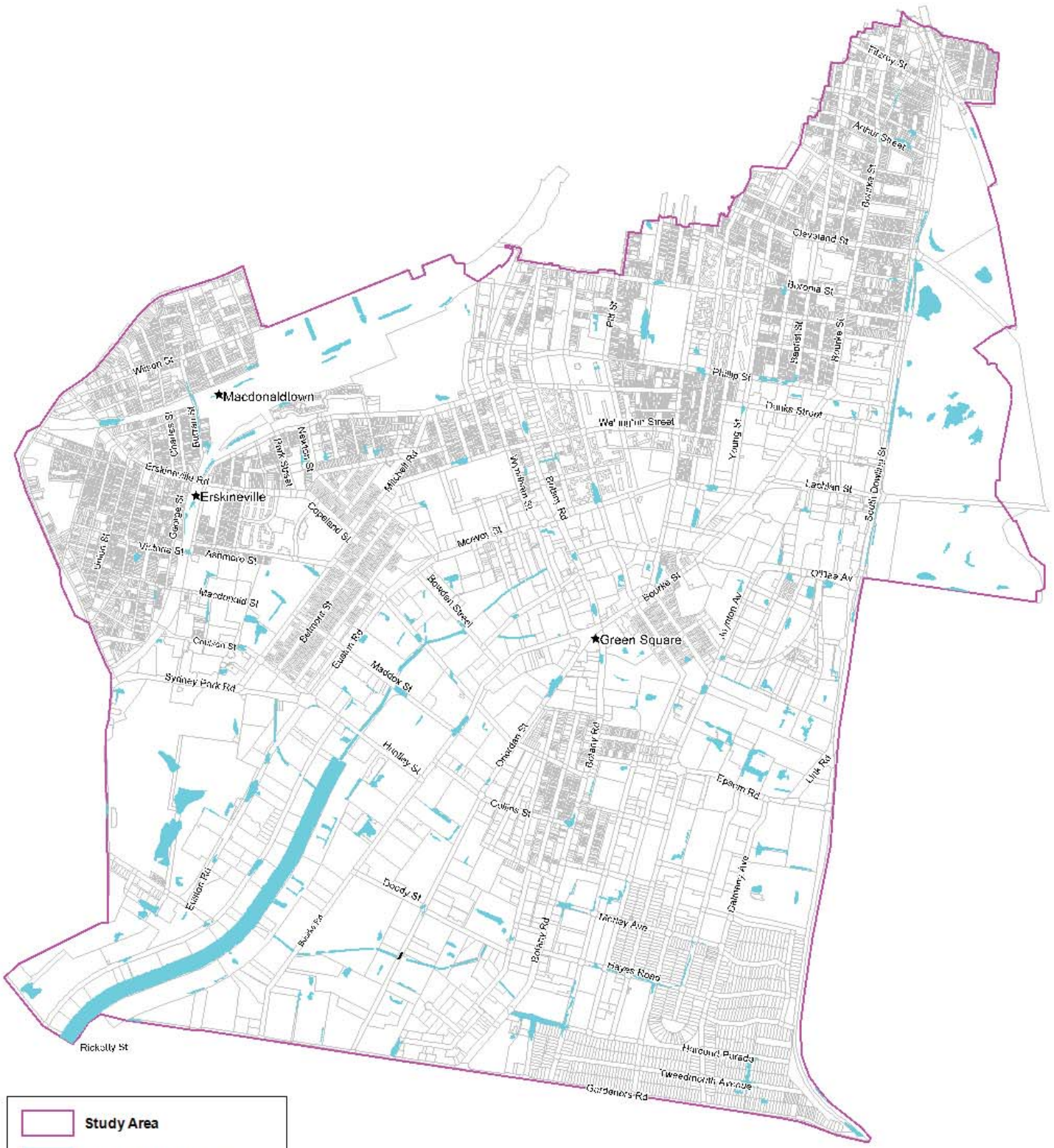

Figure 6.1

Flood Extents - 1yr ARI

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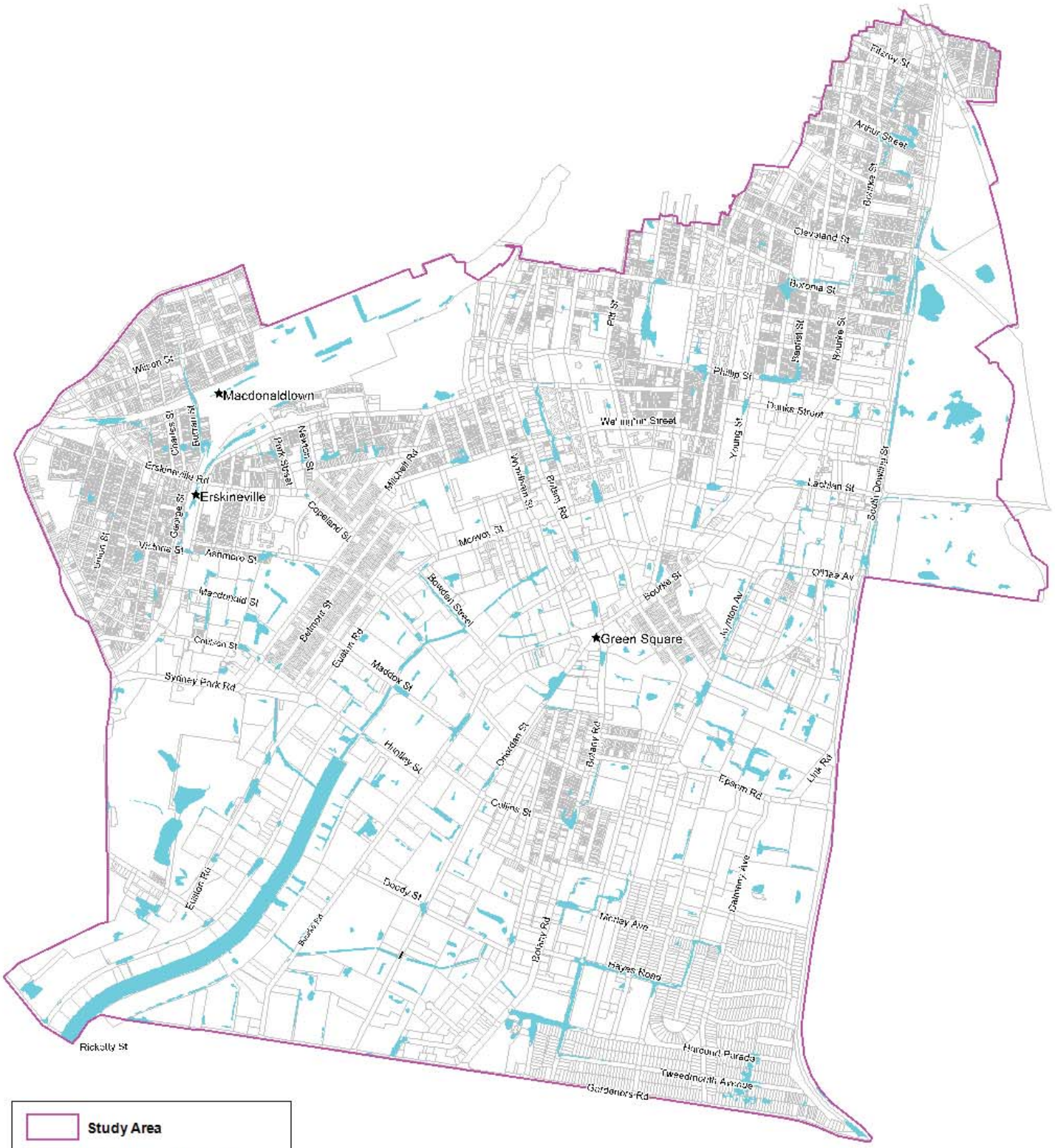

Note: Results filtered to show areas where depth >=0.15m or velocity-depth product >=0.1m2/s (as described in Section 6.1).

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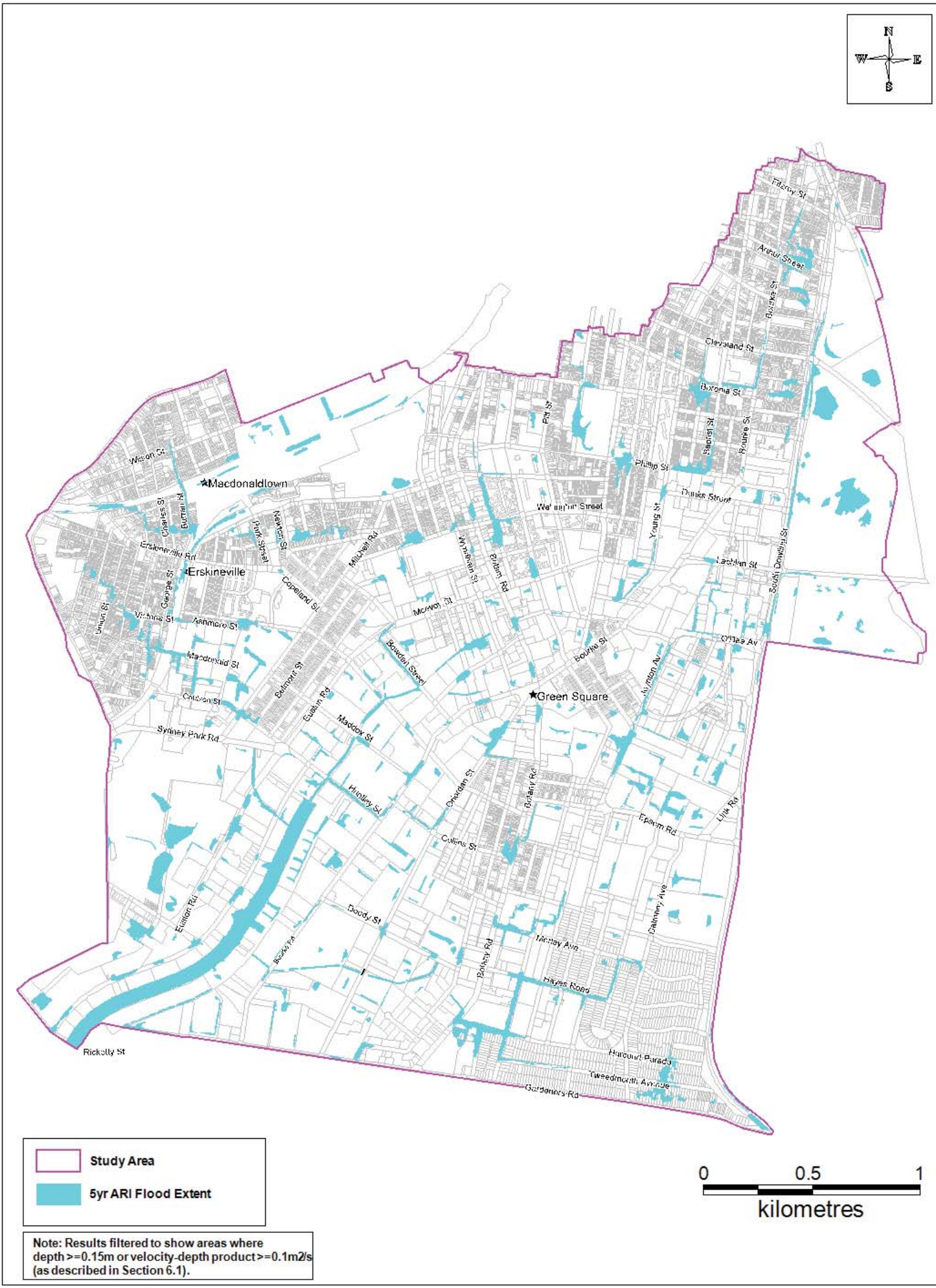
Figure 6.2

Flood Extents - 2yr ARI



Note: Results filtered to show areas where depth >=0.15m or velocity-depth product >=0.1m2/s (as described in Section 6.1).

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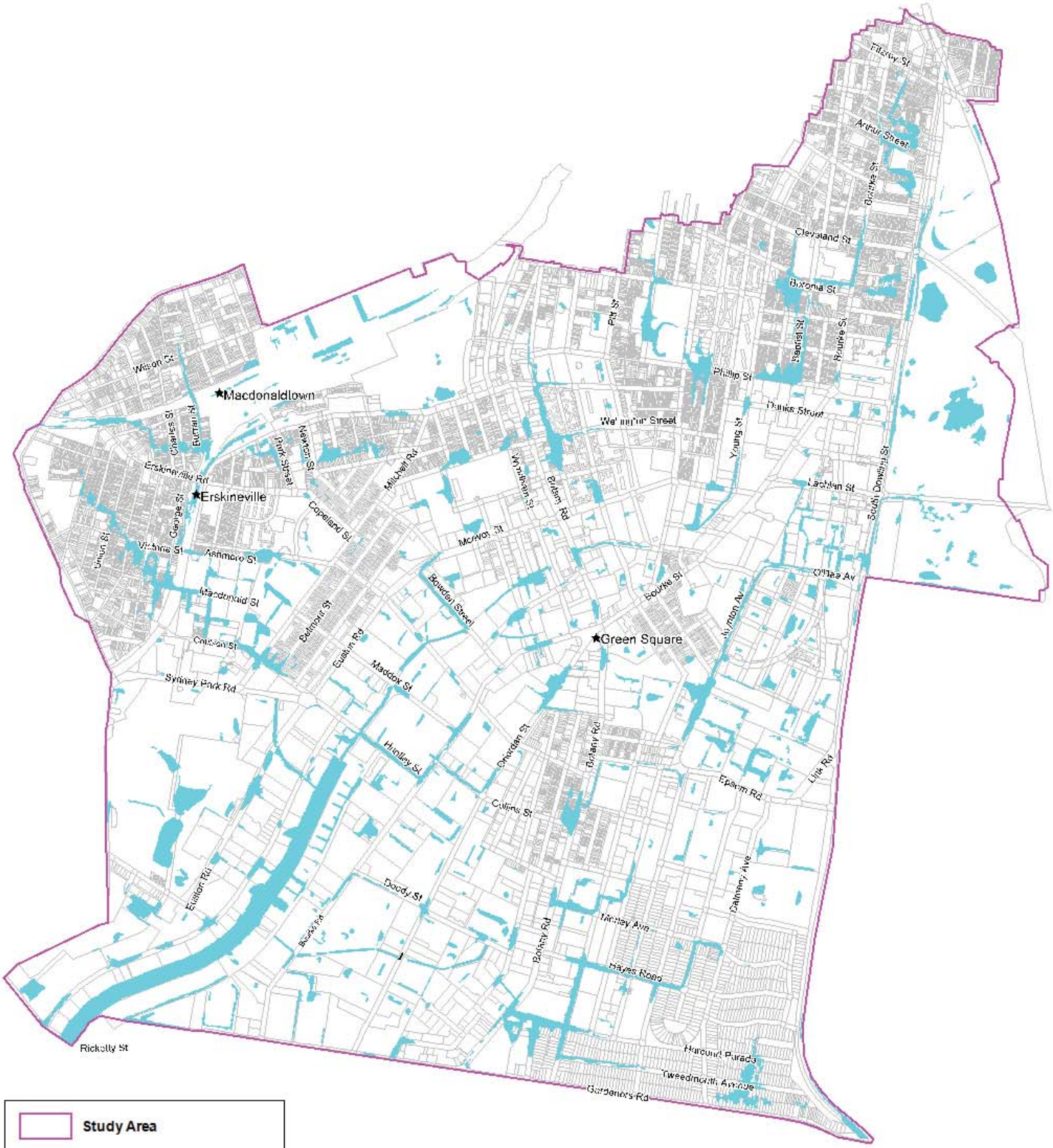
Figure 6.3

Flood Extents - 5yr ARI



Note: Results filtered to show areas where depth >=0.15m or velocity-depth product >=0.1m2/s (as described in Section 6.1).

