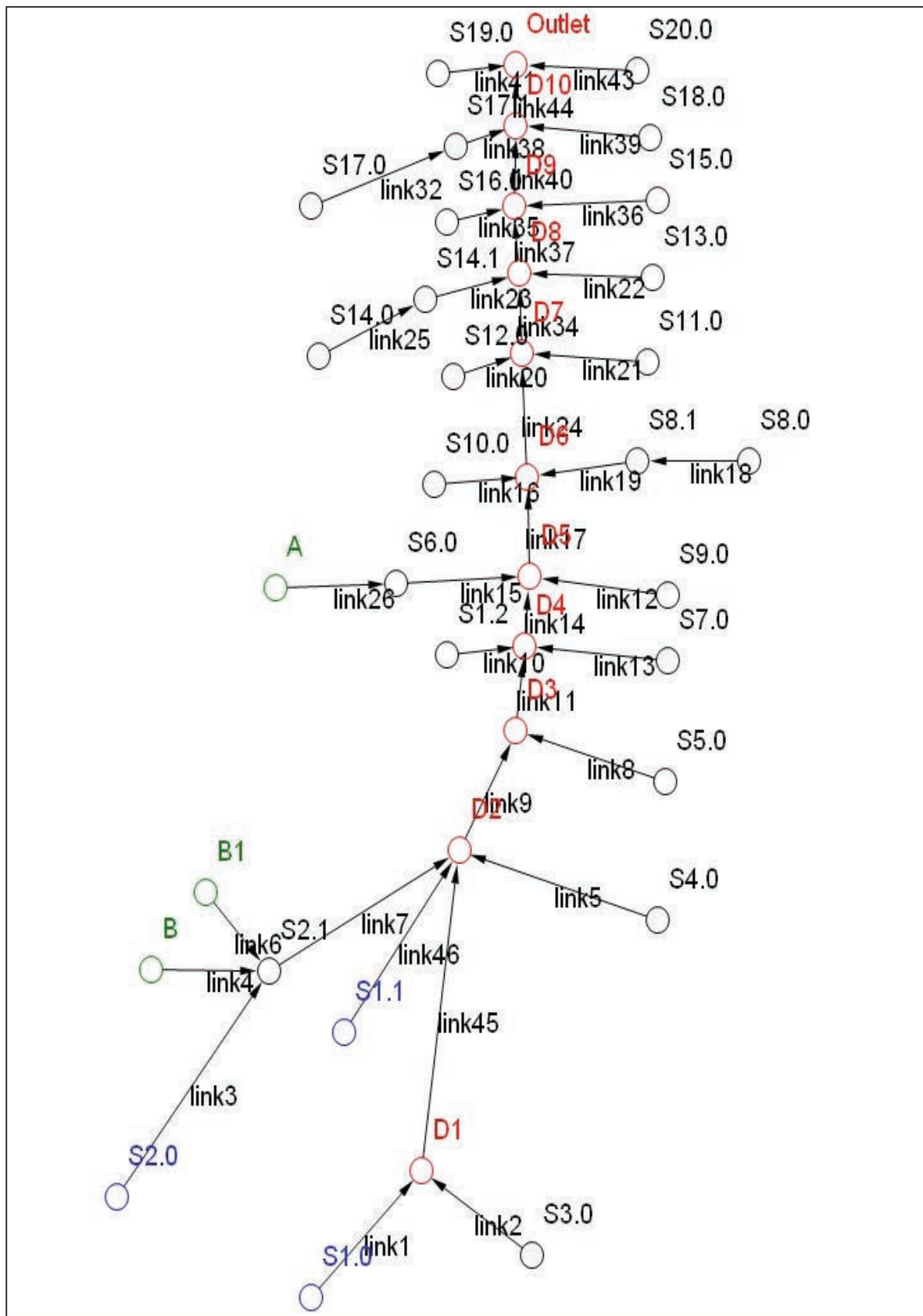
HYDER CONSULTING
PTY LTD
ABN 76 104 485 289
Level 5, 141 Walker Street
North Sydney NSW 2060
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.hyderconsulting.com
(c) Copyright reserved

Figure No
D1

Project No
AA003210



Issue
A1



Anzac Creek RAFTS Model Layout

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

#####

RUNTIME RESULTS

#####

Max. no. of links allowed = 1500

Max. no. of routing increments allowed = 250000

Max. no. of rating curve points = 250000

Max. no. of storm temporal points = 250000

Max. no. of channel subreaches = 25

Max link stack level = 50

Input version number = 800

LINK S1.0 1.000

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

LINK S3.0 1.000

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

LINK D1 1.000

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

LINK S2.0 1.000

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

LINK B 1.000

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

LINK B1 1.000

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

LINK S2.1 1.000

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

LINK S4.0 1.000

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

LINK S1.1 1.000

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

LINK D2 1.000

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

LINK S5.0 1.000

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

LINK D3 1.000

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

LINK S1.2 1.000

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

LINK S7.0 1.000

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

LINK D4 1.000

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

LINK S9.0 1.000

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

LINK A 1.000

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

LINK S6.0 1.000

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

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

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

#####

Existing - 100 year re-run - Hyder Sept 2010

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

#####

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

SUMMARY OF CATCHMENT AND RAINFALL DATA

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

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

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

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

LINK S1.0 2.000

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

LINK S3.0 2.000

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

LINK D1 2.000

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

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

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

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

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

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

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Existing - 100 year re-run - Hyder Sept 2010

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Results for period from 0: 0.0 1/ 1/1990
                      to 8:20.0 1/ 1/1990
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ROUTING INCREMENT (MINS)	=	1.00
STORM DURATION (MINS)	=	45.
RETURN PERIOD (YRS)	=	100.
BX	=	1.0000
TOTAL OF FIRST SUB-AREAS (ha)	=	689.69
TOTAL OF SECOND SUB-AREAS (ha)	=	386.68
TOTAL OF ALL SUB-AREAS (ha)	=	1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA

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

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

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

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

LINK S1.0 3.000

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

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

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

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

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LINK D10                3.000

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

LINK S19.0              3.000

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

LINK S20.0              3.000

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

LINK Outlet             3.000

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

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Existing - 100 year re-run - Hyder Sept 2010

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

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

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

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

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

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

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

LINK S1.0 4.000

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

LINK S3.0 4.000

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

LINK D1 4.000

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

LINK S2.0 4.000

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

LINK B 4.000

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

LINK B1 4.000

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

LINK S2.1 4.000

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

LINK S4.0 4.000

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

LINK S1.1 4.000

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

LINK D2 4.000

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

LINK S5.0 4.000

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

LINK D3 4.000

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

LINK S1.2 4.000

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

LINK S7.0 4.000

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

LINK D4 4.000

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

LINK S9.0 4.000

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

LINK A 4.000

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

LINK S6.0 4.000

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

LINK D5 4.000

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

LINK S10.0 4.000

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

LINK S8.0 4.000

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

LINK S8.1 4.000

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

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


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

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

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

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

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

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

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

Results for period from 0: 0.0 1/ 1/1990
                        to 13:20.0 1/ 1/1990
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ROUTING INCREMENT (MINS) =          1.00
STORM DURATION (MINS)    =          90.
RETURN PERIOD (YRS)     =          100.
BX                        =          1.0000
TOTAL OF FIRST SUB-AREAS (ha) =        689.69
TOTAL OF SECOND SUB-AREAS (ha) =        386.68
TOTAL OF ALL SUB-AREAS (ha) =       1076.37

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

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

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

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

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

LINK S1.0 5.000

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

LINK S3.0 5.000

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

LINK D1 5.000

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

LINK S2.0 5.000

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

LINK B 5.000

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

LINK B1 5.000

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

LINK S2.1 5.000

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

LINK S4.0 5.000

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

LINK S1.1 5.000

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

LINK D2 5.000

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

LINK S5.0 5.000

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

LINK D3 5.000

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

LINK S1.2 5.000

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

LINK S7.0 5.000

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

LINK D4 5.000

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

LINK S9.0 5.000

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

LINK A 5.000

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

LINK S6.0 5.000

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

LINK D5 5.000

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

LINK S10.0 5.000

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

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

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

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

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

TOTAL OF ALL SUB-AREAS (ha) = 1076.37

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

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

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

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

LINK S1.0 6.000

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

LINK S3.0 6.000

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

LINK D1 6.000

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

LINK S2.0 6.000

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

LINK B 6.000

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

LINK B1 6.000

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

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

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

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

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

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

#####

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

SUMMARY OF CATCHMENT AND RAINFALL DATA

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

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

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

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

LINK S1.0 7.000

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

LINK S3.0 7.000

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

LINK D1 7.000

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

LINK S2.0 7.000

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

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

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

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

LINK Outlet 7.000

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

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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) = 270.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 689.69
TOTAL OF SECOND SUB-AREAS (ha) = 386.68
TOTAL OF ALL SUB-AREAS (ha) = 1076.37

SUMMARY OF CATCHMENT AND RAINFALL DATA

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

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

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

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

LINK S1.0 8.000

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

LINK S3.0 8.000

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

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

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

LINK D4 8.000

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

LINK S9.0 8.000

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

LINK A 8.000

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

LINK S6.0 8.000

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

LINK D5 8.000

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

LINK S10.0 8.000

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

LINK S8.0 8.000

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

LINK S8.1 8.000

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

LINK D6 8.000

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

LINK S12.0 8.000

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

LINK S11.0 8.000

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

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

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

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

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

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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)    =          360.
RETURN PERIOD (YRS)     =          100.
BX                       =          1.0000
TOTAL OF FIRST SUB-AREAS (ha) =          689.69
TOTAL OF SECOND SUB-AREAS (ha) =          386.68
TOTAL OF ALL SUB-AREAS (ha) =          1076.37

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

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

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

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

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

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

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

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

LINK S18.0                    9.000

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

LINK D10                      9.000

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

LINK S19.0                    9.000

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

LINK S20.0                    9.000

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

LINK Outlet                   9.000

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

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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

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

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

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

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

LINK S1.0 10.000

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

LINK S3.0 10.000

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

LINK D1 10.000

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

LINK S2.0 10.000

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

LINK B 10.000

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

LINK B1 10.000

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

LINK S2.1 10.000

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

LINK S4.0 10.000

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

LINK S1.1 10.000

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

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

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

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

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

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

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

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

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

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

#####

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Max. no. of links allowed = 1500

Max. no. of routing increments allowed = 250000

Max. no. of rating curve points = 250000

Max. no. of storm temporal points = 250000

Max. no. of channel subreaches = 25

Max link stack level = 50

Input version number = 800

LINK S1.0 1.000

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

LINK S3.0 1.000

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

LINK D1 1.000

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

LINK S2.0 1.000

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

LINK B 1.000

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

LINK B1 1.000

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

LINK S2.1 1.000

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

LINK S4.0 1.000

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

LINK S1.1 1.000

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

LINK D2 1.000

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

LINK S5.0 1.000

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

LINK D3 1.000

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

LINK S1.2 1.000

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

LINK S7.0 1.000

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

LINK D4 1.000

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

LINK S9.0 1.000

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

LINK A 1.000

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

LINK S6.0 1.000

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

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

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

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

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

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

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

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

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

#####

RUNTIME RESULTS

#####

Max. no. of links allowed = 1500

Max. no. of routing increments allowed = 250000

Max. no. of rating curve points = 250000

Max. no. of storm temporal points = 250000

Max. no. of channel subreaches = 25

Max link stack level = 50

Input version number = 800

LINK S1.0 1.000

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

LINK S3.0 1.000

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

LINK D1 1.000

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

LINK S2.0 1.000

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

LINK B 1.000

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

LINK B1 1.000

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

LINK S2.1 1.000

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

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

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

 #####
 PMF

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

 #####

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

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

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

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

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

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

APPENDIX E

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



LEGEND Project Site Boundary Flood Level Contour (m AHD) Line		Notes TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (Az_exg_100y9h_01_Blockage_25pcf.tcf - TUFLOW Version 2006-06-BF). Adjustments were made to represent existing flows leaving the project site. The mapping on this drawing represents TUFLOW model results for the 100 year ARI 9 hour storm duration. Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forester (August 2010). This figure may not represent local flow regimes away from the Anzac Creek corridor. TUFLOW run files: (TUFLOW Version 2006-06-BF) F:\AA003210D-Calculations\Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOWruns\Creek\TUFLOWruns\Az_Hy_Exg100y9h_02.tcf Figure Workspace: F:\AA003210D-Calculations\Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\100yr_Ext_Anzac_Ck_Flood_Map.wor Aerial Imagery by NearMap 2011 ©		Client SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA) Scale: 1:3500 @ A1 TUFLOW Grid Size: 5m Datum: GDA94 Projection: MGA56	Project MOOREBANK INTERMODAL TERMINAL FACILITY Title ANZAC CREEK MODEL - 100 YEAR ARI FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR EXISTING CONDITION	 HYDER CONSULTING PTY LTD ABN 76 104 485 289 Level 5, 141 Walker Street North Sydney NSW 2060 Tel: +61 (0)2 9907 9000 Fax: +61 (0)2 9907 9001 www.hyderconsulting.com (c) Copyright reserved	Figure No E1 Project No AA003210  Issue 01
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LEGEND
Project Site Boundary
Line

Notes

TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (Az_exg_100y9h_01_Blockage_25pc.tcf - TUFLOW Version 2006-06-BF). Adjustments were made to represent existing 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.