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Figure 6.4

Flood Extents - 10yr ARI

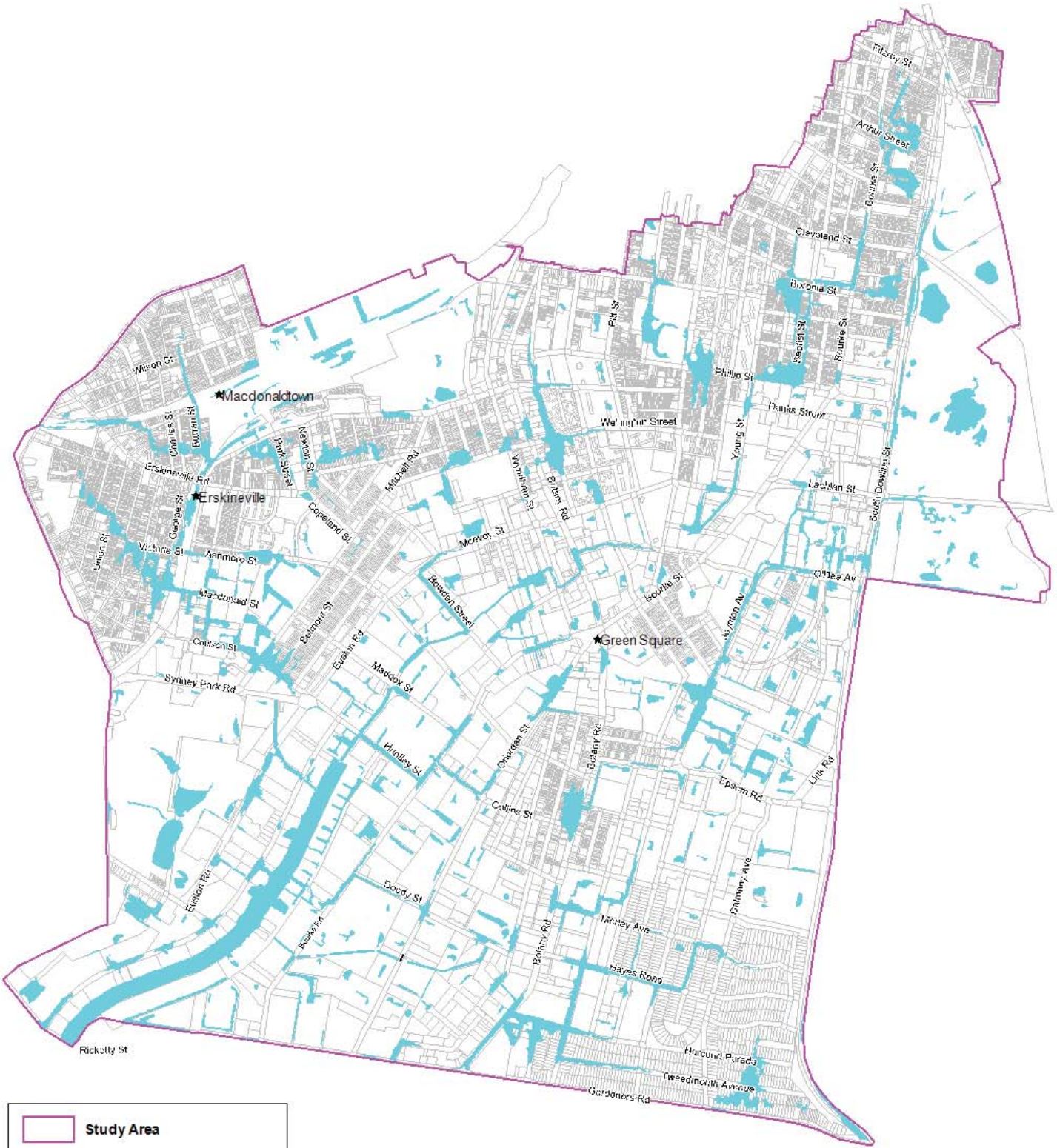

Figure 6.5

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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Flood Extents - 20yr ARI

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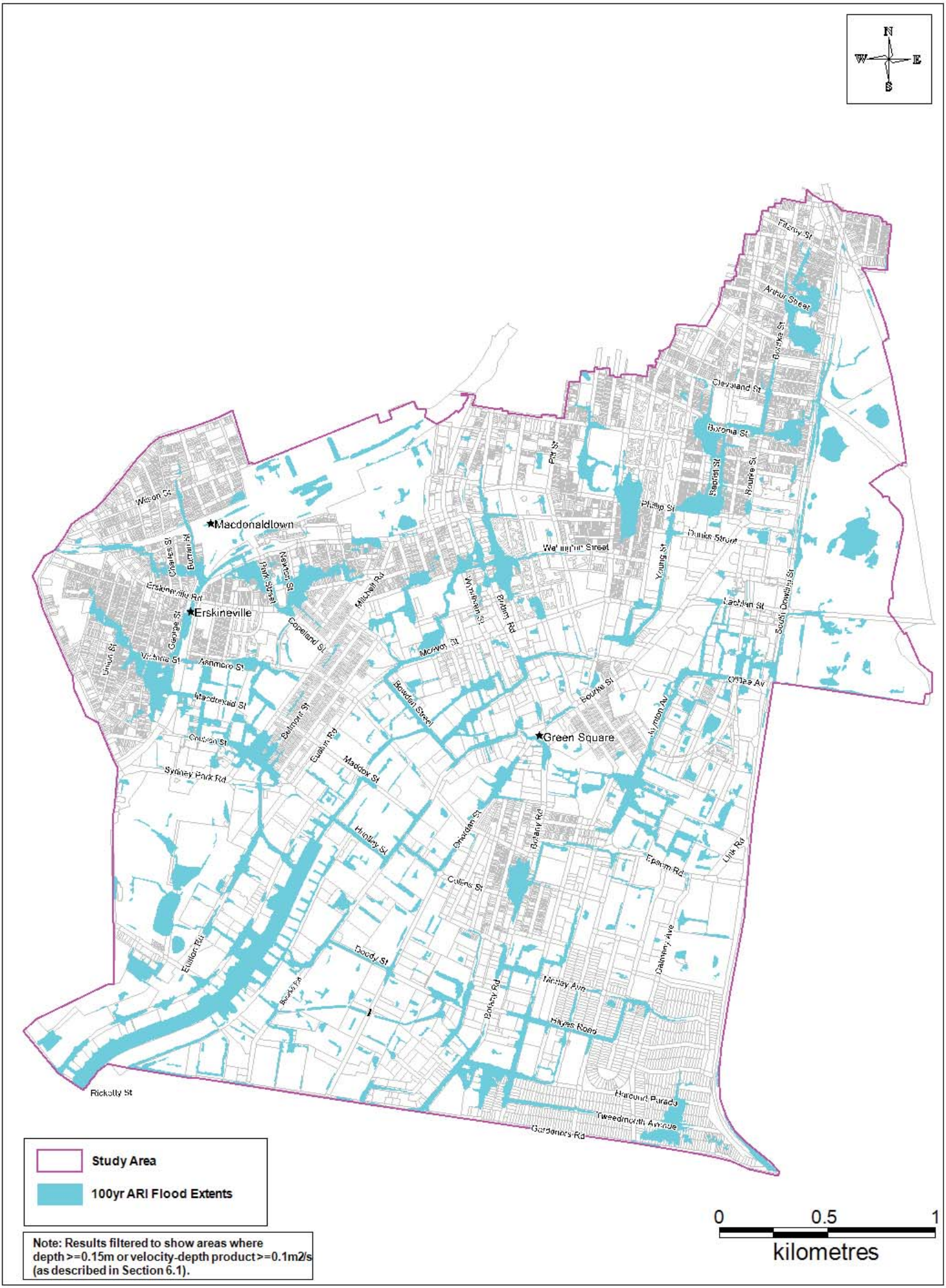

Note: Results filtered to show areas where depth >=0.15m or velocity-depth product >=0.1m2/s (as described in Section 6.1).

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Figure 6.6

Flood Extents - 100yr ARI

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Figure 6.7

Flood Extents - PMF

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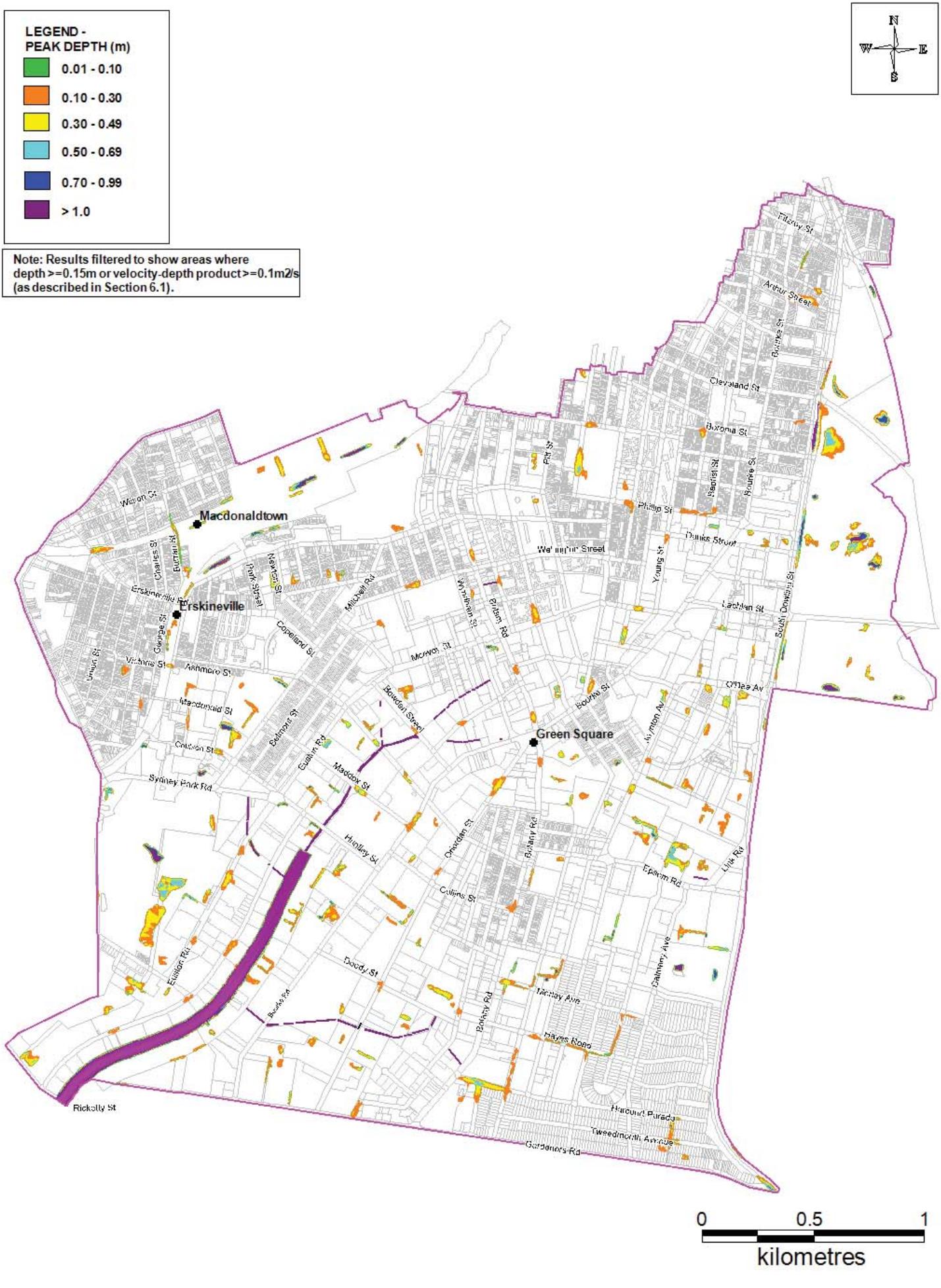

Figure 6.8

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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Peak Flood Depths - 1yr ARI

W4785

Draft

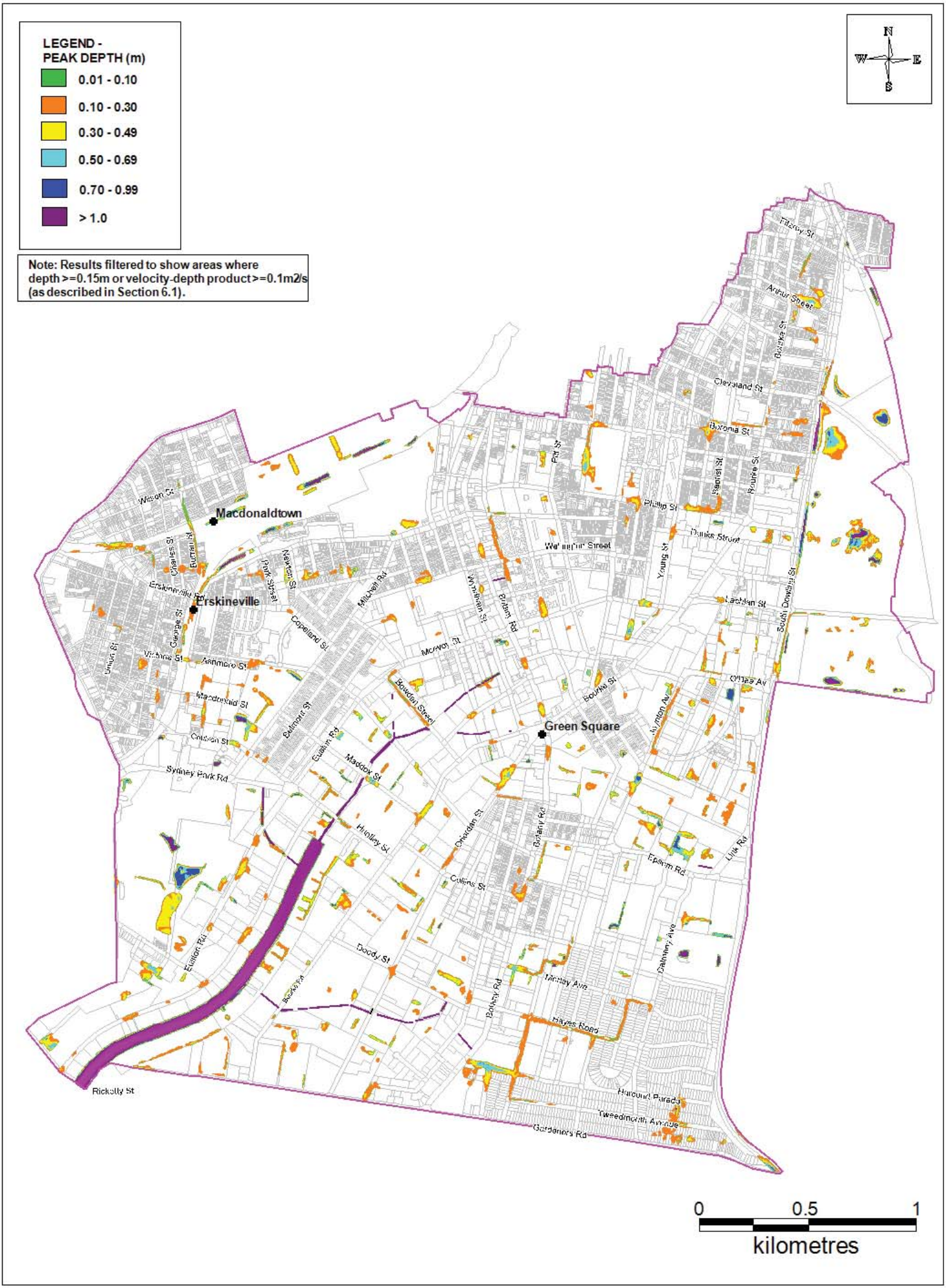

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Figure 6.9

Peak Flood Depths - 2yr ARI

W4785

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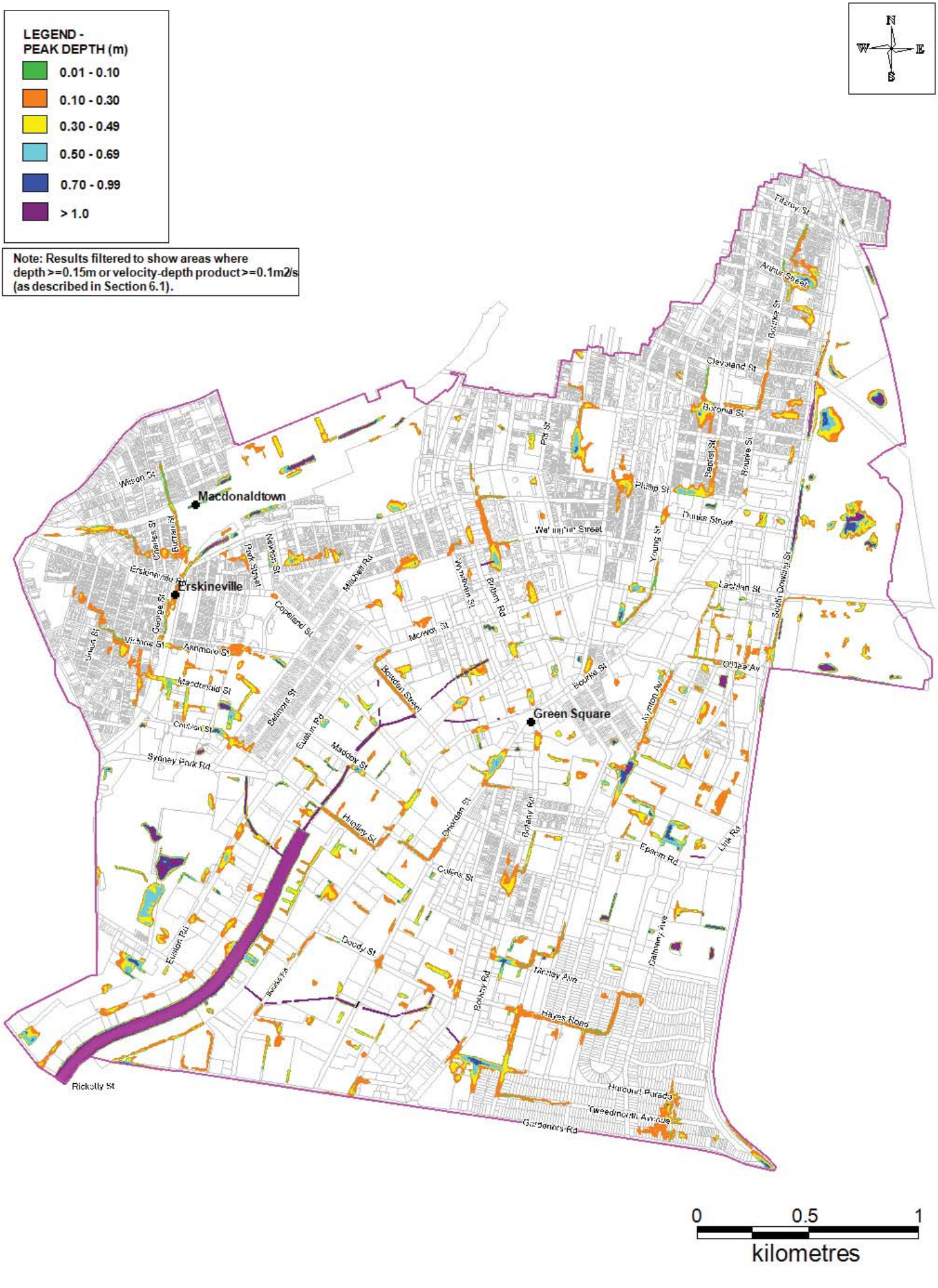

Figure 6.10

Cardno

ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Peak Flood Depths - 5yr ARI

W4785

Draft

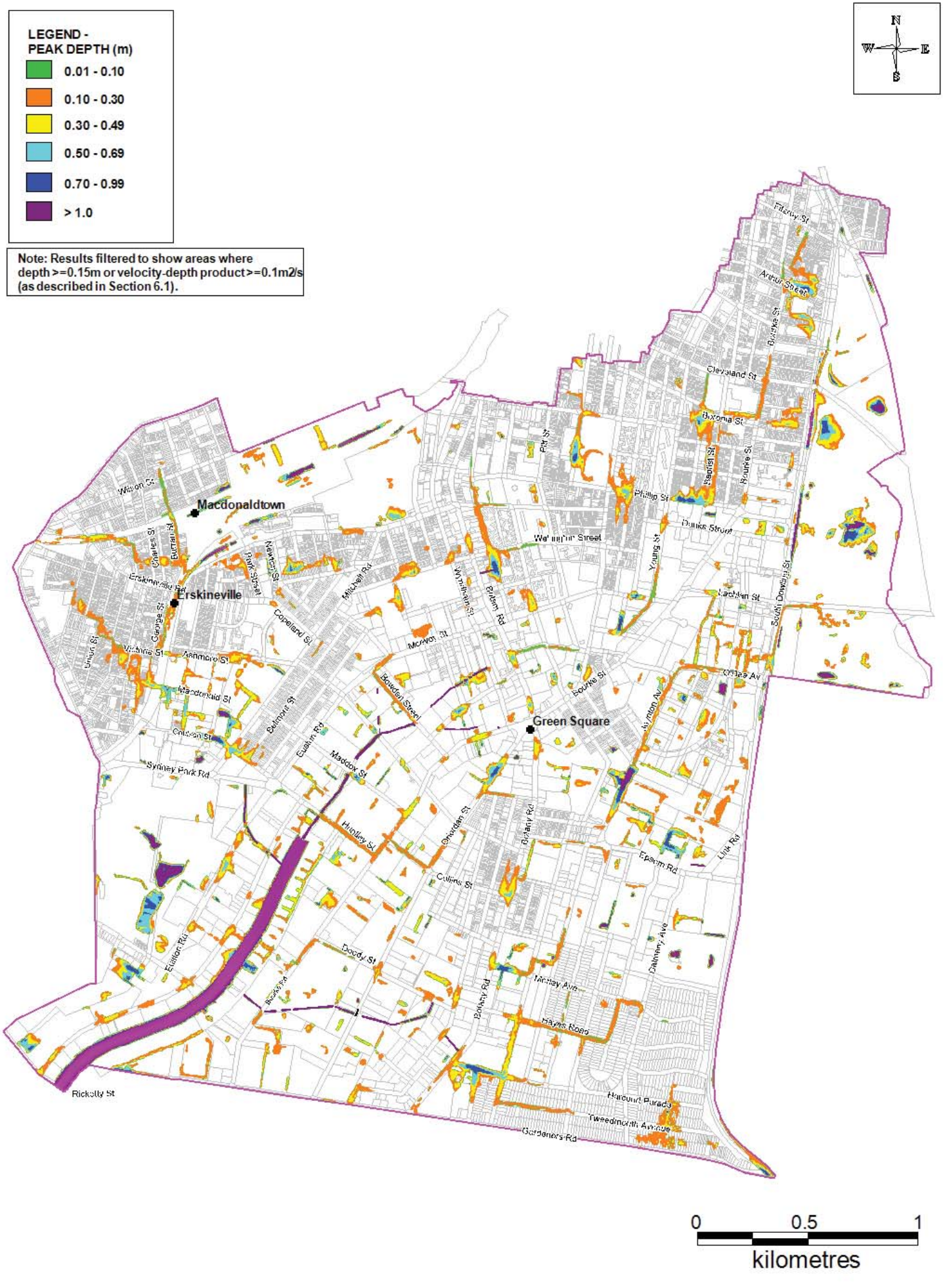

Figure 6.11

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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Peak Flood Depths - 10yr ARI

W4785

Draft

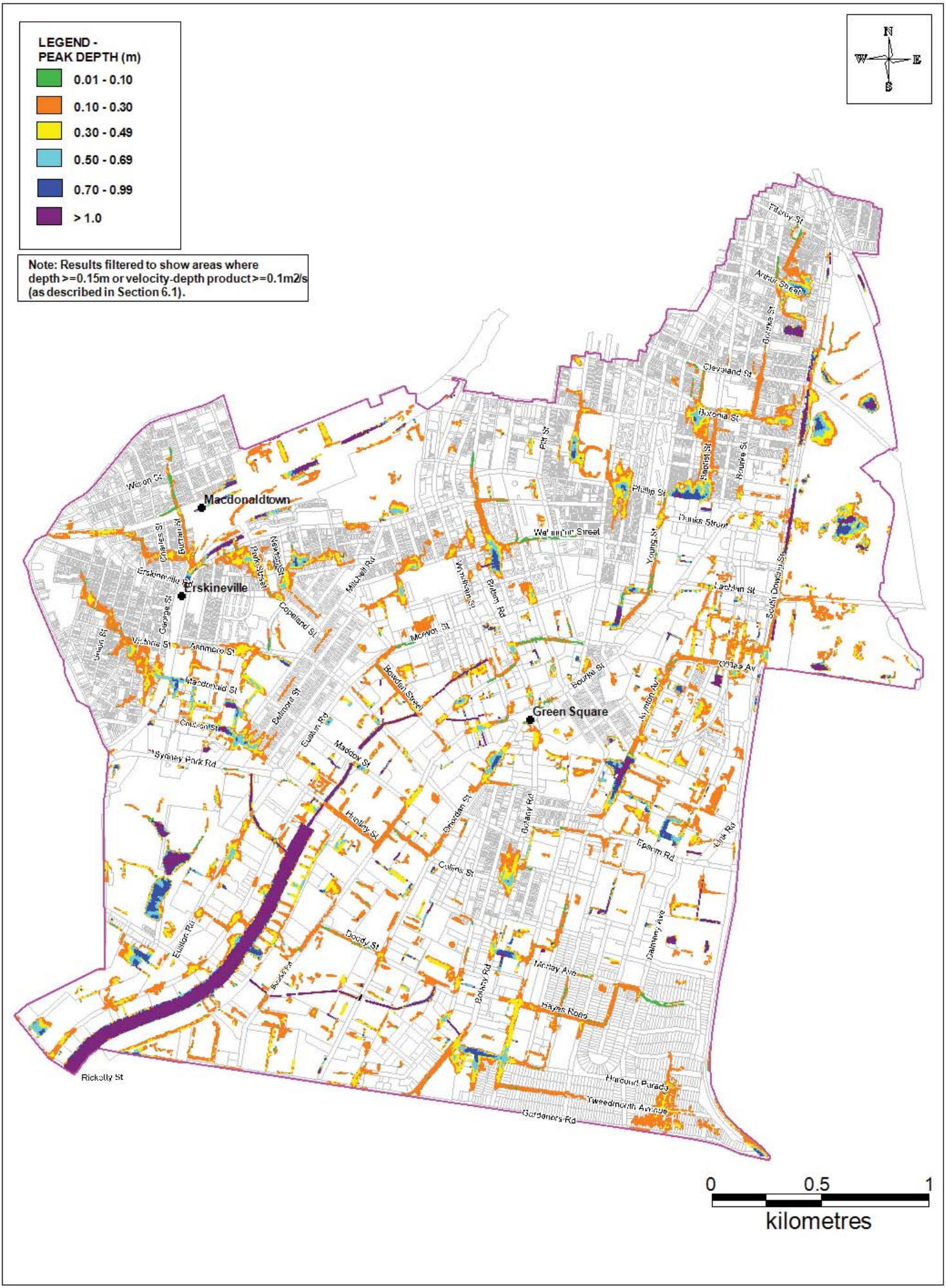

Figure 6.12

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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Peak Flood Depths - 20yr ARI