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

TUFLOW run files: (TUFLOW Version 2006-06-DB)
F:\AA003210\0-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOW\runst\Creek\TUFLOW\runst\Az_Hy_Ext100y9h_02.tcf
Az_Hy_Ext100y9h_02.tcf
Az_Hy_Prop100y9h_02.tcf

Figure Workspace:
F:\AA003210\0-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\100y_Afflux_Anzac_Ck_Flood_Map.wor

Aerial Imagery by NearMap 2011 ©

Client
SYDNEY INTERMODAL
TERMINAL ALLIANCE (SIMTA)

Scale: 1:3500 @ A1

TUFLOW Grid Size: 5m

Datum: GDA94

Projection: MGA56

Project
MOOREBANK INTERMODAL
TERMINAL FACILITY

Title
ANZAC CREEK MODEL -
CHANGE IN 100 YEAR ARI
FLOW REGIMES BETWEEN
EXISTING AND PROPOSED
CONDITIONS

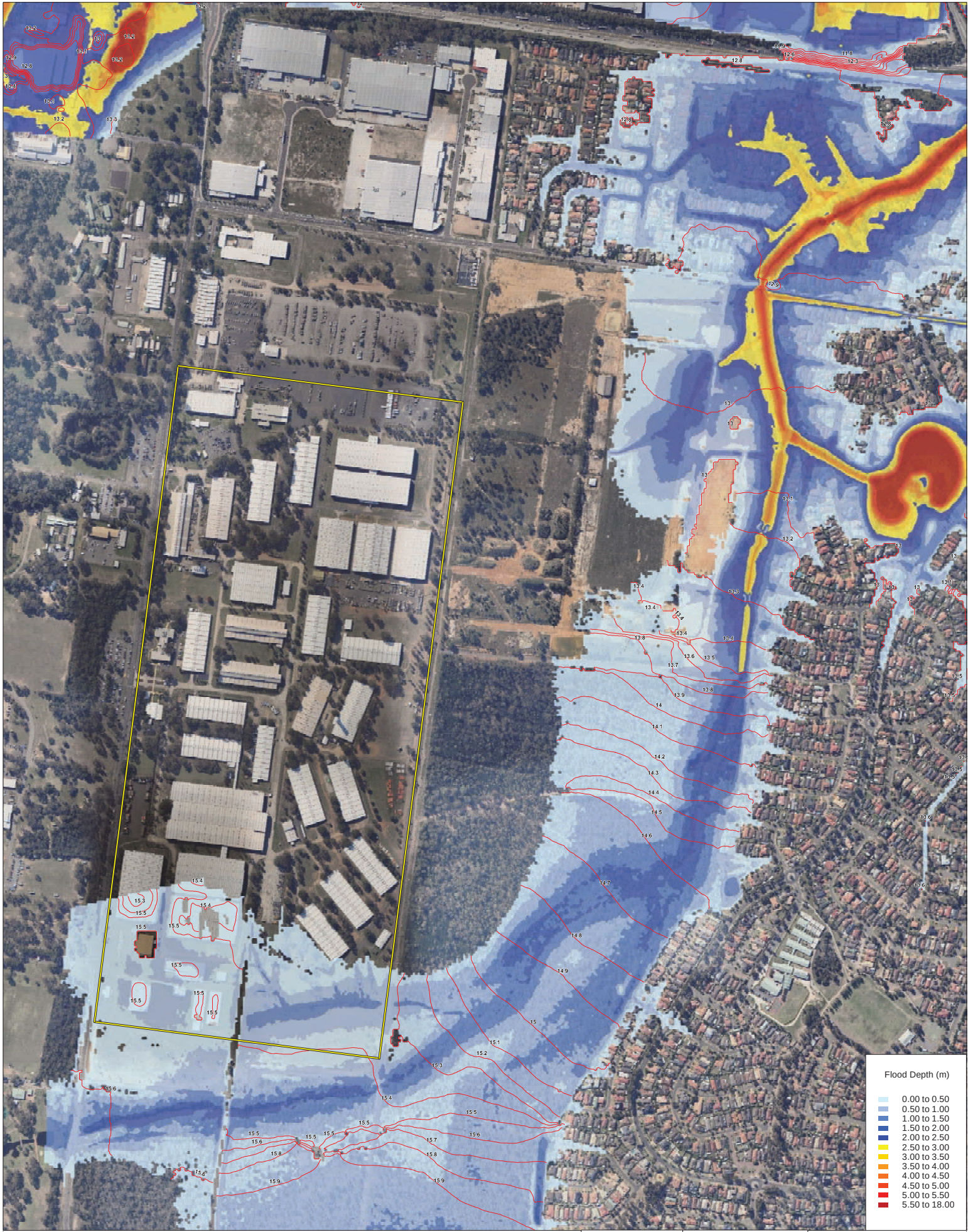


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Figure No
E2

Project No
AA003210

Issue
01



LEGEND

Project Site Boundary
Line

Notes

TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (Az_exg_PMF1h_01.tcf - TUFLOW Version 2006-06-BF). Adjustments were made to represent existing flows leaving the project site.

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

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

TUFLOW run files: (TUFLOW Version 2006-06-BF)

F:\AA003210-D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOWruns\Creek\TUFLOWruns\Az_Hy_ExgPMF1h_03.tcf

Figure Workspace:

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

Aerial Imagery by NearMap 2011 ©

Client
SYDNEY INTERMODAL
TERMINAL ALLIANCE (SIMTA)

Scale: 1:3500 @ A1

TUFLOW Grid Size: 5m

Datum: GDA94

Projection: MGA56

Project
MOOREBANK INTERMODAL
TERMINAL FACILITY

Title
ANZAC CREEK MODEL -
PROBABLE MAXIMUM FLOOD DEPTH
AND FLOOD LEVEL CONTOURS
FOR EXISTING CONDITION



HYDER CONSULTING
PTY LTD

ABN 76 104 485 289
Level 5, 141 Walker Street
North Sydney NSW 2060

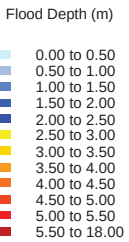
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Figure No
E3

Project No
AA003210

Issue
01





LEGEND

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

Notes

TUFLOW modelling was undertaken using Liverpool City Councils' TUFLOW model for Anzac Creek (Az_exg_PMF1h_01.tcf - TUFLOW Version 2006-06-BF). Adjustments were made to represent proposed flows leaving the project site.

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

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

TUFLOW run files: (TUFLOW Version 2006-06-BF)
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Figure Workspace:
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Client
SYDNEY INTERMODAL
TERMINAL ALLIANCE (SIMTA)

Scale: 1:3500 @ A1

TUFLOW Grid Size: 5m

Datum: GDA94

Projection: MGA56

Project
MOOREBANK INTERMODAL
TERMINAL FACILITY

Title
ANZAC CREEK MODEL -
PROBABLE MAXIMUM FLOOD DEPTH
AND FLOOD LEVEL CONTOURS
FOR PROPOSED CONDITION



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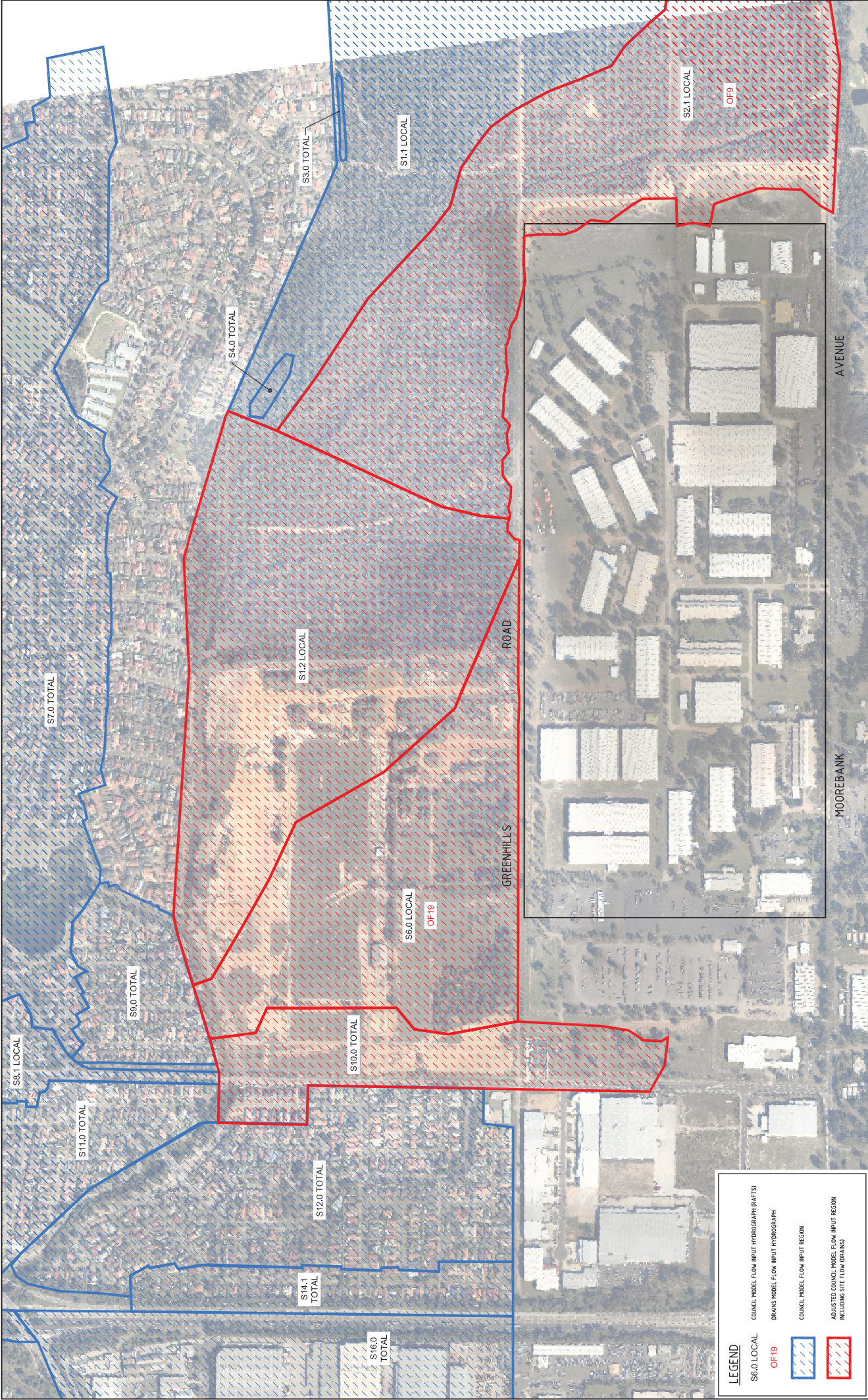
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Figure No E4	Project No AA003210		Issue 01
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LEGEND Project Site Boundary Line	Notes TUFLOW modelling was undertaken using Liverpool City Council's TUFLOW model for Anzac Creek (Az_exg_PMF1h_01.tcf – TUFLOW Version 2006-06-BF). Adjustments were made to represent existing and proposed flows leaving the project site. The mapping on this drawing represents flood depth afflux for the PMP 1 hour storm duration. Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forester (August 2010). This figure may not represent local flow regimes and afflux away from the Anzac Creek corridor. TUFLOW run files: (TUFLOW Version 2006-06-DB) F:\AA03210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW - Anzac Creek\TUFLOWruns\Creek\TUFLOWruns\Az_Hy_Exg\PMF1h_03.tcf Az_Hy_Prop\PMF1h_03.tcf Figure Workspace: F:\AA03210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\PMF_Afflux_Anzac_Ck_Flood_Map.wor Aerial Imagery by NearMap 2011 ©	Client SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)	Project MOOREBANK INTERMODAL TERMINAL FACILITY	Hyder HYDER CONSULTING PTY LTD ABN 76 104 485 289 Level 5, 141 Walker Street North Sydney NSW 2060 Tel+61 (0)2 8907 9000 Fax+61 (0)2 8907 9000 www.hyderconsulting.com (c) Copyright reserved			
		Scale: 1:3500 @ A1	Title ANZAC CREEK MODEL - CHANGE IN PMF FLOOD REGIMES BETWEEN EXISTING AND PROPOSED CONDITION	Figure No E5	Project No AA003210	N	Issue 01
		TUFLOW Grid Size: 5m					
		Datum: GDA94					
		Projection: MGA56					



LEGEND

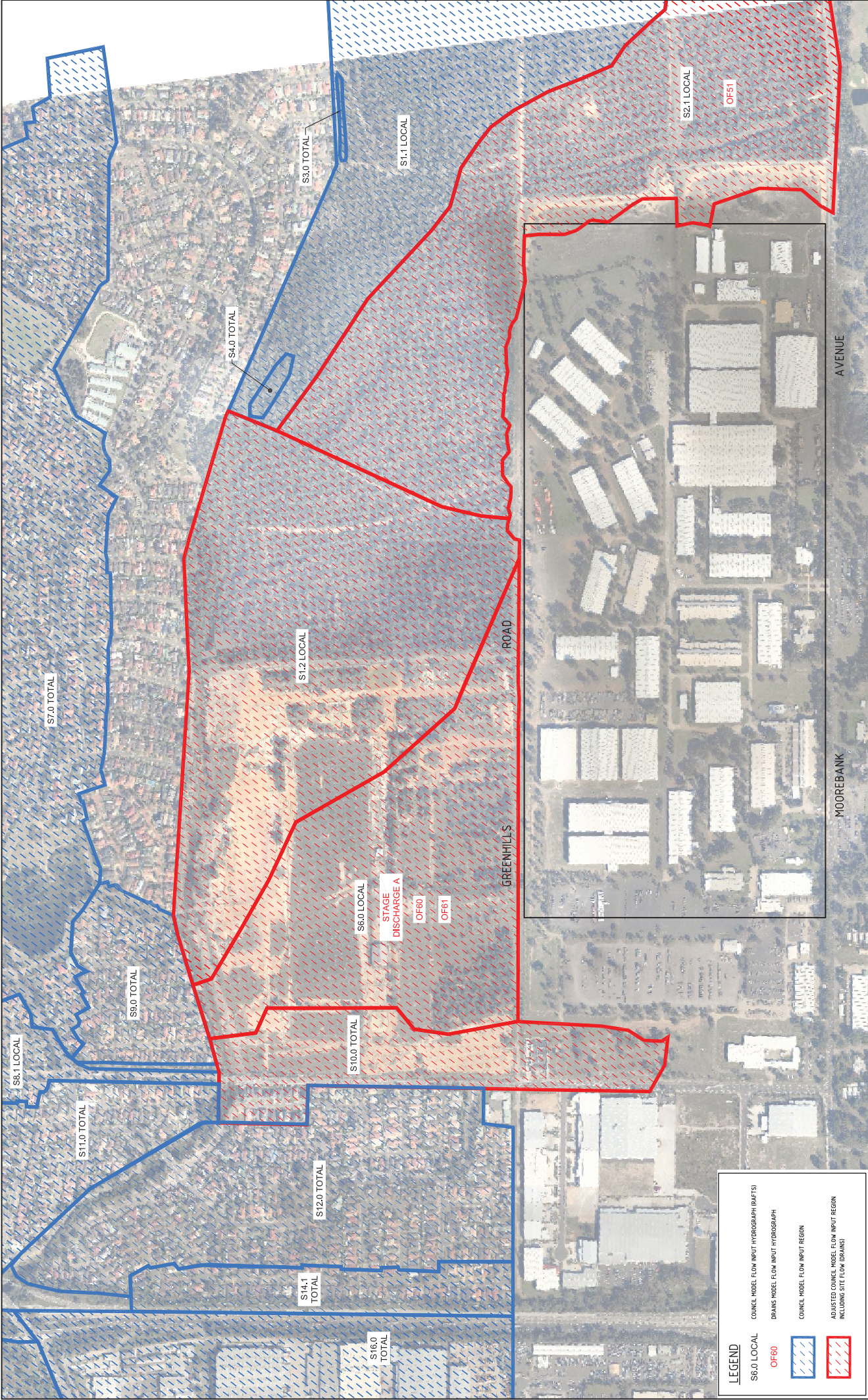
S6.0 LOCAL COUNCIL MODEL FLOW INPUT HYDROGRAPH (RAFTS)

OF19 DRAINS MODEL FLOW INPUT HYDROGRAPH

COUNCIL MODEL FLOW INPUT REGION

ADJUSTED COUNCIL MODEL FLOW INPUT REGION INCLUDING SITE FLOW DRAINS

HYDER CONSULTING PTY LTD ABN 76 104 465 289 Sydney North Sydney NSW 2060 Australia Tel: +61 (0)2 8807 9000 Fax: +61 (0)2 8807 9001 © Copyright reserved		Hyder	
Project SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY		Title EXISTING ANZAC CREEK MODEL FLOW INPUT PLAN	
Status PRELIMINARY NOT TO BE USED FOR CONSTRUCTION		Drawing No. FIG-E6 - AA003210 - 01	
Scales 1: 3500		Issue 1	
Original Size A1		Drawing No. FIG-E6 - AA003210 - 01	
Height AHD		Issue 1	
Datum MGA		Drawing No. FIG-E6 - AA003210 - 01	
Grid N. MCDONNELL		Issue 1	
Filename		Drawing No. FIG-E6 - AA003210 - 01	
Client SIMTA SYDNEY INTERMODAL TERMINAL FACILITY ALLOWANCE		Issue 1	
North Arrow		Drawing No. FIG-E6 - AA003210 - 01	
Scale 1: 3500		Issue 1	
Date 12/08/11		Drawing No. FIG-E6 - AA003210 - 01	
Description		Issue 1	
Date		Drawing No. FIG-E6 - AA003210 - 01	
Issue		Issue 1	



LEGEND

COUNCIL MODEL FLOW INPUT HYDROGRAPH (BAF75)

OF60

COUNCIL MODEL FLOW INPUT HYDROGRAPH

COUNCIL MODEL FLOW INPUT REGION

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

Issue	Description	Date	Drawn	Checked	Approved	Signature
01	ISSUE FOR REVIEW	12/08/11				

Scale	Original Size	Height	Drawn	Grid	Filename
1: 3500	A1	AHD	MGA		

Status	PRELIMINARY	NOT TO BE USED FOR CONSTRUCTION
Current Issue Signatures	Drawn	Designed
	S. MORRISON	C. McLELLAN
	Checked	Approved
	G. VES	N. McLELLAN

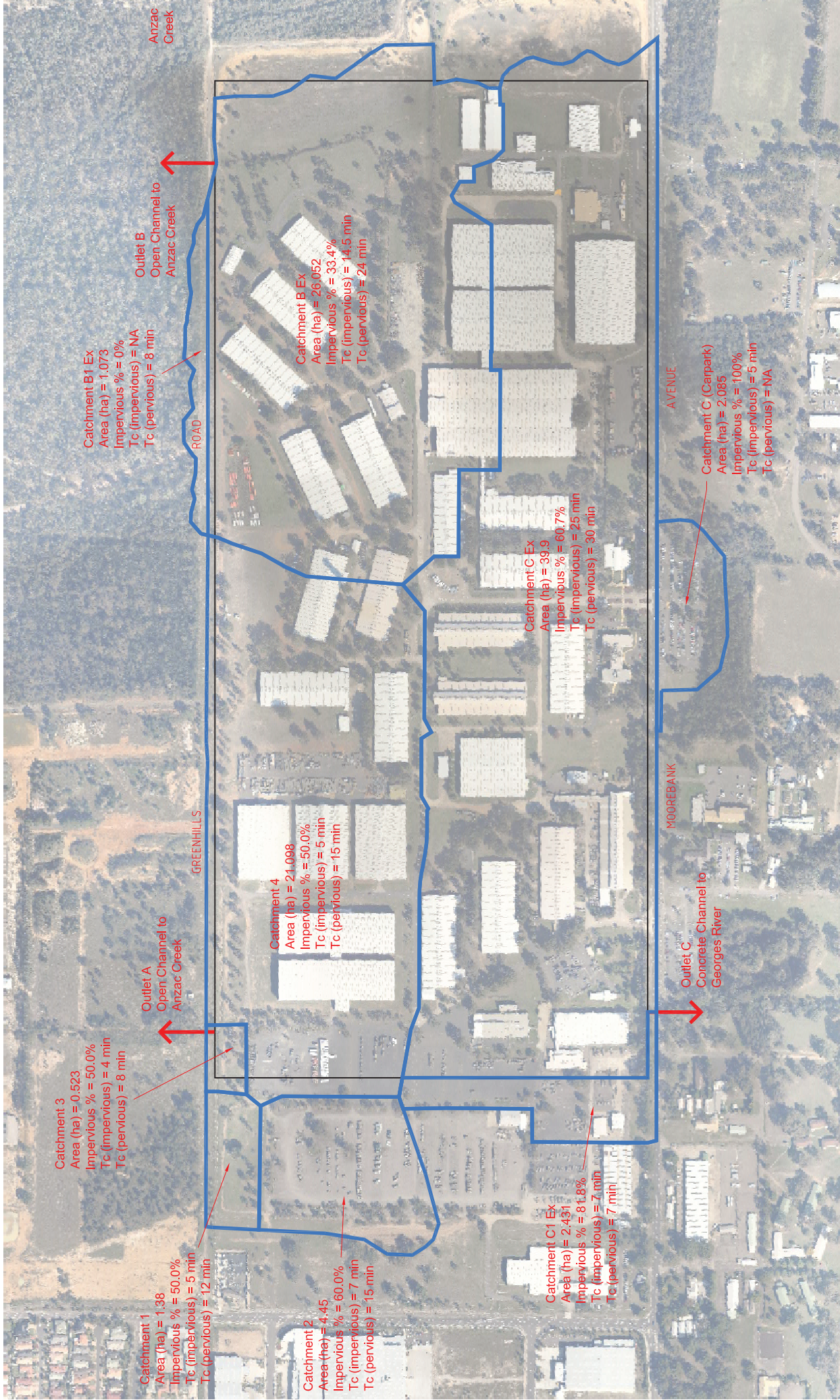
Project	Client
SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY	SIMTA