W4785

Draft

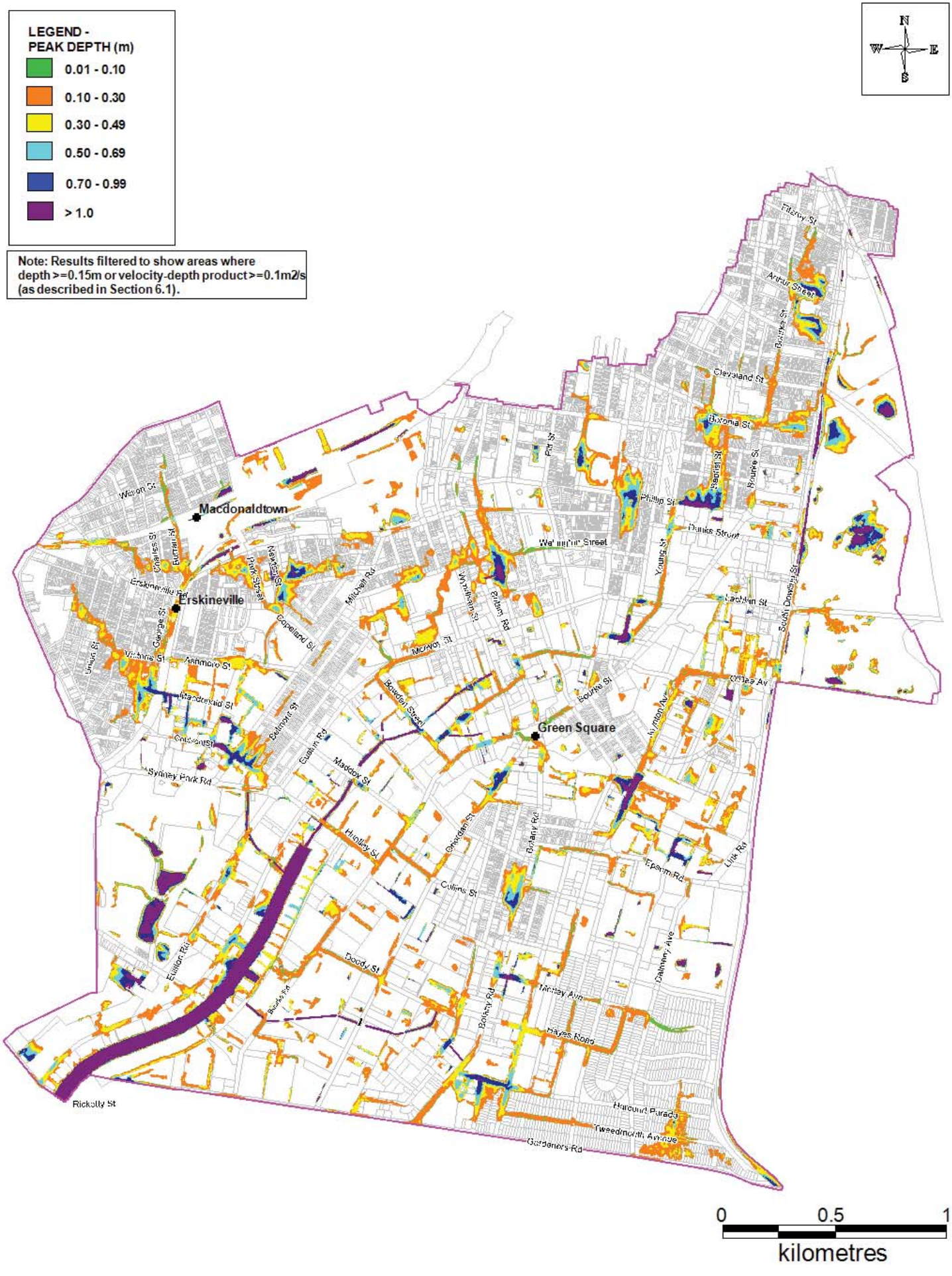

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Figure 6.13

Peak Flood Depths - 100yr ARI

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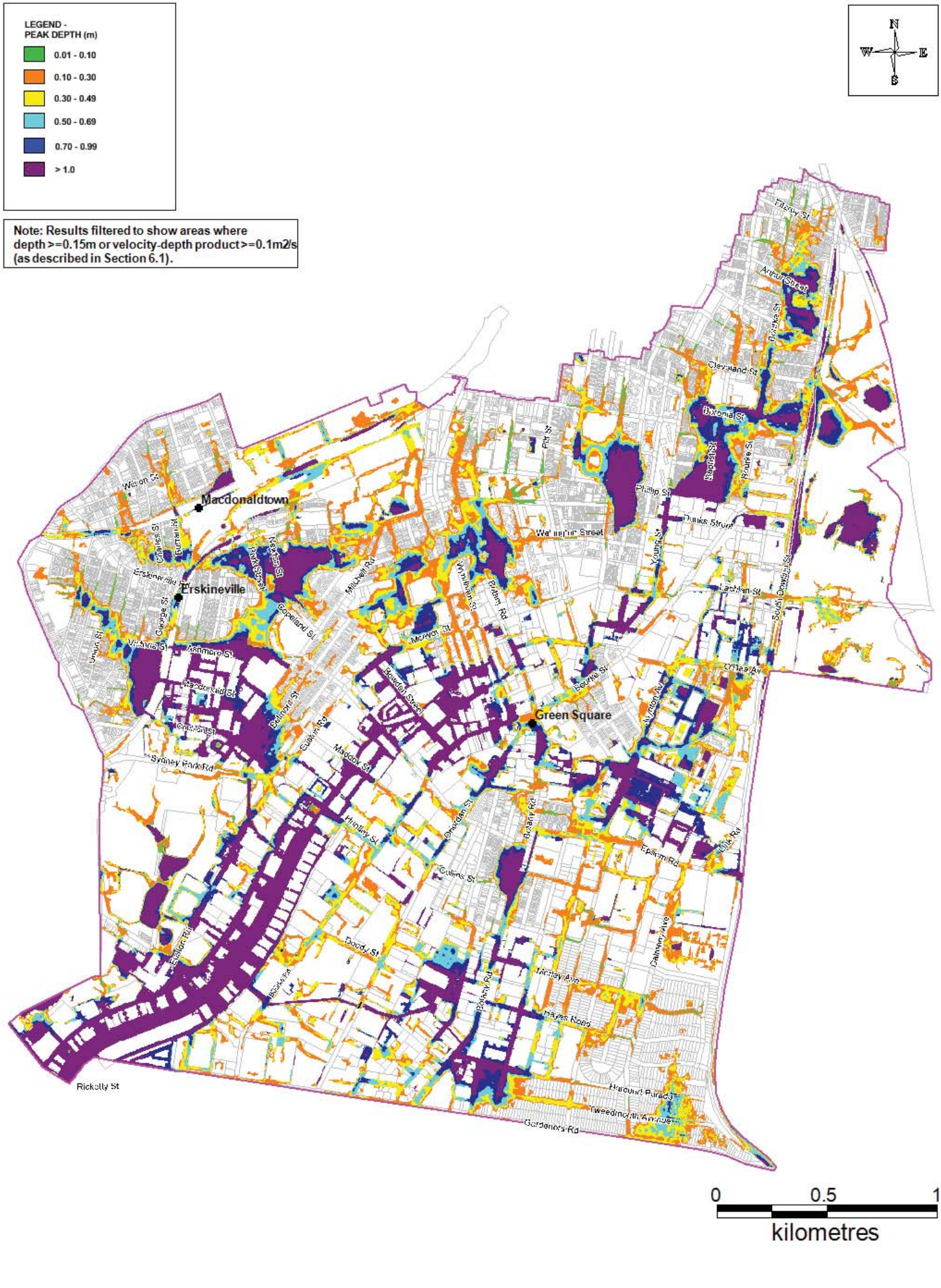

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Figure 6.14

Peak Flood Depths - PMF

W4785

Draft

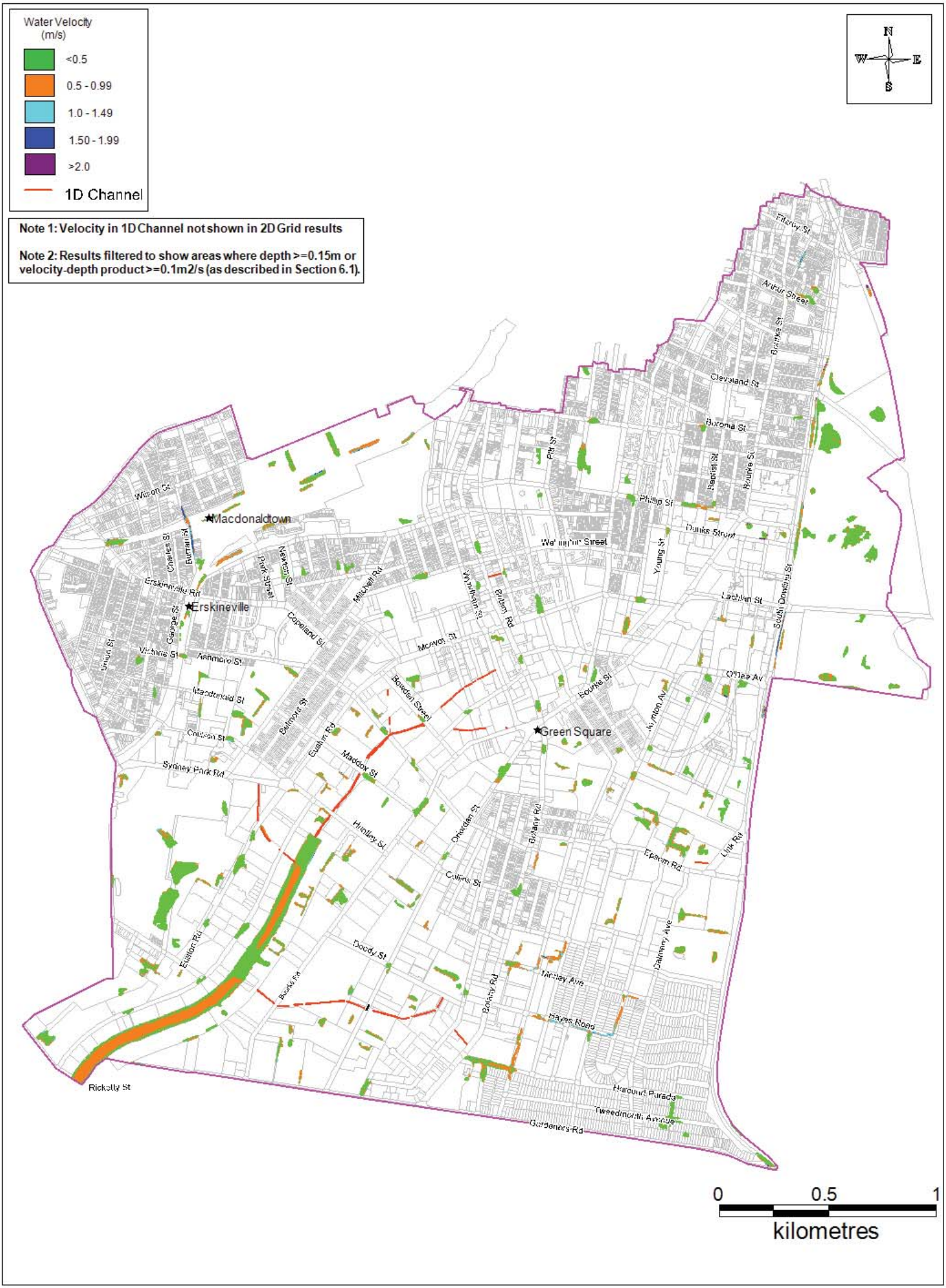

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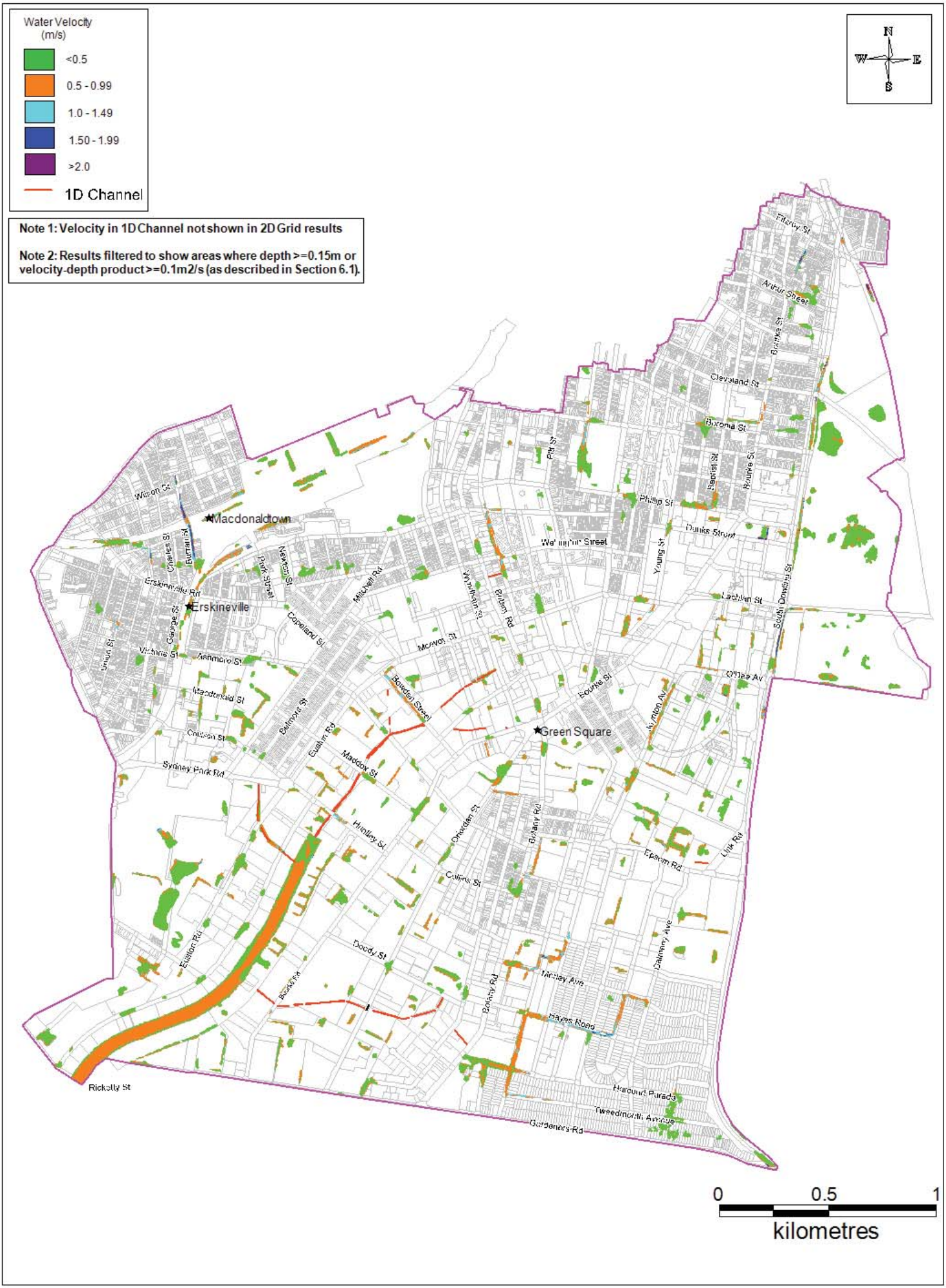
Figure 6.15