Project No.	Issue
FIG-E7 - AA003210	01

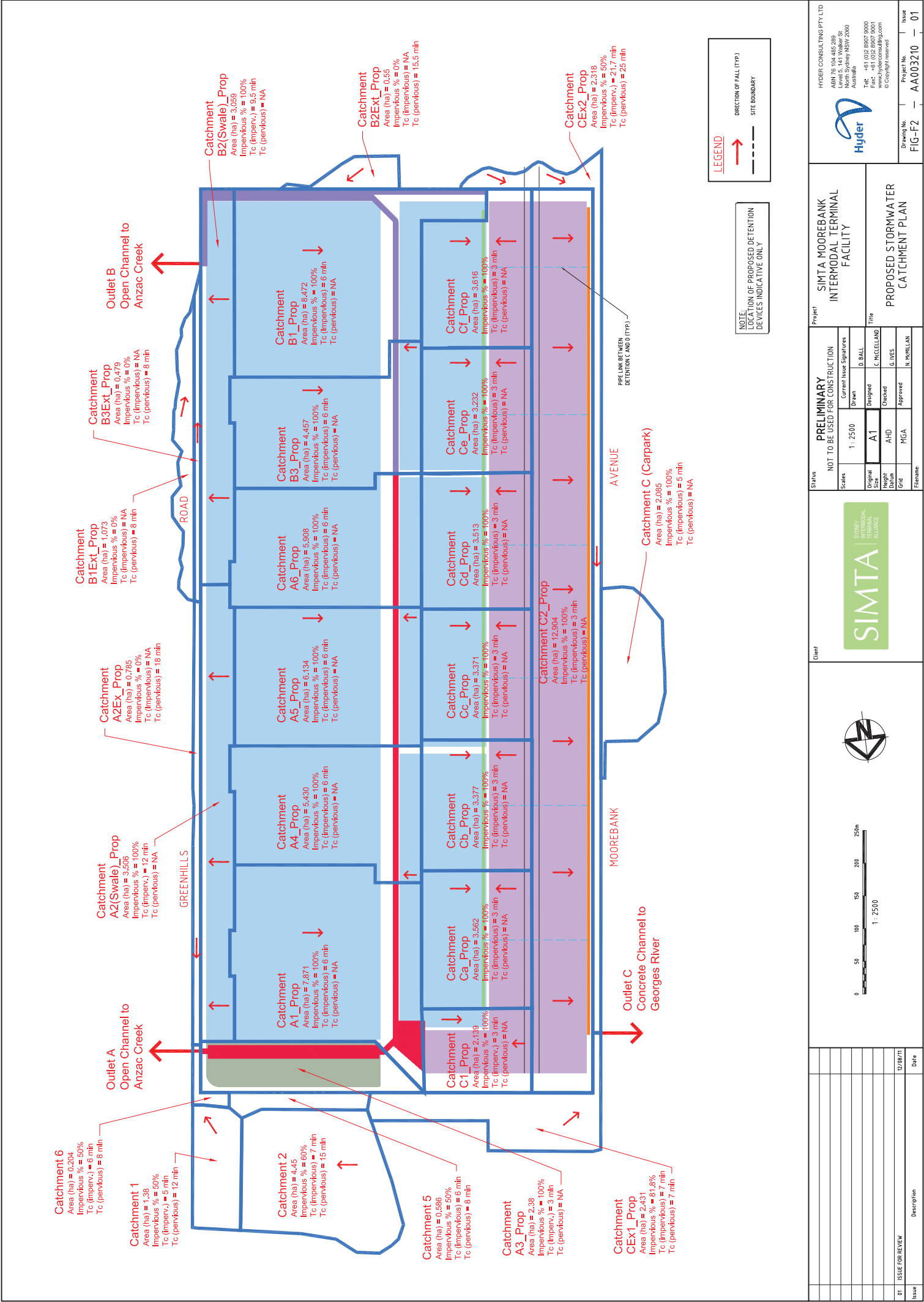
Date Plotted: 12 Aug 2011 - 10:22AM File Name: F:\AA003210\VE-CAD\G-Cut\15-Simta-mv608r-01-Plan-Regional-Proposed.dwg

APPENDIX F

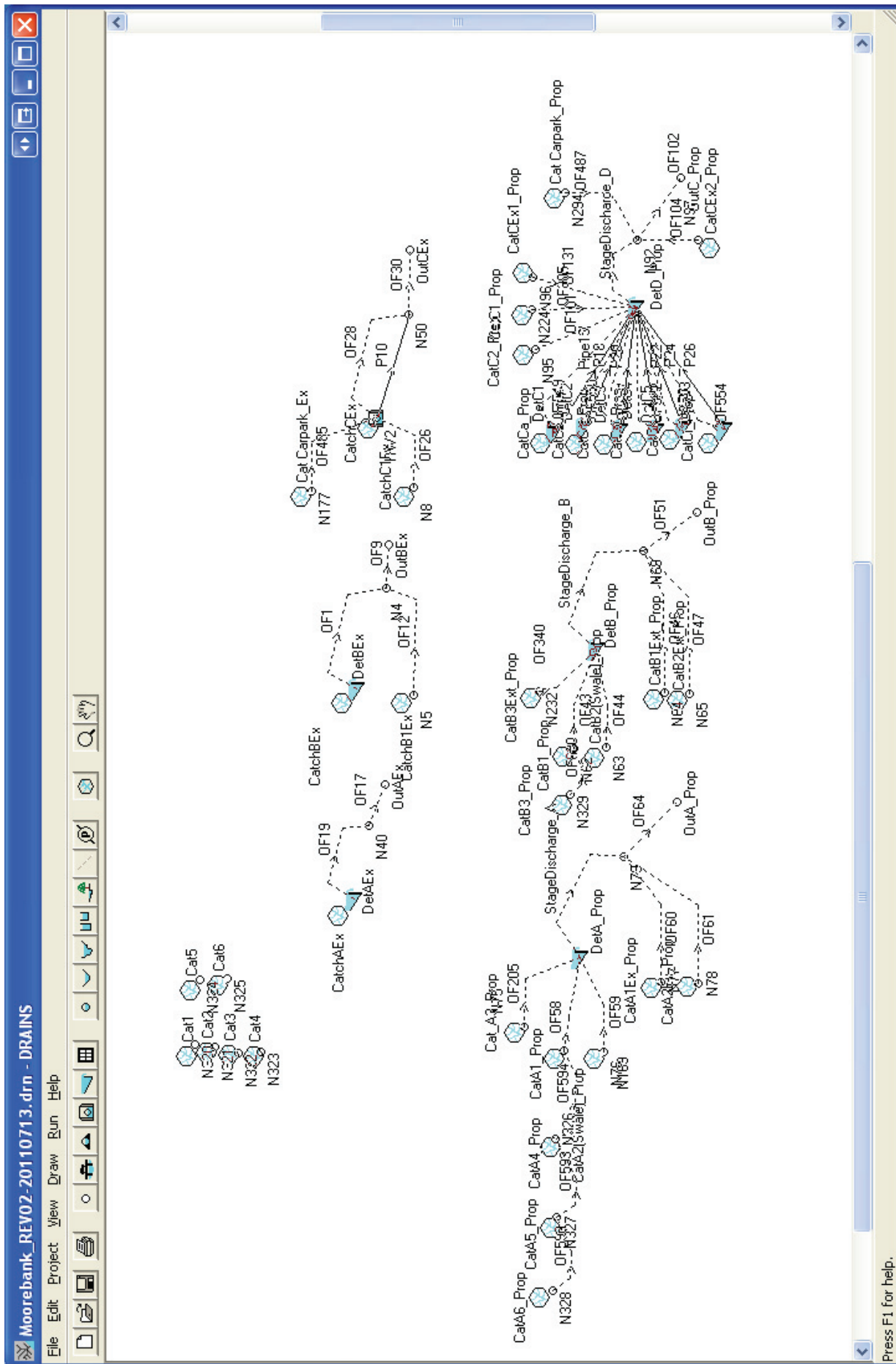
'SITE ONLY' DRAINS MODEL INPUTS AND RESULTS – EXISTING AND PROPOSED CONDITIONS



					
SIMTA STORMWATER INTERMODAL TERMINAL FACILITY		MOOREBANK		1:2500	
SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY		MOOREBANK		1:2500	
EXISTING STORMWATER CATCHMENT PLAN		MOOREBANK		1:2500	
FIG-F1 - AA003210 - 01		MOOREBANK		1:2500	
Drawing No. - AA003210 - 01		MOOREBANK		1:2500	
Issue		MOOREBANK		1:2500	
Project		MOOREBANK		1:2500	
HYDER CONSULTING PTY LTD		MOOREBANK		1:2500	
ABN 76 104 465 289		MOOREBANK		1:2500	
North Sydney NSW 2060		MOOREBANK		1:2500	
Australia		MOOREBANK		1:2500	
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FAC +61 (0)2 8807 9001		MOOREBANK		1:2500	
© Copyright reserved		MOOREBANK		1:2500	
Date Printed: 11 Aug 2017 - 09:55AM File Name: F:\AA003210-CADW-CATB-Surfaces\Figure-F1-Existing_Catchment_Plan.dwg		MOOREBANK		1:2500	



HYDER CONSULTING PTY. LTD ABN 76 104 465 289 104/105 St North Sydney NSW 2060 Australia T: +61 (0)2 8807 9000 F: +61 (0)2 8807 9001 E: info@hyder.com.au © Copyright reserved		Project SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY		Drawing No. FIG-F2 - AA003210 - 01	
Status PRELIMINARY NOT TO BE USED FOR CONSTRUCTION		Title PROPOSED STORMWATER CATCHMENT PLAN		Date Printed: 11 Aug 2011 - 09:54AM File Name: F:\AA003210\NE-CAD\VC-CivilB-Sheet\Fig-F2-Proposed_Catchment_Plan.dwg	
Scales 1 : 2500		Current Issue Signatures		Issue	
Original Size A1		Drawn D BALL		Issue	
Height Datum MGA		Checked C. MCLELLAND		Issue	
Grid		Approved G. WES		Issue	
Filename		N. MCLELLAN		Issue	



PIT / NODE DETAILS										DETENTION BASIN DETAILS									
Name	Type	Family	Version 9 Size	Ponding Volume (cu.m)	Pressure Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Boil-down lid	id	Part Full Shock Loss					
N4	Node					14			0	755.938	215.845		33						
N5	Node								0	500	150		34						
N8	Node								0	1000	150		37						
OutBEX	Node								0	861.978	209.629		1051.047						
N40	Node					14			0	186.986	258.088		4370.447						
OutAEX	Node								0	286.406	221.475		4370.448						
OutCEX	Node								0	1568.098	160.549		5647.966						
N62	Node								0	372.322	233.435		130861.144						
N63	Node								0	375.778	312.923		130861.145						
N64	Node								0	505.378	461.163		130861.146						
N65	Node								0	503.65	511.643		130861.147						
N69	Node								0	845.794	401.051		130861.153						
OutB Prop	Node								0	937.378	528.923		130861.154						
N75	Node								0	353.438	210.971		141115.681						
N76	Node								0	356.894	306.011		141115.682						
N77	Node								0	189.278	442.523		141115.683						
N78	Node								0	192.734	532.379		141115.684						
N79	Node								0	111.394	384.395		141115.685						
OutA Prop	Node					16			0	242.722	480.539		141115.686						
N82	Node								0	1591.586	387.112		151370.76						
OutC Prop	Node								0	1743.309	491.164		151370.77						
N85	Node								0	1531.362	142.3943		151370.86						
N86	Node								0	1073.471	136.327		151370.87						
N87	Node								0	159.486	439.172		151370.91						
N169	Node								0	256.423	113.077		486537.09						
N177	Node								0	990.16	397.15		151463.360						
N224	Node								0	1425.586	133.112		669067.26						
N224	Node								0	507.444	-149.02		739345.74						
N232	Node								0	1164.783	240.386		830860.08						
Headwall	Node				0.5	14.2			0	1414.306	162.277		840707.42						
N50	Node					16			0	1705.992	214.147		840707.42						
N294	Node								0	339.614	676.982		84400956						
N320	Node								0	345.374	628.022		84400957						
N321	Node								0	359.774	571.862		84400958						
N322	Node								0	358.334	520.022		84400959						
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	564.16	189.264		84402416						
N327	Node								0	753.297	193.411		84402417						
N328	Node								0	929.553	183.043		84402418						
N329	Node								0	260.866	225.898		84402438						
DETENTION BASIN DETAILS																			
Name	Elev	Volume	Init Vol. (cu.m)	Outlet Typ	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	23.289																	
	13.7	70.52																	
	13.8	162.39																	
	13.9	326.236																	
	14	598.996																	
	14.1	1061.177																	
	14.2	1822.46																	
	14.3	2998.53																	
	14.4	4603.96																	
	14.5	6355.08																	
	14.6	9177.45																	
	14.7	12162																	
	14.8	15734.5																	
DetAEX	14.82	16517.8	0	None						10.018	295.909	No				4370.434			
	13.1	0.457																	
	13.2	7.16																	
	13.3	26.646																	
	13.4	71.296																	
	13.5	153.944																	
	13.6	292.6																	
	13.7	516.484																	
	13.8	880.951																	
	13.9	1439.4																	
	14	2241.32																	
	14.1	3343.31																	

[illegible]

[illegible]

2 Year ARI Results

DRAINS Model Name and File Path:		F:\AA003210\D-Calculations\C-Civil\Stormwater\DRAINS\Post PEAMoorebank_REV02-20110713.drn											
DRAINS Version:		2010.09 - 5 August 2010											
Modeller's Name:		Chris McClelland											
Description:		Moorebank OSD											
DRAINS results prepared 09 August, 2011 from Version 2010.09													
PIT / NODE DETAILS				Version 8		RESULTS 2 YEAR ARI							
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min							Overflow	Constraint
		HGL	Flow Arriving	Volume	Freeboard							(cu.m/s)	
			(cu.m/s)	(cu.m)	(m)								
HW2	12.34	5.744			1.86	0	None						
N50	11.97		0										
SUB-CATCHMENT DETAILS													
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm						
	Flow Q	Max Q	Max Q	Tc	Tc	Tc							
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)							
CatchB1Ex	0.185	0	0.185	3	8	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1						
CatchC1Ex	0.617	0.542	0.076	7	7	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatchBEx	2.76	1.56	1.313	14.5	24	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1						
CatchAEx	4.115	3.019	1.136	13.75	15	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatB1_Prop	2.392	2.392	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatB2(Swale)_Prop	0.785	0.785	0	9.5	8.5	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatB1Ext_Prop	0.185	0	0.185	5	8	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1						
CatB2Ext_Prop	0.06	0	0.06	8.5	15.5	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1						
CatA1_Prop	2.222	2.222	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatA2(Swale)_Prop	0.819	0.819	0	12	11	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatA1Ex_Prop	1.185	0.682	0.512	13.2	8.3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatA2Ex_Prop	0.076	0	0.076	0	18	0	AR&R 2 year, 1 hour storm, average 33.7 mm/h, Zone 1						
CatCa_Prop	1.078	1.078	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1						
CatCb_Prop	1.022	1.022	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1						
CatCc_Prop	1.021	1.021	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1						
CatCd_Prop	1.064	1.064	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1						
CatCe_Prop	0.979	0.979	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1						
CatCf_Prop	1.095	1.095	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1						
CatC2_Prop	3.907	3.907	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1						
CatCEx1_Prop	0.617	0.542	0.076	7	7	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatCEx2_Prop	0.268	0.197	0.087	21.7	25	0	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1						
Cat_A3_Prop	0.721	0.721	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1						
Cat Carpark_Ext	0.618	0.618	0	5	0	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatC1_Prop	0.648	0.648	0	3	0	0	AR&R 2 year, 5 minutes storm, average 109 mm/h, Zone 1						
CatB3Ext_Prop	0.083	0	0.083	0	8	0	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1						
CatchCEx	4.757	3.863	0.998	25	30	0	AR&R 2 year, 1 hour storm, average 33.7 mm/h, Zone 1						
Cat Carpark_Prop	0.618	0.618	0	5	0	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
Cat1	0.279	0.192	0.09	5	12	0	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1						
Cat2	0.869	0.727	0.147	7	15	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
Cat3	0.117	0.072	0.045	4	8	0	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1						
Cat4	3.294	3.126	0.175	5	15	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
Cat5	0.127	0.083	0.045	6	8	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
Cat6	0.044	0.029	0.015	6	8	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatA4_Prop	1.533	1.533	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatA5_Prop	1.732	1.732	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatA6_Prop	1.668	1.668	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
CatB3_Prop	1.258	1.258	0	6	3	0	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1						
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)													
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff									
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)									
AR&R 2 year, 5 min	19807.55	12757.59 (64.4%)	12649.92 (63.9%)	107.67 (1.9%)									
AR&R 2 year, 10 min	30347.35	21235.00 (70.0%)	20213.78 (66.7%)	1021.22 (11.9%)									
AR&R 2 year, 15 min	38161.34	28053.71 (73.5%)	25821.41 (67.7%)	2232.30 (20.7%)									
AR&R 2 year, 20 min	44485.22	33654.47 (75.7%)	30359.75 (68.2%)	3294.72 (26.2%)									
AR&R 2 year, 25 min	49700.61	38202.99 (76.9%)	34102.68 (68.6%)	4100.31 (29.2%)									
AR&R 2 year, 30 min	54298.14	41954.61 (77.3%)	37401.99 (68.9%)	4552.62 (29.7%)									
AR&R 2 year, 45 min	65092.34	51071.20 (78.5%)	45148.41 (69.4%)	5922.79 (32.2%)									
AR&R 2 year, 1 hour	73487.84	58130.29 (79.1%)	51173.34 (69.5%)	6956.94 (33.5%)									
AR&R 2 year, 1.5 hours	86026.57	68093.83 (79.1%)	60171.75 (69.7%)	7922.08 (32.6%)									
AR&R 2 year, 2 hours	95948.54	76033.59 (79.2%)	67292.29 (69.7%)	8741.31 (32.3%)									
AR&R 2 year, 3 hours	110558.87	87557.55 (79.2%)	77778.05 (69.5%)	9779.50 (31.3%)									
AR&R 2 year, 4.5 hours	127567.9	99997.64 (78.4%)	89984.34 (69.8%)	10013.30 (27.8%)									
PIPE DETAILS													
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm								
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)									
Pipe13	1.018	1.5	15.29	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1								
P18	0.964	1.4	15.284	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1								
P20	0.962	1.4	15.284	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1								
P22	1.004	1.5	15.288	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1								
P24	0.921	1.4	15.283	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1								
P26	1.034	1.5	15.292	15.273	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1								
P10	5.744	2.5	12.017	11.967	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1								
CHANNEL DETAILS													
Name	Max Q	Max V	Chainage	Max	Due to Storm								
	(cu.m/s)	(m/s)	(m)	HGL (m)									
OVERFLOW ROUTE DETAILS													
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm					
OF9	0.4	0.4	0.256	0.06	0.04	15.94	0.75	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1					
OF12	0.185	0.185	0.256	0.044	0.03	12.89	0.59	AR&R 2 year, 2 hours storm, average 22 mm/h, Zone 1					
OF26	0.617	0.617	0.256	0.071	0.06	18.28	0.84	AR&R 2 year, 25 minutes storm, average 54.7 mm/h, Zone 1					
OF1	0.279	0.279	0.256	0.052	0.03	14.33	0.67	AR&R 2 year, 3 hours storm, average 16.9 mm/h, Zone 1					
OF19	2.424	2.424	0.256	0.125	0.15	29.06	1.21	AR&R 2 year, 1.5 hours storm, average 26.3 mm/h, Zone 1					

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

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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																				
Name	Max HGL	Max Pond	Max Surface	Version 8	Min	Overflow	Constraint													
		HGL	Flow Arriving	Max Pond	Freeboard	(cu.m/s)														
			(cu.m/s)	Volume	(m)															
HW2	12.06	3.217			2.14	0	None													
N50	11.78		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	0.07	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_Ext	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	Total Runoff	Impervious Runoff	Pervious Runoff																
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)																
AR&R 2 year, 6 hours	141305.98	110836.58 (78.4%)	99842.64 (98.4%)	10993.94 (27.6%)																
AR&R 2 year, 9 hours	163286.91	128975.79 (79.0%)	115622.15 (98.6%)	13353.64 (29.0%)																
AR&R 2 year, 12 hours	181081	143399.65 (79.2%)	128379.24 (98.4%)	15020.40 (29.4%)																
AR&R 2 year, 18 hours	209996.39	161625.47 (77.0%)	149142.59 (99.6%)	12482.88 (21.1%)																
AR&R 2 year, 24 hours	232893.2	177091.17 (75.9%)	165586.45 (99.2%)	11504.72 (17.5%)																
PIPE DETAILS																				
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm															
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)																
Pipe13	0.321	1.5	15.09	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1															
P18	0.304	1.5	15.087	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1															
P20	0.303	1.5	15.086	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1															
P22	0.316	1.5	15.089	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1															
P24	0.291	1.4	15.084	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1															
P26	0.325	1.5	15.09	14.999	AR&R 2 year, 6 hours storm, average 10.8 mm/h, Zone 1															
P10	3.217	2.1	11.831	11.781	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1															
CHANNEL DETAILS																				
Name	Max Q	Max V	Chainage	Max	Due to Storm															
	(cu.m/s)	(m/s)	(m)	HGL (m)																
OVERFLOW ROUTE DETAILS																				
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm												
OF9	0.32	0.32	7.665	0.054	0.04	14.87	0.71	AR&R 2 year, 9 hours storm, average 8.32 mm/h, Zone 1												

2 Year ARI Results

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

2 Year ARI Results

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

20 Year ARI Results

DRAINS Model Name and File Path:		F:\AA003210\ID-Calculations\IC-Civil\Stormwater\DRAINS\Post PEA\Moorebank_REV02-20110713.drn									
DRAINS Version:		2010.09 - 5 August 2010									
Modeller's Name:		Chris McClelland									
Description:		Moorebank OSD									
DRAINS results prepared 09 August, 2011 from Version 2010.09											
PIT / NODE DETAILS				Version 8						RESULTS 20 YEAR ARI	
Name	Max HGL	Max Pond 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		0.381	3	8		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatchC1Ex	1.032	0.87	0.163	7	7		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatchBEx	5.832	2.538	3.35	14.5	24		0 AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1				
CatchAEx	7.717	4.854	3.112	13.75	15		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatB1_Prop	3.84	3.84	0	6	3		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatB2(Swale)_Prop	1.26	1.26	0	9.5	8.5		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatB1Ext_Prop	0.381	0	0.381	5	8		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatB2Ext_Prop	0.132	0	0.132	8.5	15.5		0 AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1				
CatA1_Prop	3.567	3.567	0	6	3		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatA2(Swale)_Prop	1.315	1.315	0	12	11		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatA1Ex_Prop	2.342	1.094	1.248	13.2	8.3		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatA2Ex_Prop	0.179	0	0.179	0	18		0 AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1				
CatCa_Prop	1.732	1.732	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCb_Prop	1.642	1.642	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCc_Prop	1.639	1.639	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCd_Prop	1.708	1.708	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCe_Prop	1.571	1.571	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCf_Prop	1.758	1.758	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatC2_Prop	6.273	6.273	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
CatCEx1_Prop	1.032	0.87	0.163	7	7		0 AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1				
CatCEx2_Prop	0.511	0.32	0.211	21.7	25		0 AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1				
Cat A3_Prop	1.157	1.157	0	3	0		0 AR&R 20 year, 5 minutes storm, average 175 mm/h, Zone 1				
Cat Carpark 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 Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)							
AR&R 20 year, 5 m	31801.12	23349.77 (73.1%)	21257.06 (93.1%)	2092.71 (23.3%)							
AR&R 20 year, 10 m	48701.14	39129.66 (80.3%)	33385.34 (95.1%)	5744.31 (41.8%)							
AR&R 20 year, 15 m	61058.14	50683.12 (83.0%)	42253.21 (96.4%)	8429.90 (48.9%)							
AR&R 20 year, 20 m	71379.88	60285.51 (84.5%)	49660.72 (96.4%)	10624.79 (52.7%)							
AR&R 20 year, 25 m	79775.38	67927.40 (85.1%)	55685.65 (97.1%)	12241.75 (54.3%)							
AR&R 20 year, 30 m	87116.89	74393.13 (85.4%)	60954.32 (97.1%)	13438.81 (54.6%)							
AR&R 20 year, 45 m	104834.66	90285.41 (86.1%)	73669.27 (97.1%)	16616.13 (56.1%)							
AR&R 20 year, 1 h	118627.25	102699.03 (86.6%)	83567.49 (98.1%)	19131.53 (57.1%)							
AR&R 20 year, 1.5 h	139670.52	121238.64 (86.9%)	98669.28 (98.1%)	22569.36 (57.2%)							
AR&R 20 year, 2 h	156134.39	135577.38 (86.8%)	110484.45 (98.2%)	25092.93 (56.9%)							
AR&R 20 year, 3 h	181866.03	158100.23 (86.9%)	128950.34 (98.2%)	29149.89 (56.8%)							
AR&R 20 year, 4.5 h	210977.67	182255.05 (86.4%)	149844.19 (99.3%)	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	1.533	1.4	15.724	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1						
P24	1.449	1.3	15.707	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1						
P26	1.567	1.5	15.731	15.649	AR&R 20 year, 15 minutes storm, average 112 mm/h, Zone 1						
P10	10.166	3	12.303	12.253	AR&R 20 year, 1.5 hours storm, average 42.7 mm/h, Zone 1						
CHANNEL DETAILS											
Name	Max Q (cu.m/s)	Max V (m/s)	Chainage (m)	Max HGL (m)	Due to Storm						
OVERFLOW ROUTE DETAILS											
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm			
OF9	0.652	0.652	0.256	0.073	0.06	18.64	0.85	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1			
OF12	0.381	0.381	0.256	0.059	0.04	15.76	0.73	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF26	1.032	1.032	0.256	0.088	0.08	21.69	0.96	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF1	0.633	0.633	0.256	0.072	0.06	18.46	0.84	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1			
OF19	6.244	6.244	0.256	0.185	0.28	40.91	1.53	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1			
OF17	6.244	6.244	0.256	0.185	0.28	40.91	1.53	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1			
StageDischarge_B	0.21	0.21	0.256	0.046	0.03	13.25	0.62	AR&R 20 year, 4.5 hours storm, average 21.5 mm/h, Zone 1			
OF43	5.835	5.835	0.256	0.179	0.27	39.83	1.51	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF44	1.26	1.26	0.256	0.096	0.1	23.13	1.02	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF46	0.381	0.381	0.256	0.059	0.04	15.76	0.73	AR&R 20 year, 25 minutes storm, average 87.8 mm/h, Zone 1			
OF47	0.132	0.132	0.256	0.039	0.02	11.81	0.53	AR&R 20 year, 2 hours storm, average 35.8 mm/h, Zone 1			