Peak Flood Velocity - 1yr ARI



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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Figure 6.16

Peak Flood Velocity - 2yr ARI

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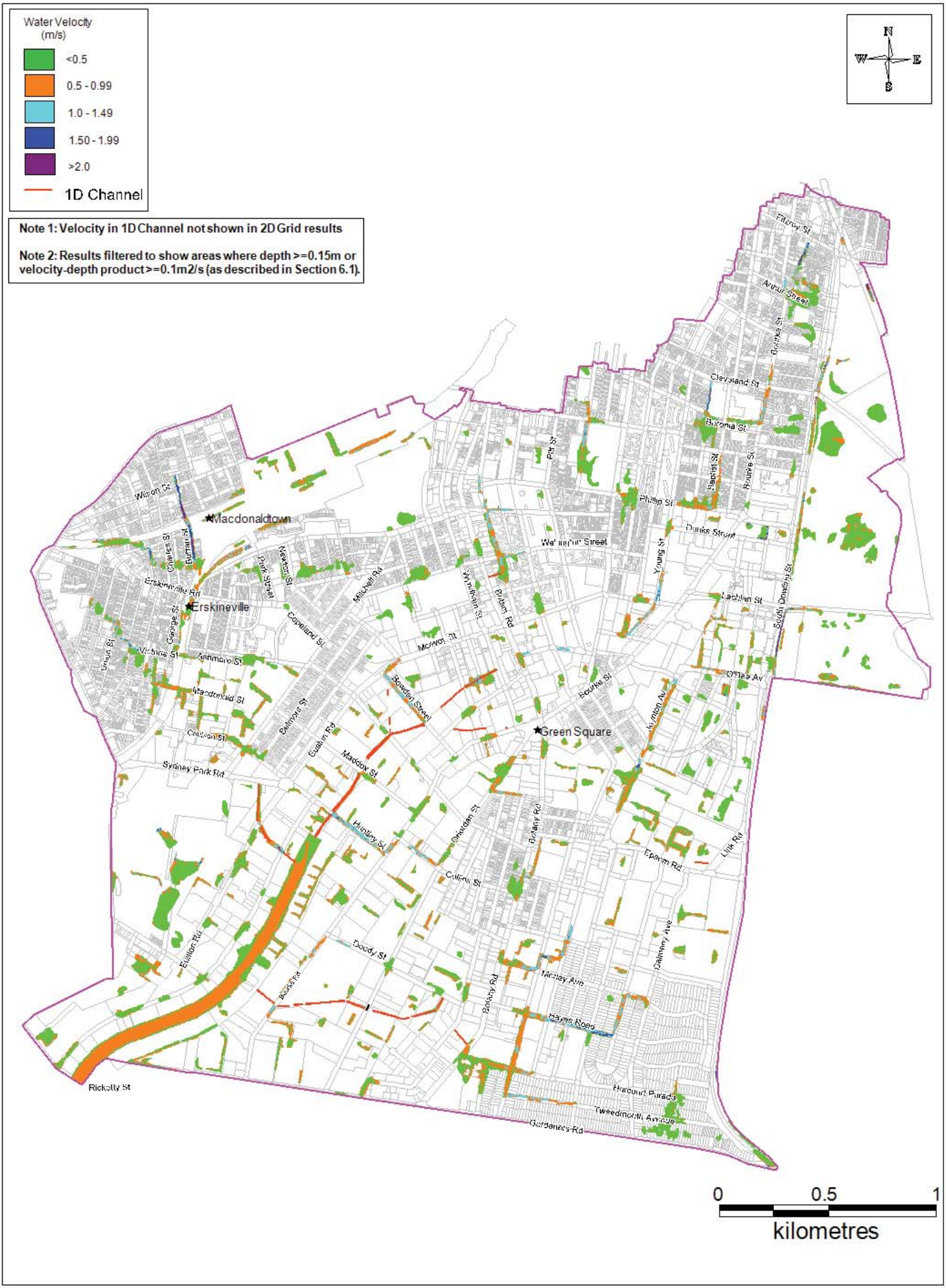

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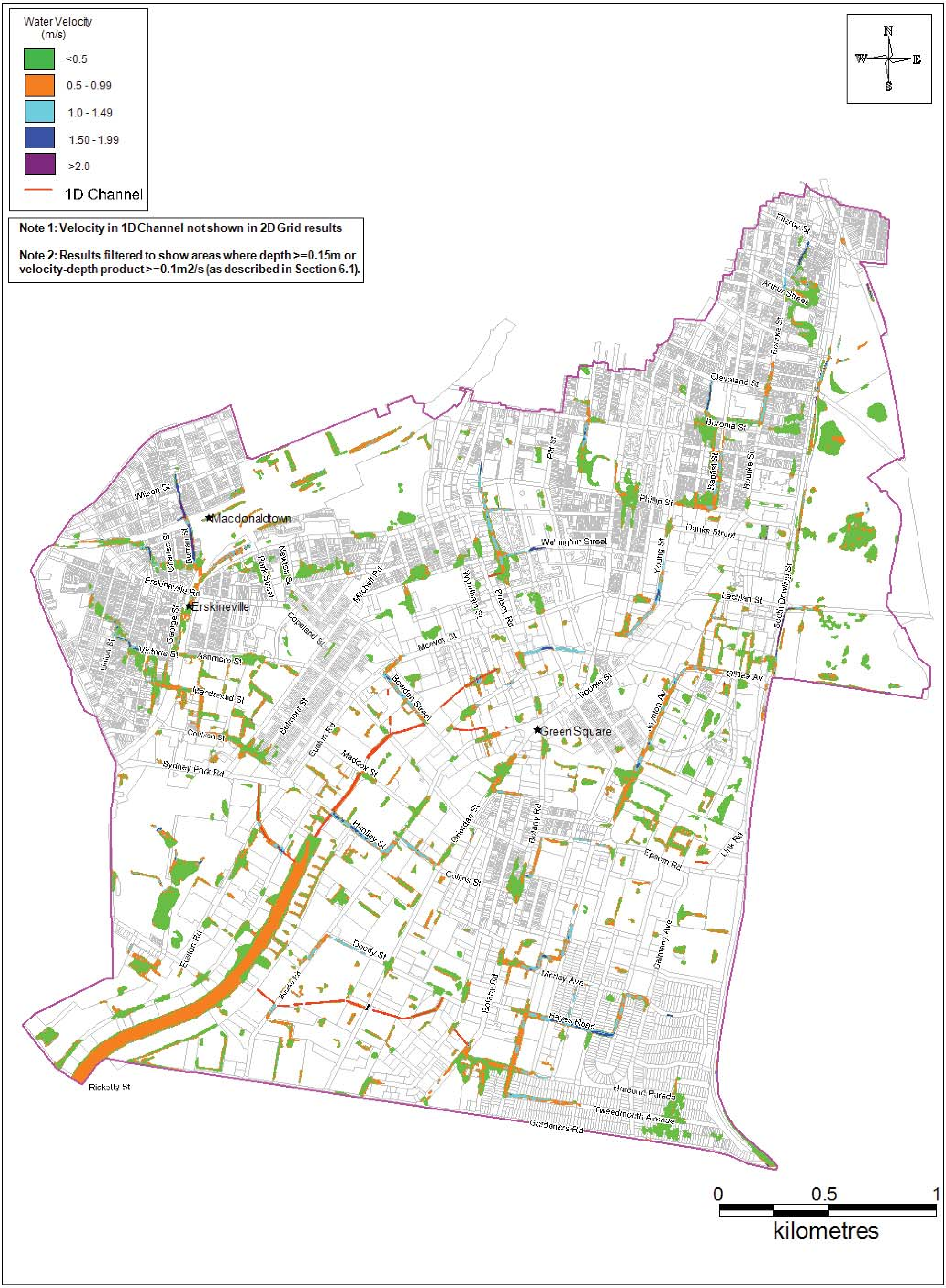
Figure 6.17

Peak Flood Velocity - 5yr ARI



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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Draft