20 Year ARI Results

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

20 Year ARI Results

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

20 Year ARI Results

StageDischarge_D	5.301	5.301	7.665	0.172	0.25	38.4	1.48	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF550	0	0	7.665	0	0	0	0				
OF551	0	0	7.665	0	0	0	0				
OF552	0	0	7.665	0	0	0	0				
OF553	0	0	7.665	0	0	0	0				
OF554	0	0	7.665	0	0	0	0				
OF102	5.916	5.916	7.665	0.18	0.27	40.01	1.52	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF101	1.936	1.936	7.665	0.115	0.13	26.9	1.13	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF131	0.355	0.355	7.665	0.057	0.04	15.41	0.72	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF104	0.322	0.322	7.665	0.055	0.04	15.05	0.69	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF205	0.357	0.357	7.665	0.057	0.04	15.41	0.72	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF485	0.313	0.313	7.665	0.054	0.04	14.87	0.69	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF305	0.321	0.321	7.665	0.054	0.04	14.87	0.71	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF340	0.062	0.062	7.665	0.029	0.01	9.73	0.44	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF28	0	0	7.665	0	0	0	0				
OF30	6.295	6.295	7.665	0.185	0.28	40.91	1.54	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF487	0.313	0.313	7.665	0.054	0.04	14.87	0.69	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF594	2.621	2.621	7.665	0.13	0.16	29.95	1.22	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF593	1.806	1.806	7.665	0.111	0.12	26.18	1.12	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF590	0.886	0.886	7.665	0.083	0.08	20.61	0.92	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
OF600	0.669	0.669	7.665	0.074	0.06	18.82	0.85	AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1			
DETENTION BASIN DETAILS											
Name	Max WL	MaxVol	Max Q	Max Q	Max Q						
			Total	Low Level	High Level						
DetBEx	14.72	12778.5	1.075	0	1.075						
DetAEx	14.07	3022.5	3.46	0	3.46						
DetB_Prop	15.87	16649.8	0.753	0	0.753						
DetA_Prop	15.58	23523.9	0.96	0	0.96						
DetC1	15.53	220.8	0.534	0.534	0						
DetD_Prop	15.48	7982.5	5.301	0	5.301						
DetC2	15.52	217.3	0.506	0.506	0						
DetC3	15.52	217.2	0.505	0.505	0						
DetC4	15.52	219.9	0.526	0.526	0						
DetC5	15.52	214.7	0.484	0.484	0						
DetC6	15.53	221.9	0.542	0.542	0						
CONTINUITY CHECK for AR&R 20 year, 6 hours storm, average 18 mm/h, Zone 1											
Node	Inflow	Outflow	Storage 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	2230.95	0	0							
N320	1140.85	1140.85	0	0							
N321	3876.56	3876.56	0	0							
N322	429.89	429.89	0	0							
N323	12498.13	12498.13	0	0							
N324	481.67	481.67	0	0							
N325	167.68	167.68	0	0							
N326	18694.93	18695.02	0	0							
N327	12884.85	12884.95	0	0							
N328	6321.49	6321.49	0	0							
N329	4768.99	4768.99	0	0							
Run Log for Moorebank_REV02 run at 10:33:19 on 9/8/2011											
The following detention basins have little effect (less than 2%) in reducing peak discharge: DetC6, DetC5, DetC4, DetC3, DetC2, DetC1 You might consider upsizing these, or removing them											

100 Year ARI Results

DRAINS Model Name and File Path:		F:\AA003210\D-Calculations\C-Civil\Stormwater\DRAINS\Post PEA\Moorebank_REV02-20110713.drn											
DRAINS Version:		2010.09 - 5 August 2010											
Modeller's Name:		Chris McClelland											
Description:		Moorebank OSD											
DRAINS results prepared 09 August, 2011 from Version 2010.09													
PIT / NODE DETAILS				Version 8		RESULTS 100 YEAR ARI							
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min							Overflow	Constraint
		HGL	Flow Arriving	Volume	Freeboard							(cu.m/s)	
			(cu.m/s)	(cu.m)	(m)								
HW2	13.38	12.746			0.82	0	None						
N50	13.28		0										
SUB-CATCHMENT DETAILS													
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm						
	Flow Q	Max Q	Max Q	Tc	Tc	Tc							
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)							
CatchB1Ex	0.465	0	0.465	3	8	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatchC1Ex	1.231	1.034	0.197	7	7	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatchBEx	7.538	3.077	4.462	14.5	24	0	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1						
CatchAEx	9.881	5.94	4.252	13.75	15	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatB1_Prop	4.547	4.547	0	6	3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatB2(Swale)_Prop	1.51	1.51	0	9.5	8.5	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatB1Ext_Prop	0.465	0	0.465	5	8	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatB2Ext_Prop	0.17	0	0.17	8.5	15.5	0	AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1						
CatA1_Prop	4.224	4.224	0	6	3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatA2(Swale)_Prop	1.595	1.595	0	12	11	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatA1Ex_Prop	2.808	1.335	1.531	13.2	8.3	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatA2Ex_Prop	0.231	0	0.231	0	18	0	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1						
CatCa_Prop	2.216	2.216	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCb_Prop	2.101	2.101	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCc_Prop	2.098	2.098	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCd_Prop	2.186	2.186	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCe_Prop	2.011	2.011	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCf_Prop	2.25	2.25	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatC2_Prop	8.029	8.029	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
CatCEx1_Prop	1.231	1.034	0.197	7	7	0	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1						
CatCEx2_Prop	0.656	0.391	0.288	21.7	25	0	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1						
Cat_A3_Prop	1.481	1.481	0	3	0	0	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1						
Cat Carpark_ 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 min	40705.43	32100.10 (78.7%)	27647.31 (94.4%)	4452.79 (38.7%)									
AR&R 100 year, 10 min	62511.91	52822.48 (84.5%)	43296.53 (96.3%)	9525.95 (54.0%)									
AR&R 100 year, 15 min	78503.32	67964.89 (86.6%)	54772.67 (97.1%)	13192.22 (59.5%)									
AR&R 100 year, 20 min	91587.23	80290.73 (87.7%)	64162.38 (97.4%)	16128.35 (62.4%)									
AR&R 100 year, 25 min	101763.58	89556.05 (88.0%)	71465.52 (97.4%)	18090.52 (63.0%)									
AR&R 100 year, 30 min	111213.05	98245.21 (88.4%)	78246.95 (98.1%)	19998.26 (63.7%)									
AR&R 100 year, 45 min	134273.41	119478.42 (88.9%)	94796.08 (98.2%)	24682.35 (65.1%)									
AR&R 100 year, 1 h	151991.16	135745.67 (89.3%)	107511.19 (98.3%)	28234.48 (65.8%)									
AR&R 100 year, 1.5 h	179576.36	160892.24 (89.6%)	127307.49 (98.3%)	33584.75 (66.2%)									
AR&R 100 year, 2 h	201055.77	180304.16 (89.7%)	142721.55 (98.3%)	37582.62 (66.2%)									
AR&R 100 year, 3 h	234855.8	210569.45 (89.7%)	166978.94 (98.3%)	43590.51 (65.7%)									
AR&R 100 year, 4.5 h	272799.09	243546.58 (89.3%)	194210.94 (98.3%)	49335.64 (64.1%)									
PIPE DETAILS													
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm								
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)									
Pipe13	1.77	1.6	15.986	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P18	1.693	1.6	15.972	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P20	1.69	1.6	15.972	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P22	1.749	1.6	15.982	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P24	1.634	1.5	15.963	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P26	1.793	1.7	15.99	15.896	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
P10	12.746	1.8	13.294	13.28	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1								
CHANNEL DETAILS													
Name	Max Q	Max V	Chainage	Max	Due to Storm								
	(cu.m/s)	(m/s)	(m)	HGL (m)									
OVERFLOW ROUTE DETAILS													
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm					
OF9	1.626	1.626	0.256	0.106	0.12	25.28	1.09	AR&R 100 year, 3 hours storm, average 35.9 mm/h, Zone 1					
OF12	0.465	0.465	0.256	0.063	0.05	16.66	0.78	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF26	1.231	1.231	0.256	0.095	0.1	22.95	1.01	AR&R 100 year, 20 minutes storm, average 126 mm/h, Zone 1					
OF1	1.572	1.572	0.256	0.105	0.11	24.92	1.08	AR&R 100 year, 3 hours storm, average 35.9 mm/h, Zone 1					
OF19	8.334	8.334	0.256	0.207	0.34	45.4	1.65	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1					

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

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N50	26769.13	26769.13	0	0									
N294	1432.39	1432.39	0	0									
N320	797.66	797.66	0	0									
N321	2653.85	2653.85	0	0									
N322	300.97	300.97	0	0									
N323	8219.99	8219.99	0	0									
N324	337.22	337.22	0	0									
N325	117.4	117.4	0	0									
N326	12003.26	12003.26	0	0									
N327	8272.85	8272.86	0	0									
N328	4058.79	4058.79	0	0									
N329	3061.96	3061.96	0	0									
Run Log for Moorebank_REV02 run at 10:34:38 on 9/8/2011													
The maximum flow exceeded the safe value in the following overflow routes: OF600, OF594, OF593, OF590, OF487, OF485, OF305, OF205, OF131, OF104, OF102, OF101, StageDischarge_D, C													
DRAINS results prepared 09 August, 2011 from Version 2010.09													
PIT / NODE DETAILS													
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint						
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)							
			(cu.m/s)	(cu.m)	(m)								
HW2	13.32	7.698			0.88	0	None						
N50	13.28		0										
SUB-CATCHMENT DETAILS													
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm						
	Flow Q	Max Q	Max Q	Tc	Tc	Tc							
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)							
CatchB1Ex	0.173	0	0.173	3	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatchC1Ex	0.431	0.36	0.071	7	7	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatchBEx	4.356	1.575	2.782	14.5	24	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatchAEx	4.693	2.484	2.209	13.75	15	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB1_Prop	1.533	1.533	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB2(Swale)_Prop	0.554	0.554	0	9.5	8.5	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB1Ext_Prop	0.173	0	0.173	5	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB2Ext_Prop	0.088	0	0.088	8.5	15.5	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA1_Prop	1.424	1.424	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA2(Swale)_Prop	0.634	0.634	0	12	11	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA1Ex_Prop	1.126	0.55	0.576	13.2	8.3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA2Ex_Prop	0.126	0	0.126	0	18	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCa_Prop	0.645	0.645	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCb_Prop	0.611	0.611	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCc_Prop	0.61	0.61	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCd_Prop	0.636	0.636	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCe_Prop	0.585	0.585	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCf_Prop	0.654	0.654	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatC2_Prop	2.335	2.335	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCEx1_Prop	0.431	0.36	0.071	7	7	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatCEx2_Prop	0.395	0.21	0.186	21.7	25	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat_A3_Prop	0.431	0.431	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat Carpark_Ext	0.377	0.377	0	5	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatC1_Prop	0.387	0.387	0	3	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB3Ext_Prop	0.077	0	0.077	0	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatchCEx	6.889	4.383	2.506	25	30	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat Carpark_Prop	0.377	0.377	0	5	0	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat1	0.237	0.126	0.112	5	12	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat2	0.769	0.483	0.286	7	15	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat3	0.09	0.047	0.042	4	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat4	2.249	1.909	0.34	5	15	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat5	0.1	0.053	0.047	6	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Cat6	0.035	0.018	0.016	6	8	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA4_Prop	0.983	0.983	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA5_Prop	1.11	1.11	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatA6_Prop	1.069	1.069	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
CatB3_Prop	0.807	0.807	0	6	3	0	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1						
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)													
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff									
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)									
AR&R 100 year, 6 h	304854.63	270784.28 (88.86%)	217212.31 (71.28%)	53571.97 (17.58%)									
AR&R 100 year, 9 h	3307316	313204.46 (9.47%)	254771.72 (7.70%)	58432.74 (1.77%)									
AR&R 100 year, 12 h	400367	350135.02 (87.45%)	285758.69 (71.38%)	64376.34 (16.07%)									
AR&R 100 year, 18 h	474945.16	408699.81 (85.84%)	339291.97 (71.43%)	69407.84 (14.62%)									
AR&R 100 year, 24 h	539056.13	456777.45 (84.73%)	385271.72 (71.46%)	71505.73 (13.26%)									
PIPE DETAILS													
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm								
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)									
Pipe13	0.631	0.6	15.566	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P18	0.598	0.6	15.56	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P20	0.597	0.6	15.559	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P22	0.623	0.6	15.564	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P24	0.572	0.5	15.555	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P26	0.641	0.6	15.568	15.504	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
P10	7.698	1.1	13.285	13.28	AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1								
CHANNEL DETAILS													
Name	Max Q	Max V	Chainage	Max	Due to Storm								
	(cu.m/s)	(m/s)	(m)	HGL (m)									
OVERFLOW ROUTE DETAILS													
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max Dv	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					