Figure 6.18

Peak Flood Velocity - 10yr ARI

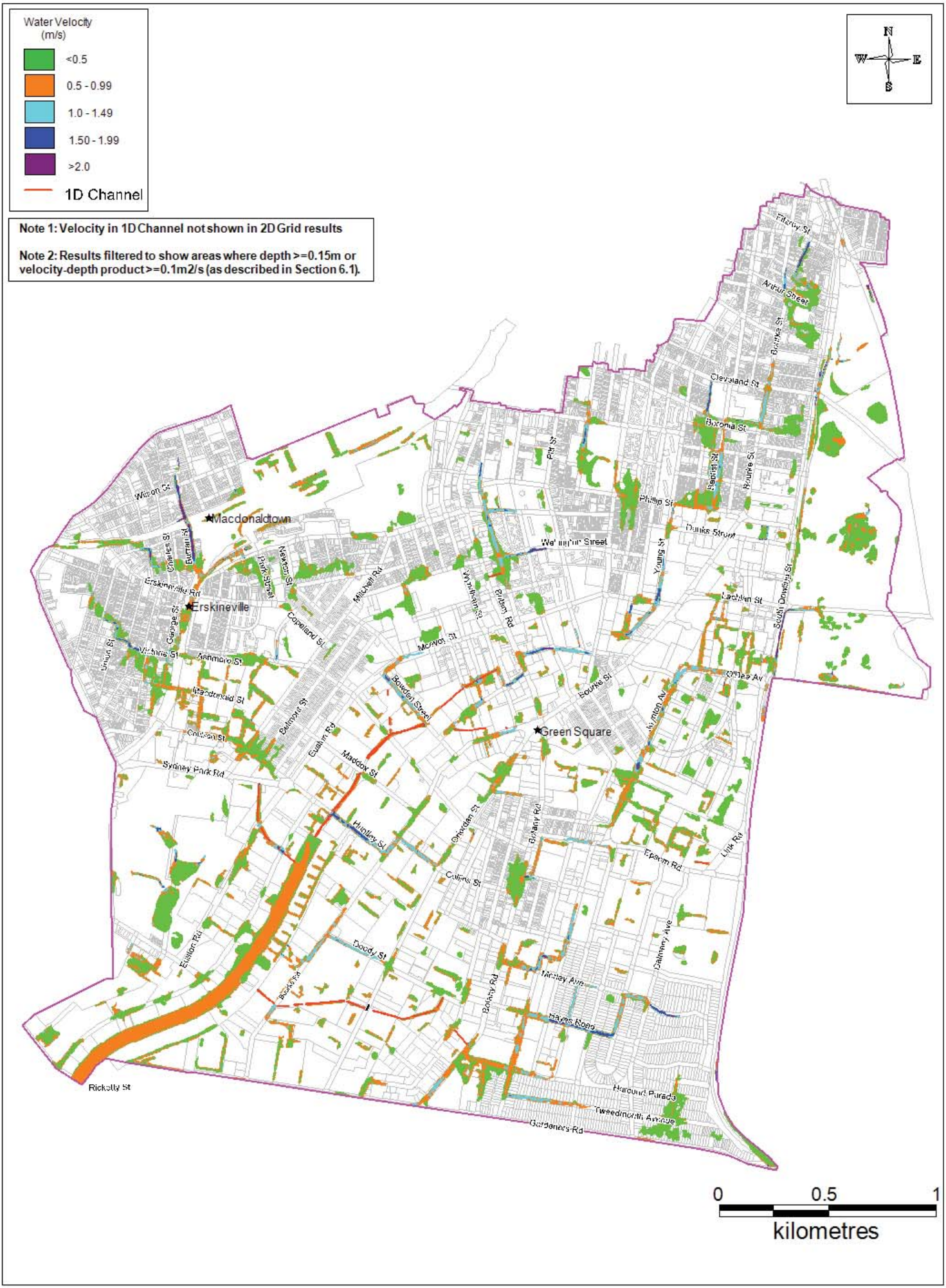

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Figure 6.19

Peak Flood Velocity -20yr ARI

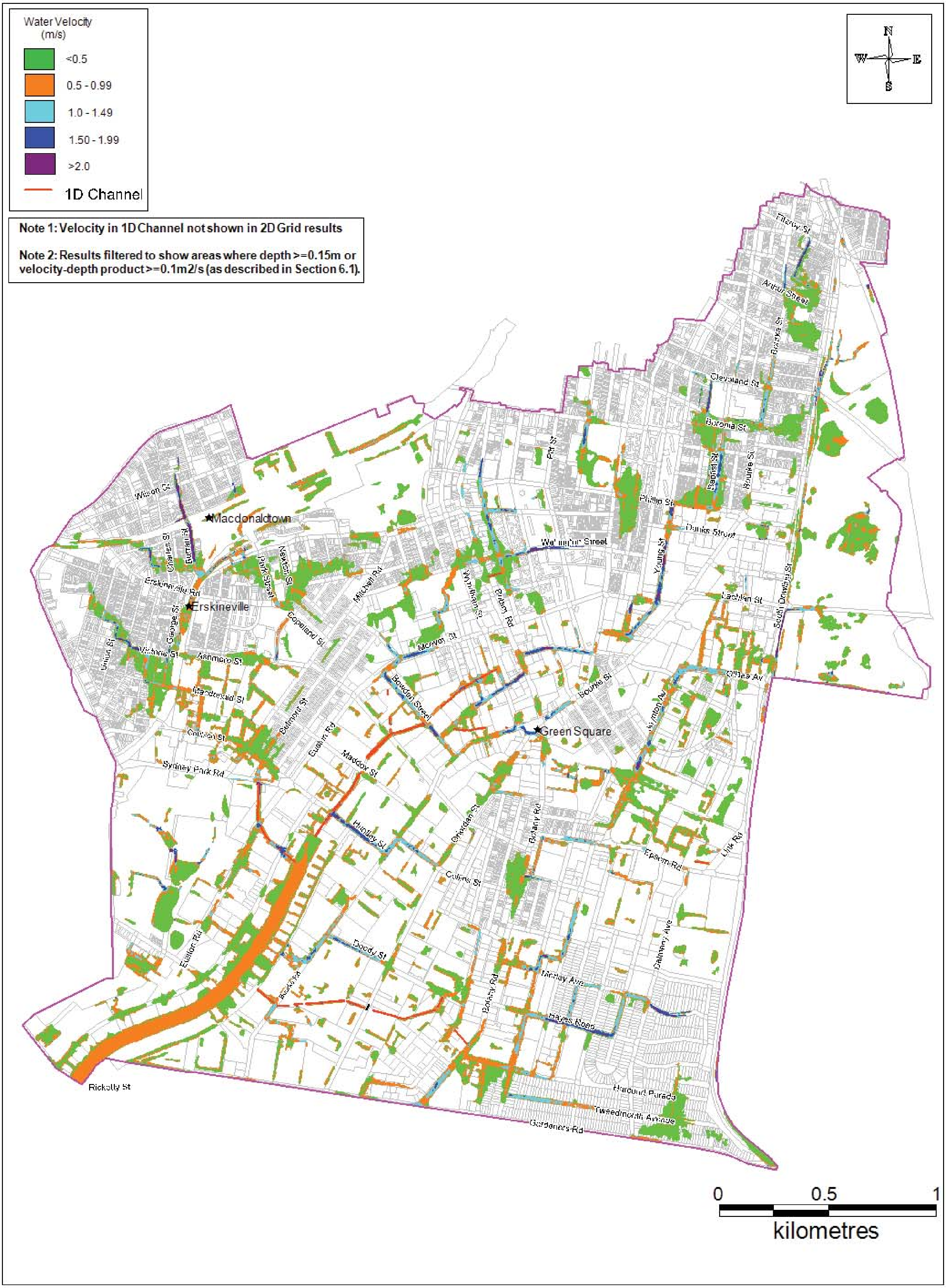

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Figure 6.20

Peak Flood Velocity -100yr ARI

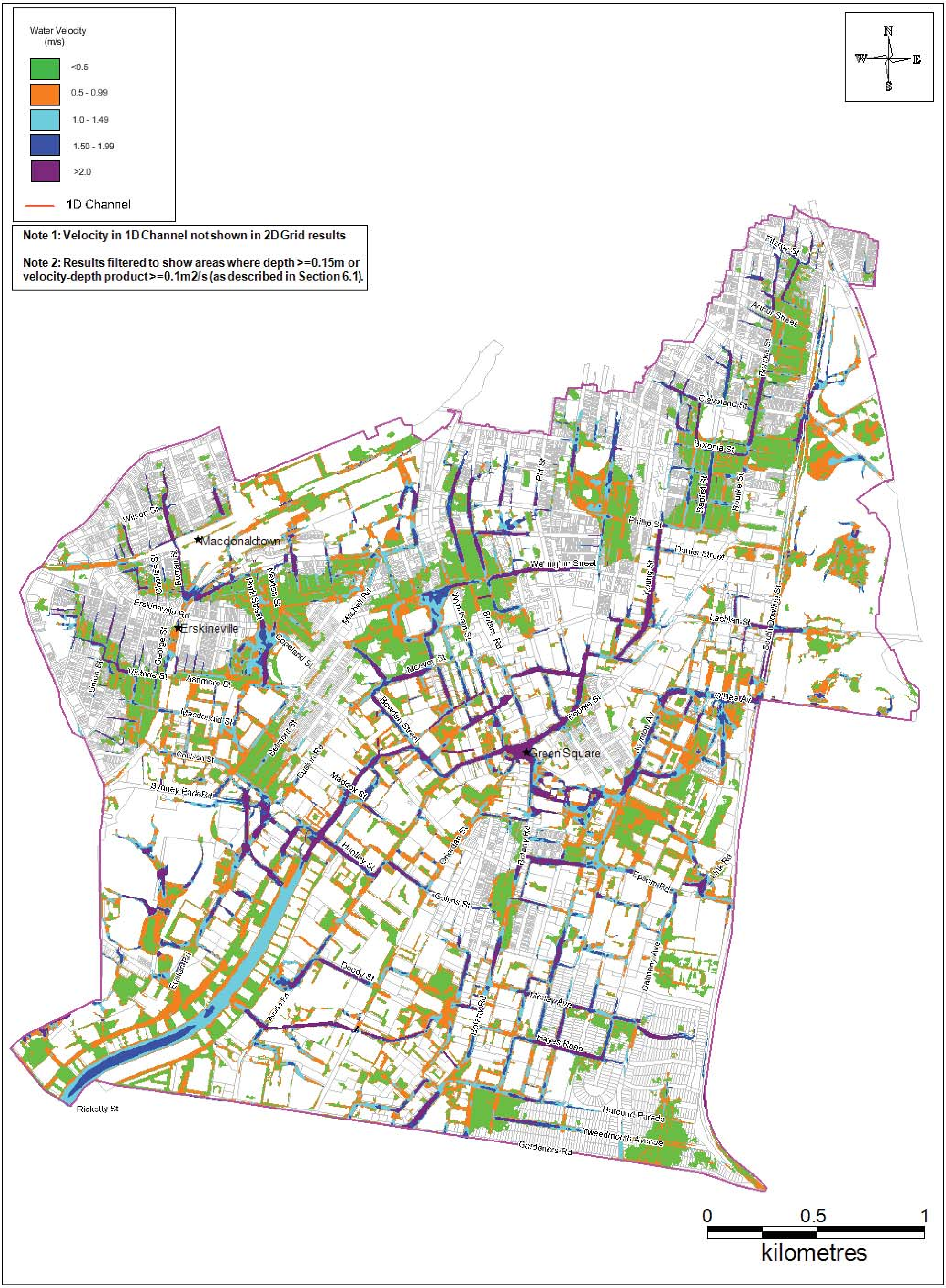

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Figure 6.21

Peak Flood Velocity - PMF

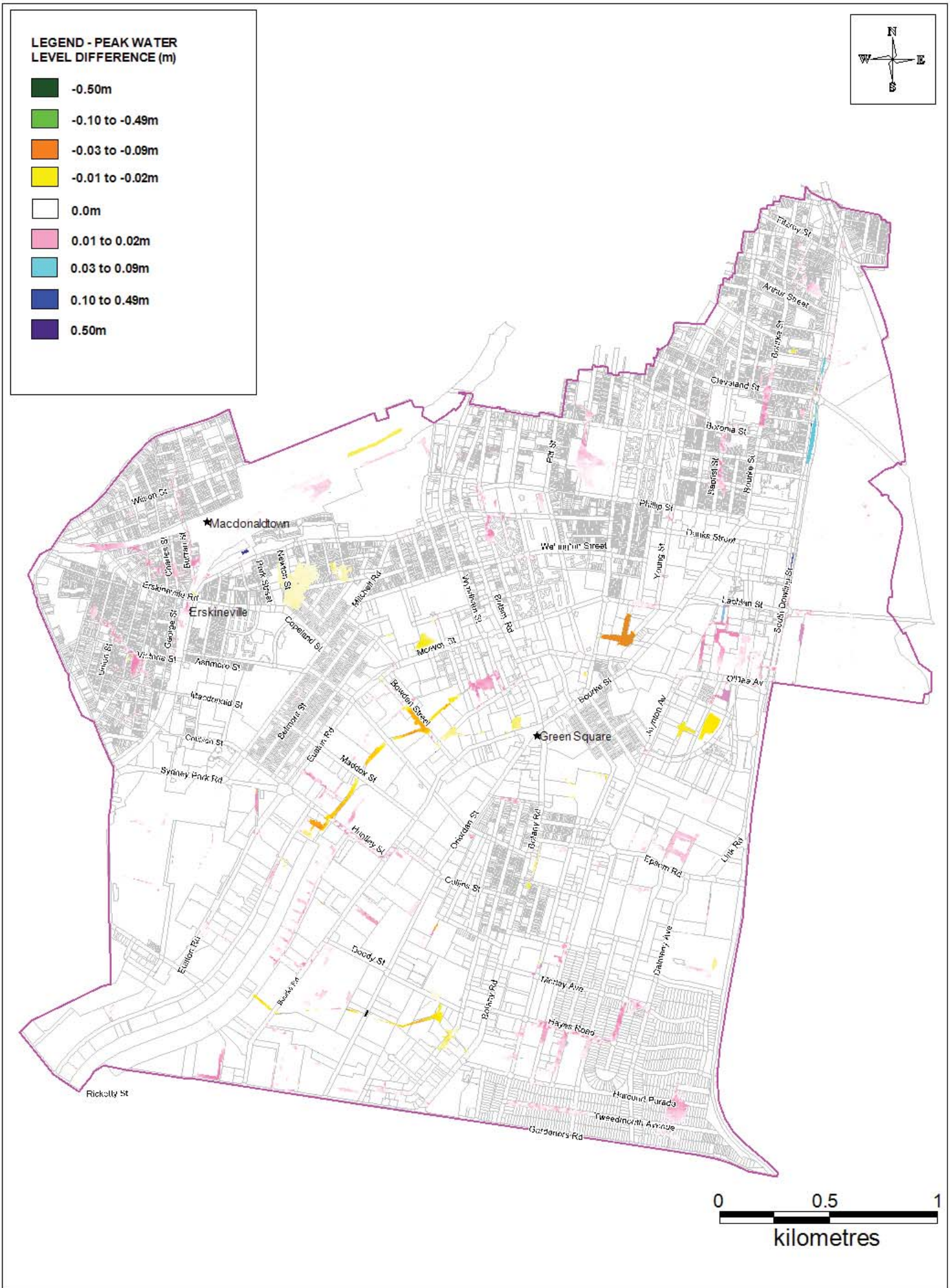

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Figure 6.22

Sensitivity Analysis
100yr ARI Roughness Plus 20%