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

100 Year ARI Results

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

100 Year ARI (Climate Change)

DRAINS Model Name and File Path:		F:\AA003210\ID-Calculations\C-Civil\Stormwater\DRAINS\Post PEA\Moorebank_REV02-20110713.drn									
DRAINS Version:		2010.09 - 5 August 2010									
Modeller's Name:		Chris McClelland									
Description:		Moorebank OSD									
DRAINS results prepared 09 August, 2011 from Version 2010.09											
PIT / NODE DETAILS				Version 8						RESULTS Climate Change	
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint				
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)					
			(cu.m/s)	(cu.m)	(m)						
HW2	13.19	15.598			1.01	0	None				
N50	12.56		0								
SUB-CATCHMENT DETAILS											
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm				
	Flow Q	Max Q	Max Q	Tc	Tc	Tc					
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)					
CatchB1Ex	0.573	0	0.573	3	8		0 AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
CatchC1Ex	1.482	1.239	0.243	7	7		0 AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
CatchBEx	9.21	3.691	5.519	14.5	24		0 AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1				
CatchAEx	12.204	7.118	5.403	13.75	15		0 AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
CatB1_Prop	5.455	5.455	0	6	3		0 AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1				
CatB2(Swale)_Prop	1.81	1.81	0	9.5	8.5		0 AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
CatB1Ext_Prop	0.573	0	0.573	5	8		0 AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
CatB2Ext_Prop	0.215	0	0.215	8.5	15.5		0 AR&R 102 year, 1 hour storm, average 83.6 mm/h, Zone 1				
CatA1_Prop	5.068	5.068	0	6	3		0 AR&R 102 year, 15 minutes storm, average 173 mm/h, Zone 1				
CatA2(Swale)_Prop	1.912	1.912	0	12	11		0 AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
CatA1Ex_Prop	3.423	1.6	1.887	13.2	8.3		0 AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
CatA2Ex_Prop	0.289	0	0.289	0	18		0 AR&R 102 year, 1 hour storm, average 83.6 mm/h, Zone 1				
CatCa_Prop	2.662	2.662	0	3	0		0 AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
CatCb_Prop	2.523	2.523	0	3	0		0 AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
CatCc_Prop	2.519	2.519	0	3	0		0 AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
CatCd_Prop	2.625	2.625	0	3	0		0 AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
CatCe_Prop	2.415	2.415	0	3	0		0 AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
CatCf_Prop	2.702	2.702	0	3	0		0 AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
CatC2_Prop	9.642	9.642	0	3	0		0 AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
CatCEx1_Prop	1.482	1.239	0.243	7	7		0 AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1				
CatCEx2_Prop	0.814	0.47	0.369	21.7	25		0 AR&R 102 year, 1.5 hours storm, average 65.9 mm/h, Zone 1				
Cat_A3_Prop	1.778	1.778	0	3	0		0 AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1				
Cat Carpark_ 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	Total Runoff	Impervious Ru	Pervious Runoff							
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)							
AR&R 102 year, 5 m	48882.86	40233.50 (82.3%)	33515.75 (95.6%)	6717.75 (48.7%)							
AR&R 102 year, 10	74868.91	65129.53 (87.1%)	52164.57 (97.2%)	12964.96 (61.3%)							
AR&R 102 year, 15	94313.03	83699.96 (88.7%)	66118.59 (97.2%)	17581.36 (66.0%)							
AR&R 102 year, 20	109759.3	98384.88 (89.6%)	77203.63 (98.4%)	21181.25 (68.3%)							
AR&R 102 year, 25	121752.85	109465.23 (89.9%)	85810.67 (98.2%)	23654.56 (68.8%)							
AR&R 102 year, 30	133019.53	119984.68 (90.2%)	93896.34 (98.4%)	26088.34 (69.5%)							
AR&R 102 year, 45	161095.38	146237.80 (90.8%)	114044.66 (98.4%)	32193.14 (70.8%)							
AR&R 102 year, 1 h	182302.19	165987.45 (91.1%)	129263.70 (98.4%)	36723.75 (71.3%)							
AR&R 102 year, 1.5	215557.06	196809.39 (91.3%)	153129.33 (99.1%)	43680.06 (71.8%)							
AR&R 102 year, 2 h	241179.64	220327.19 (91.3%)	171517.27 (99.4%)	48809.93 (71.7%)							
AR&R 102 year, 3 h	281957.75	257485.74 (91.3%)	200779.45 (99.5%)	56706.29 (71.2%)							
AR&R 102 year, 4.5	327751.44	298350.03 (91.0%)	233645.61 (99.8%)	64704.42 (69.9%)							
PIPE DETAILS											
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm						
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)							
Pipe13	1.988	1.8	16.202	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
P18	1.942	1.8	16.182	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
P20	1.94	1.8	16.181	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
P22	1.975	1.8	16.198	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
P24	1.916	1.8	16.167	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
P26	2.001	1.9	16.205	16.009	AR&R 102 year, 5 minutes storm, average 269 mm/h, Zone 1						
P10	15.598	3.4	12.82	12.558	AR&R 102 year, 1.5 hours storm, average 65.9 mm/h, Zone 1						
CHANNEL DETAILS											
Name	Max Q	Max V	Chainage	Max	Due to Storm						
	(cu.m/s)	(m/s)	(m)	HGL (m)							
OVERFLOW ROUTE DETAILS											
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm			
OF9	2.679	2.679	0.256	0.131	0.16	30.13	1.23	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1			
OF12	0.573	0.573	0.256	0.07	0.06	17.92	0.82	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1			
OF26	1.482	1.482	0.256	0.103	0.11	24.57	1.05	AR&R 102 year, 20 minutes storm, average 151 mm/h, Zone 1			
OF1	2.585	2.585	0.256	0.129	0.16	29.77	1.22	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1			
OF19	11.119	11.119	0.256	0.23	0.42	49.99	1.81	AR&R 102 year, 2 hours storm, average 55.3 mm/h, Zone 1			

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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									

100 Year ARI (Climate Change)

N50	32919.43	32919.43	0	0									
N294	1722.21	1722.21	0	0									
N320	990.05	990.05	0	0									
N321	3270.52	3270.52	0	0									
N322	373.52	373.52	0	0									
N323	9977.67	9977.67	0	0									
N324	418.52	418.52	0	0									
N325	145.7	145.7	0	0									
N326	14431.86	14431.87	0	0									
N327	9946.69	9946.69	0	0									
N328	4880.01	4880.01	0	0									
N329	3681.48	3681.48	0	0									
Run Log for Moorebank_REV02 run at 14:08:29 on 9/8/2011													
The maximum flow exceeded the safe value in the following overflow routes: OF600, OF594, OF593, OF590, OF487, OF485, OF305, OF205, OF131, OF104, OF102, OF101, StageDischarge_D, C													
DRAINS results prepared 09 August, 2011 from Version 2010.09													
PIT / NODE DETAILS													
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint						
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)							
			(cu.m/s)	(cu.m)	(m)								
HW2	12.68	9.326			1.52	0	None						
N50	12.2		0										
SUB-CATCHMENT DETAILS													
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm						
	Flow Q	Max Q	Max Q	Tc	Tc	Tc							
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)							
CatchB1Ex	0.213	0	0.213	3	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatchC1Ex	0.52	0.432	0.088	7	7	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatchBEx	5.314	1.892	3.422	14.5	24	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatchAEx	5.7	2.985	2.715	13.75	15	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB1_Prop	1.842	1.842	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB2(Swale)_Prop	0.665	0.665	0	9.5	8.5	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB1Ext_Prop	0.213	0	0.213	5	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB2Ext_Prop	0.109	0	0.109	8.5	15.5	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA1_Prop	1.712	1.712	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA2(Swale)_Prop	0.762	0.762	0	12	11	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA1Ex_Prop	1.369	0.661	0.707	13.2	8.3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA2Ex_Prop	0.155	0	0.155	0	18	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCa_Prop	0.775	0.775	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCb_Prop	0.734	0.734	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCc_Prop	0.733	0.733	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCd_Prop	0.764	0.764	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCe_Prop	0.703	0.703	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCf_Prop	0.786	0.786	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatC2_Prop	2.806	2.806	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCEx1_Prop	0.52	0.432	0.088	7	7	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatCEx2_Prop	0.481	0.252	0.228	21.7	25	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat_A3_Prop	0.518	0.518	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat Carpark_Ext	0.453	0.453	0	5	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatC1_Prop	0.465	0.465	0	3	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB3Ext_Prop	0.095	0	0.095	0	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatchCEx	8.352	5.267	3.086	25	30	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat Carpark_Prop	0.453	0.453	0	5	0	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat1	0.288	0.151	0.137	5	12	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat2	0.932	0.58	0.352	7	15	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat3	0.109	0.057	0.052	4	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat4	2.711	2.294	0.417	5	15	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat5	0.122	0.064	0.058	6	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Cat6	0.042	0.022	0.02	6	8	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA4_Prop	1.181	1.181	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA5_Prop	1.334	1.334	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatA6_Prop	1.285	1.285	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
CatB3_Prop	0.969	0.969	0	6	3	0	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1						
Outflow Volumes for Total Catchment (156 impervious + 61.6 pervious = 218 total ha)													
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff									
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)									
AR&R 102 year, 6 h	366348.84	331903.44 (90.6%)	261351.63 (99.7%)	70551.81 (68.2%)									
AR&R 102 year, 9 h	427843.13	383158.98 (89.8%)	305481.31 (99.7%)	77677.67 (64.3%)									
AR&R 102 year, 12 h	481487.06	429691.20 (89.2%)	343953.34 (99.8%)	85737.85 (63.1%)									
AR&R 102 year, 18 h	569149.13	500128.20 (87.9%)	406857.28 (99.8%)	93270.92 (58.0%)									
AR&R 102 year, 24 h	648960.81	563771.91 (86.9%)	464126.28 (99.8%)	99645.63 (54.4%)									
PIPE DETAILS													
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm								
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)									
Pipe13	0.682	0.6	15.719	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P18	0.642	0.6	15.712	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P20	0.641	0.6	15.711	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P22	0.672	0.6	15.717	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P24	0.611	0.6	15.706	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P26	0.694	0.6	15.722	15.648	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
P10	9.326	2.9	12.251	12.201	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1								
CHANNEL DETAILS													
Name	Max Q	Max V	Chainage	Max	Due to Storm								
	(cu.m/s)	(m/s)	(m)	HGL (m)									
OVERFLOW ROUTE DETAILS													
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max Dv	Max Width	Max V	Due to Storm					
OF9	4.021	4.021	7.665	0.154	0.21	34.8	1.37	AR&R 102 year, 9 hours storm, average 21.8 mm/h, Zone 1					

100 Year ARI (Climate Change)

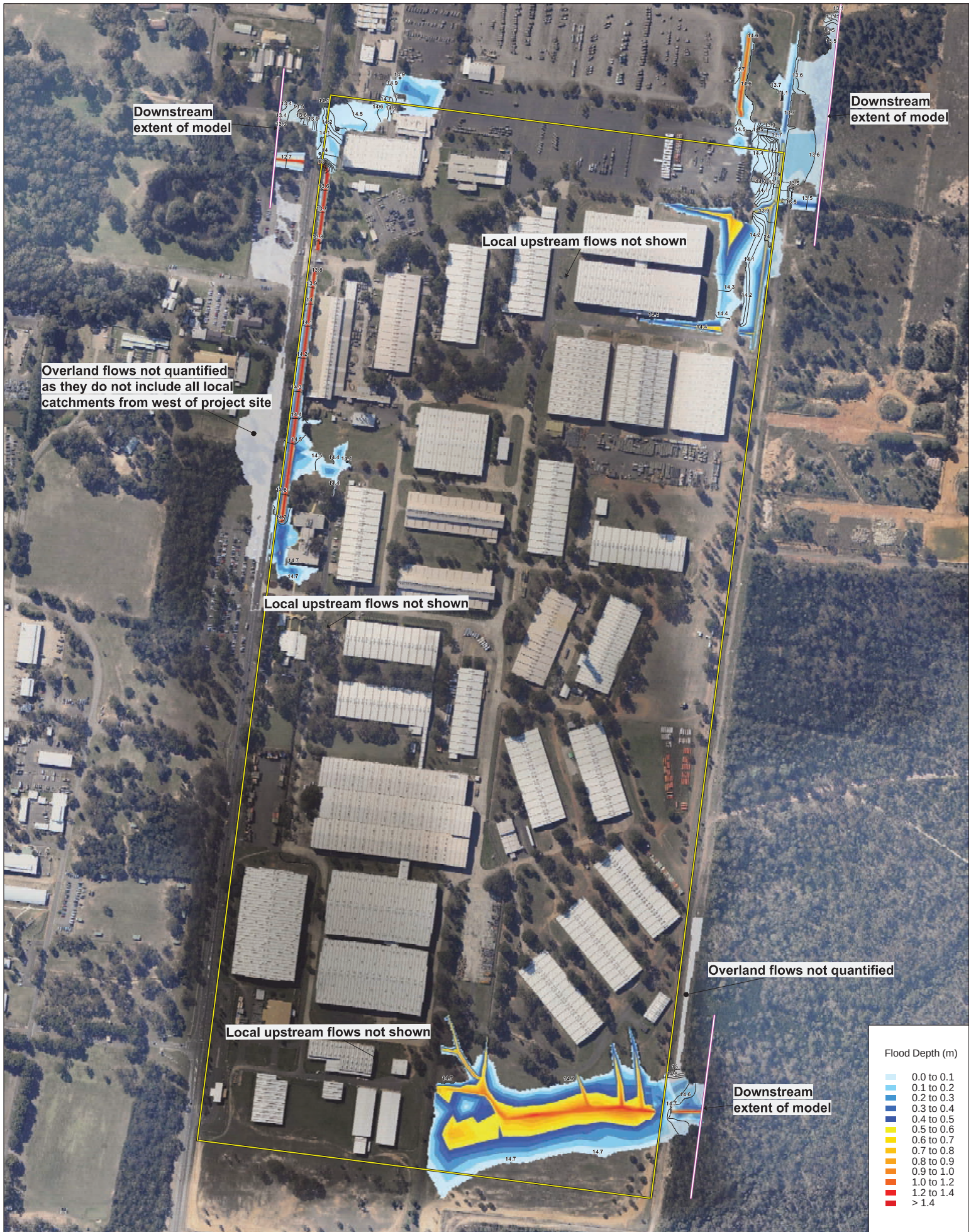
OF12	0.213	0.213	7.665	0.046	0.03	13.25	0.63	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF26	0.52	0.52	7.665	0.067	0.05	17.38	0.79	AR&R 102 year, 6 hours storm, average 28 mm/h, Zone 1
OF1	3.886	3.886	7.665	0.152	0.21	34.44	1.36	AR&R 102 year, 9 hours storm, average 21.8 mm/h, Zone 1
OF19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

100 Year ARI (Climate Change)

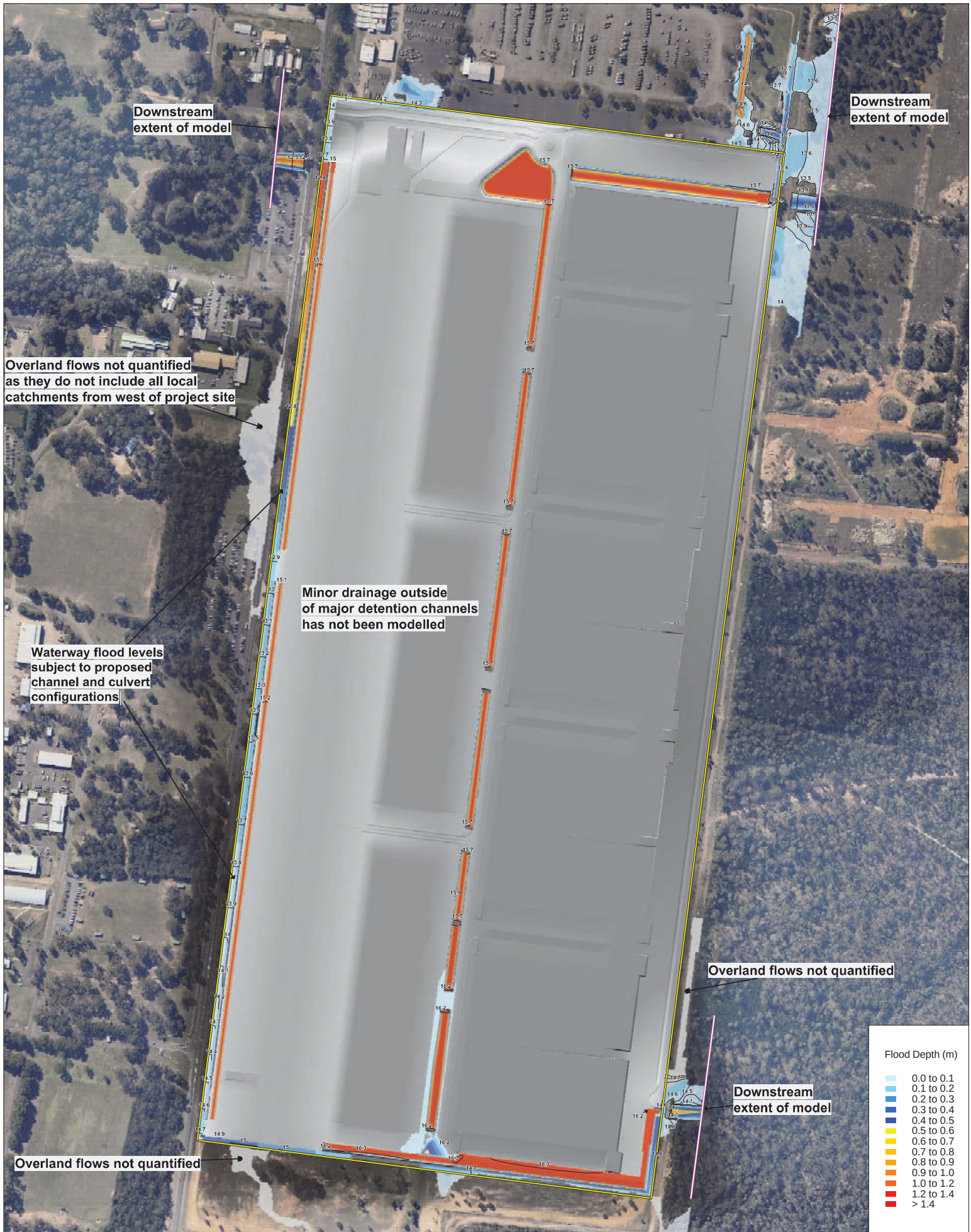
N177	3481.95	3481.95	0	0								
N224	3572.18	3572.18	0	0								
N232	549.05	549.05	0	0								
HW2	65719.56	65719.52	0	0								
N50	65719.52	65719.52	0	0								
N294	3481.95	3481.95	0	0								
N320	1954.38	1954.38	0	0								
N321	6495.9	6495.9	0	0								
N322	736.45	736.45	0	0								
N323	20034.76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

APPENDIX G

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



LEGEND Project Site Boundary 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, 6 and 9 hour duration storm events. Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008) and ground survey of the site by Hard and Forester (August 2010). This figure may not represent all local flow regimes. TUFLOW run files (TUFLOW Version 2010-10-AD-ISP-w32): F:\AA03210D-Calculation\Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW-Site Model\TUFLOW\run\MB_Ex5_100y1h_01.tcf MB_Ex5_100y2h_01.tcf MB_Ex5_100y4h_01.tcf MB_Ex5_100y6h_01.tcf MB_Ex5_100y9h_01.tcf Figure Workspace: F:\AA03210D-Calculation\Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\100yr_Ext_Site_Model_Flood_Map.wor * Aerial Imagery by NearMap 2011 ©		Client SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA) Scale: 1:2500 @ A1 TUFLOW Grid Size: 2m Datum: GDA94 Projection: MGA56	Project MOOREBANK INTERMODAL TERMINAL FACILITY Title SITE MODEL - 100 YEAR ARI FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR EXISTING CONDITION	 HYDER CONSULTING PTY LTD ABN 76 104 485 289 Level 5, 141 Walker Street North Sydney NSW 2060 Tel: +61 (0)2 9907 9000 Fax: +61 (0)2 9907 9001 www.hyderconsulting.com (c) Copyright reserved	Figure No G1 Project No AA03210  Issue 01
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LEGEND		Notes		Client		Project		 HYDER CONSULTING PTY LTD ABN 76 104 485 289 Level 5, 141 Walker Street North Sydney NSW 2060 Tel: +61 (0)2 8907 9000 Fax: +61 (0)2 8907 9001 www.hyderconsulting.com (c) Copyright reserved							
Project Site Boundary Line		The mapping on this drawing represents peak flood level and depth for the 100 year ARI 1, 2, 4.5, 6 and 9 hour duration storm events.		SYDNEY INTERMODAL TERMINAL ALLIANCE (SIMTA)		MOOREBANK INTERMODAL TERMINAL FACILITY									
Flood Level Contour (m AHD) Line		Flood regimes are based on aerial laser survey provided by AAM Hatch Pty Ltd (May 2008), ground survey of the site by Hard and Forester (August 2010) and Hyder civil design surface.		Scale: 1:2500 @ A1		Title									
		This figure may not represent all local flow regimes.		TUFLOW Grid Size: 2m		SITE MODEL - 100 YEAR ARI FLOOD DEPTH AND FLOOD LEVEL CONTOURS FOR CONCEPT CIVIL DESIGN OPTIONS CONDITION									
		TUFLOW run files (TUFLOW Version 2010-10-AD-ISP-w32): F:\AA003210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\TUFLOW-Site Model\TUFLOW\runst MB_P9_100y10h_01.tcf MB_P9_100y2h_01.tcf MB_P9_100y4hr_01.tcf MB_P9_100y6h_01.tcf MB_P9_100y9h_01.tcf		Datum: GDA94											
		Figure Workspace: F:\AA003210D-Calculations\C-Civil\Stormwater\Flooding\2011 - Revised Modelling\PROJECT FIGURES\Workspace\100yr_Prop_Site_Model_Flood_Map.apr * Aerial Imagery by NearMap 2011 ©		Projection: MGA56				Figure No G2		Project No AA003210				Issue 01	



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

ROUGHNESS	DESCRIPTION
0.020	ROAD UNIMPROVED AREAS
0.030	LIGHT VEGETATION
0.060	HEAVY VEGETATION
0.500	BUILDINGS

LEGEND

FLOW INPUT REGION (2d)

					
Client		Status		Project	
PRELIMINARY NOT TO BE USED FOR CONSTRUCTION		1: 2000		SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY	
Original Size		A1		Title	
Height		A1D		EXISTING 'SITE ONLY': TUFLOW FLOW INPUT AND ROUGHNESS PLAN	
Datum		MGA		Drawing No.	
Grid		G VES		FIG-G3 - AA003210 - 01	
Filename		N. McPHELAN		Issue	
Date		12/08/11		Project No.	
Description		ISSUE FOR REVIEW		AA003210 - 01	
Issue		01		HYDER CONSULTING PTY LTD ABN 76 104 465 289 104/105 St North Sydney NSW 2060 Australia Tel: +61 (0)2 8807 9000 Fax: +61 (0)2 8807 9001 www.hyder.com.au © Copyright reserved	

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