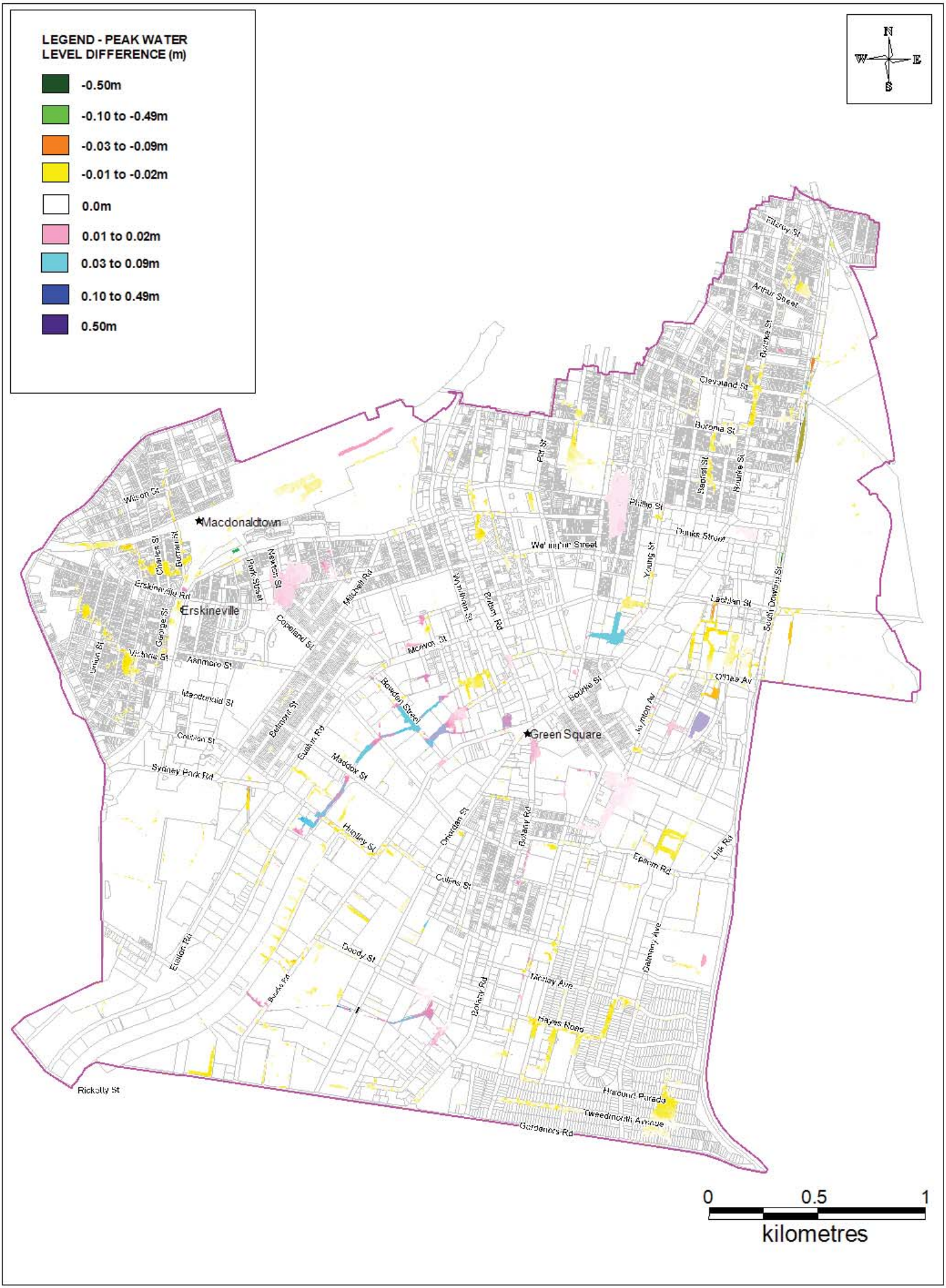

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Figure 6.23

Sensitivity Analysis
100yr ARI Roughness Less 20%

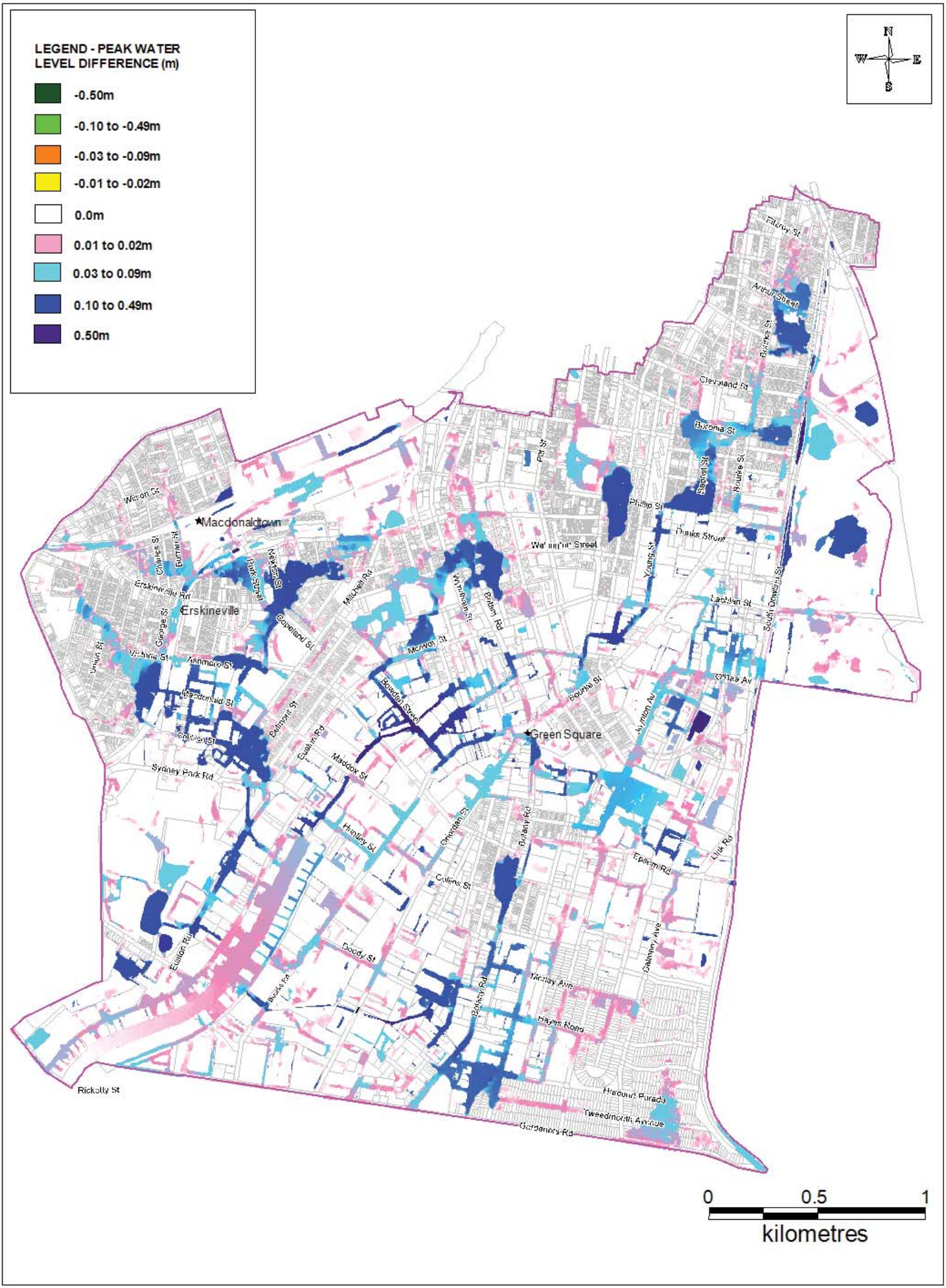

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Figure 6.24

Sensitivity Analysis
100yr ARI Rainfall Plus 20%

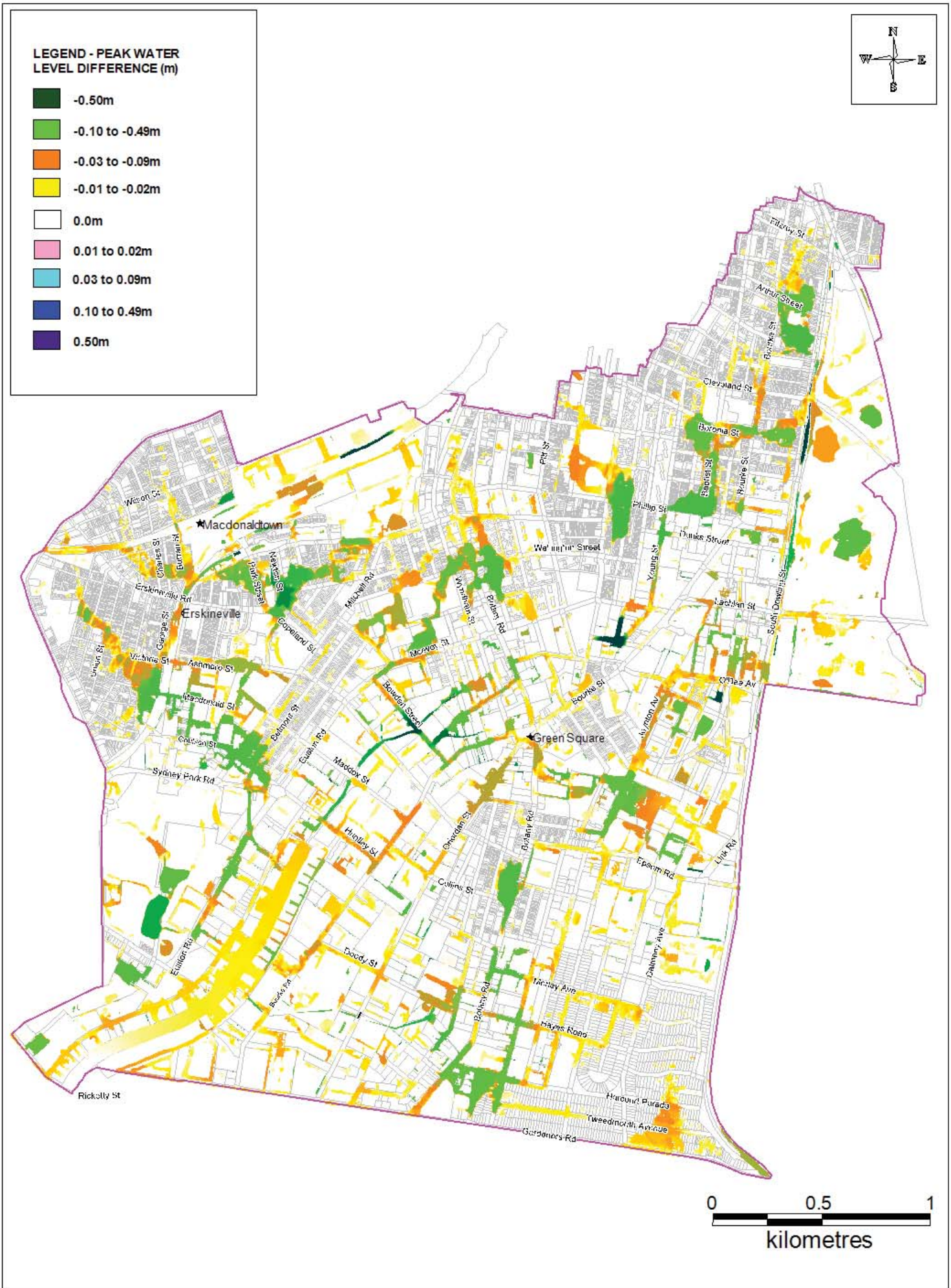

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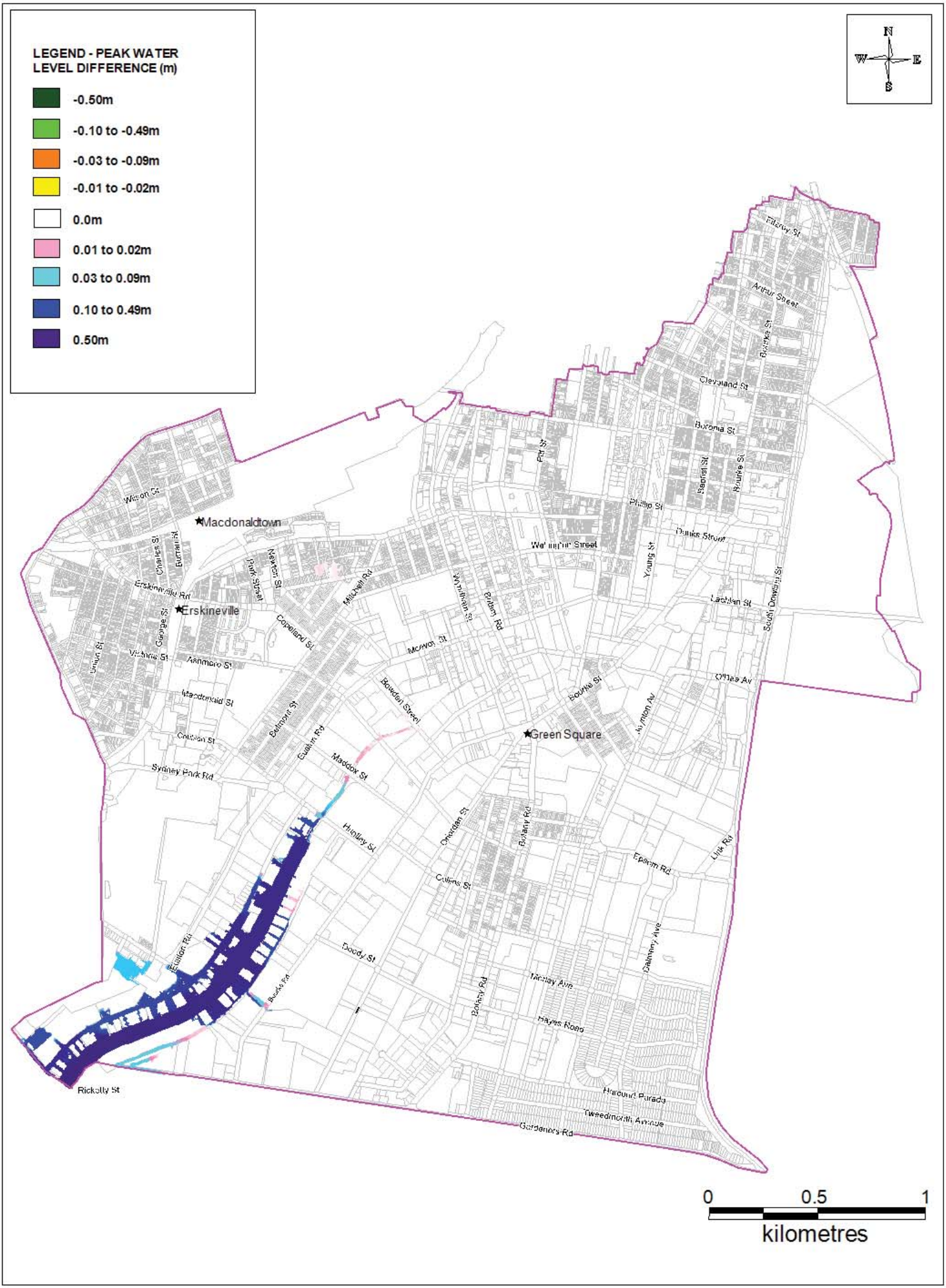
Figure 6.25

Sensitivity Analysis
100yr ARI Rainfall Less 20%



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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Figure 6.26

Sensitivity Analysis
100yr ARI Downstream Boundary Plus 20%

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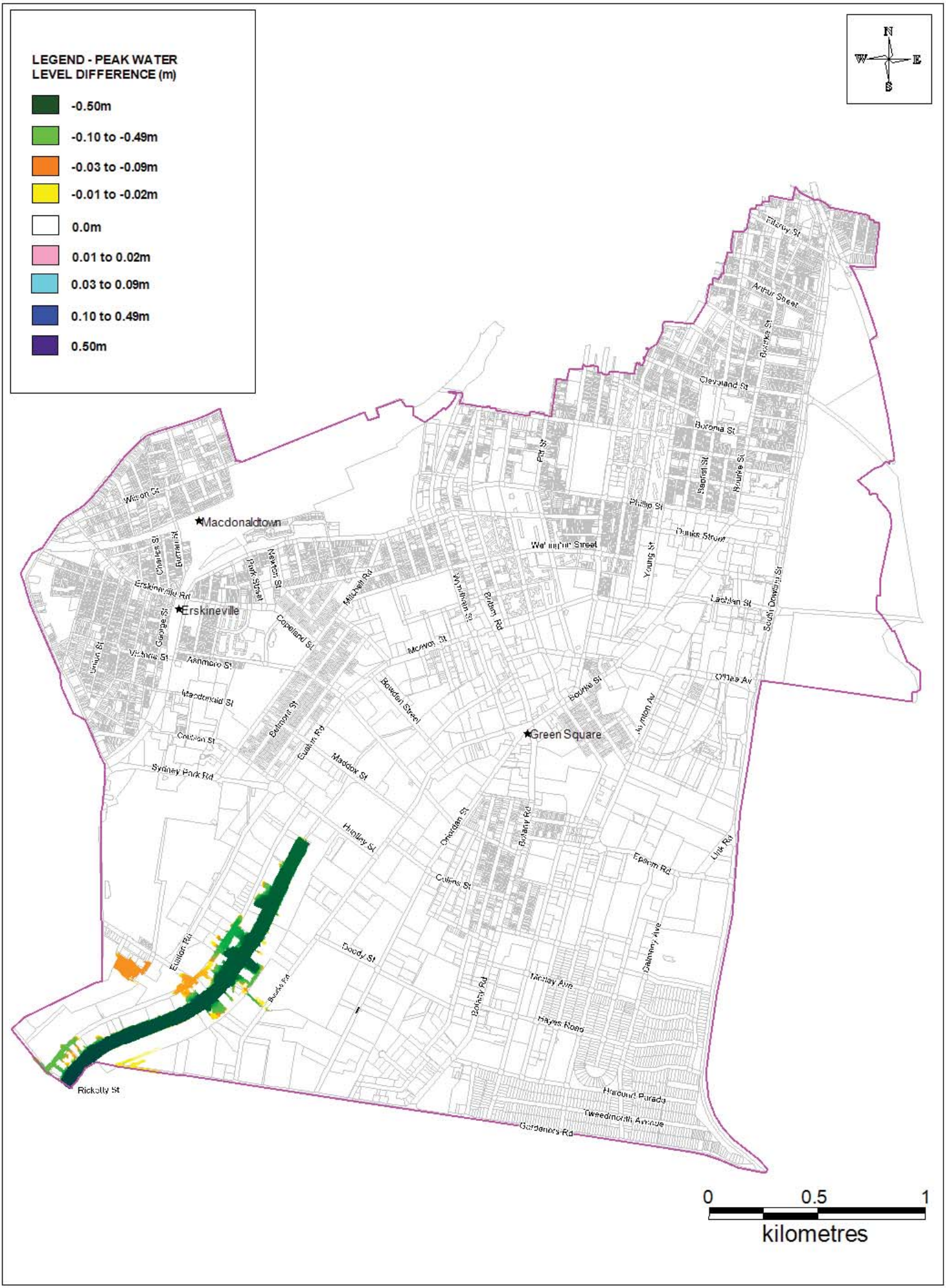

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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Figure 6.27

Sensitivity Analysis
100yr ARI Downstream Boundary Less 20%

W4785

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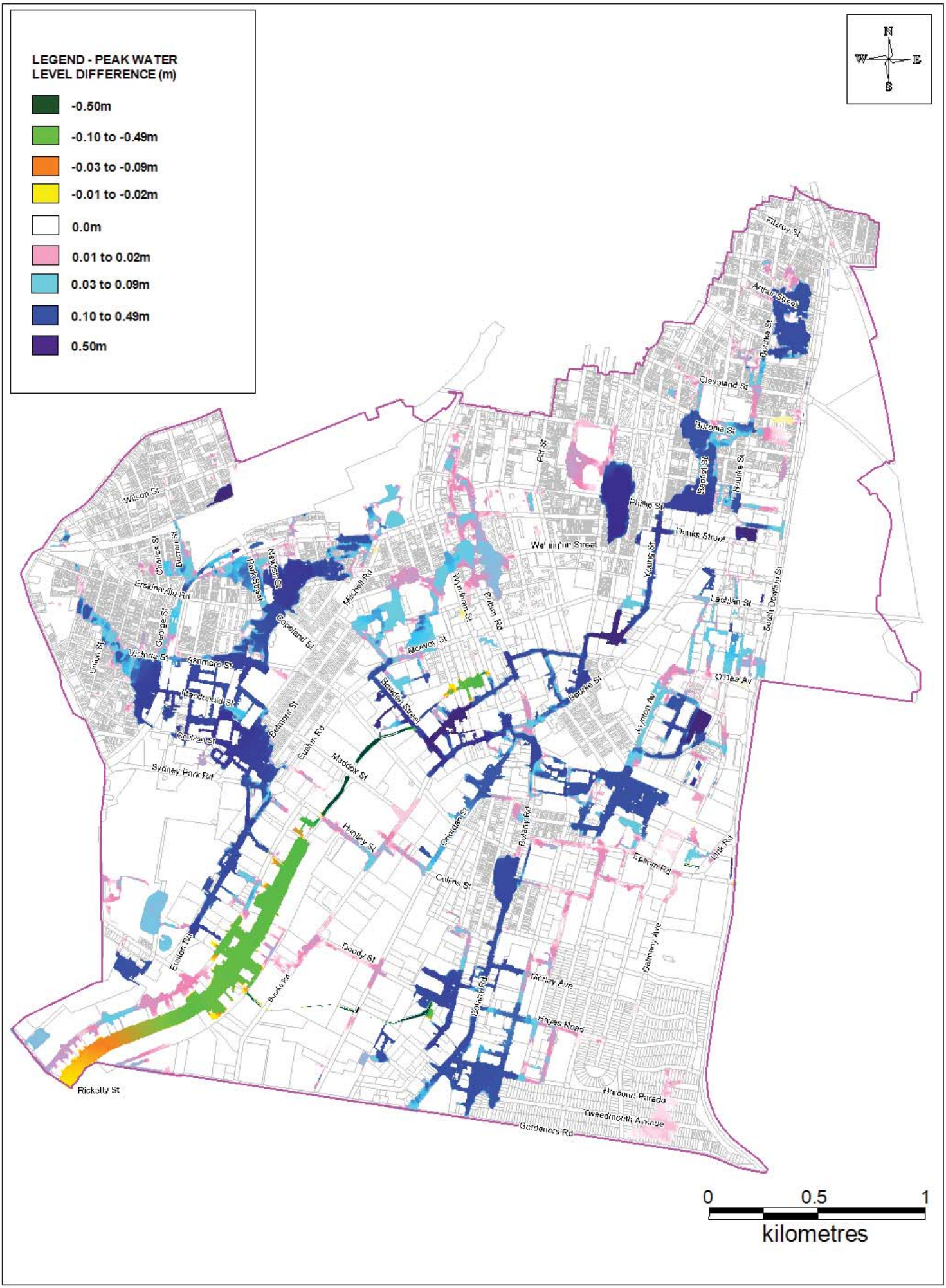

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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Figure 6.28

W4785

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Sensitivity Analysis
Blockages 100yr ARI - 100% Blocked

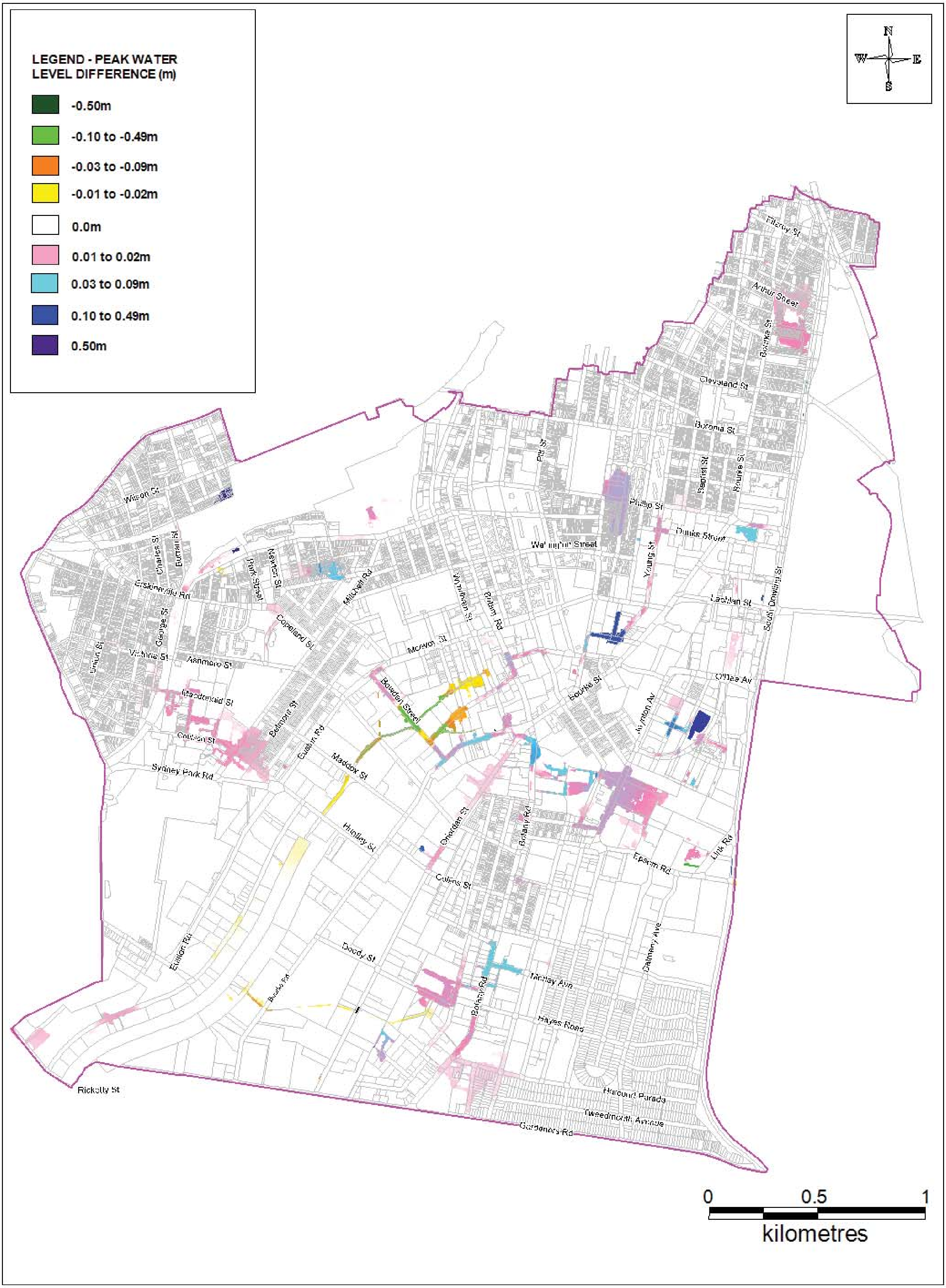

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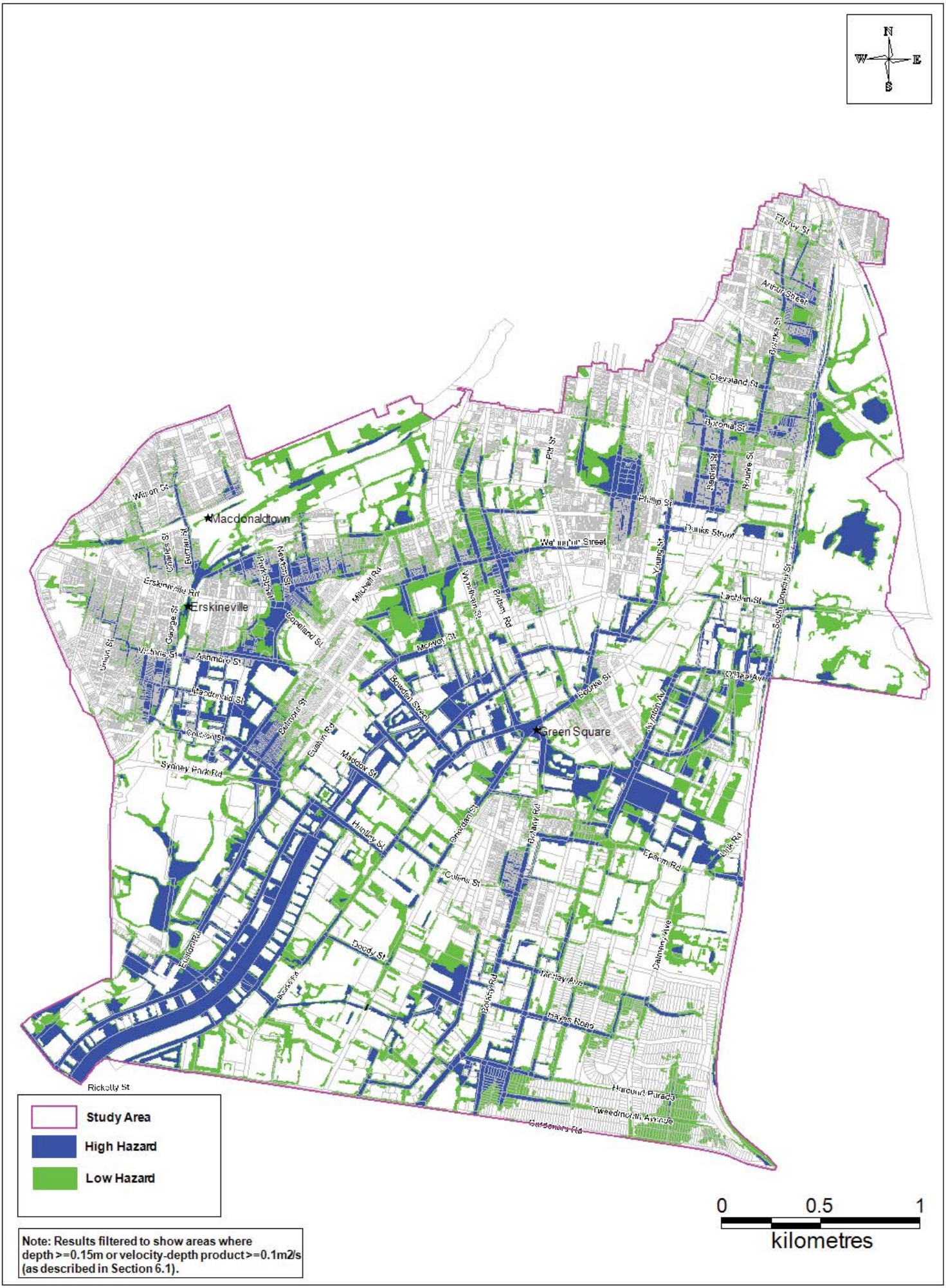
Figure 6.29

Sensitivity Analysis
Blockages 100yr ARI - 50% Blocked



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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Figure 7.1

Flood Hazard - PMF

W4948

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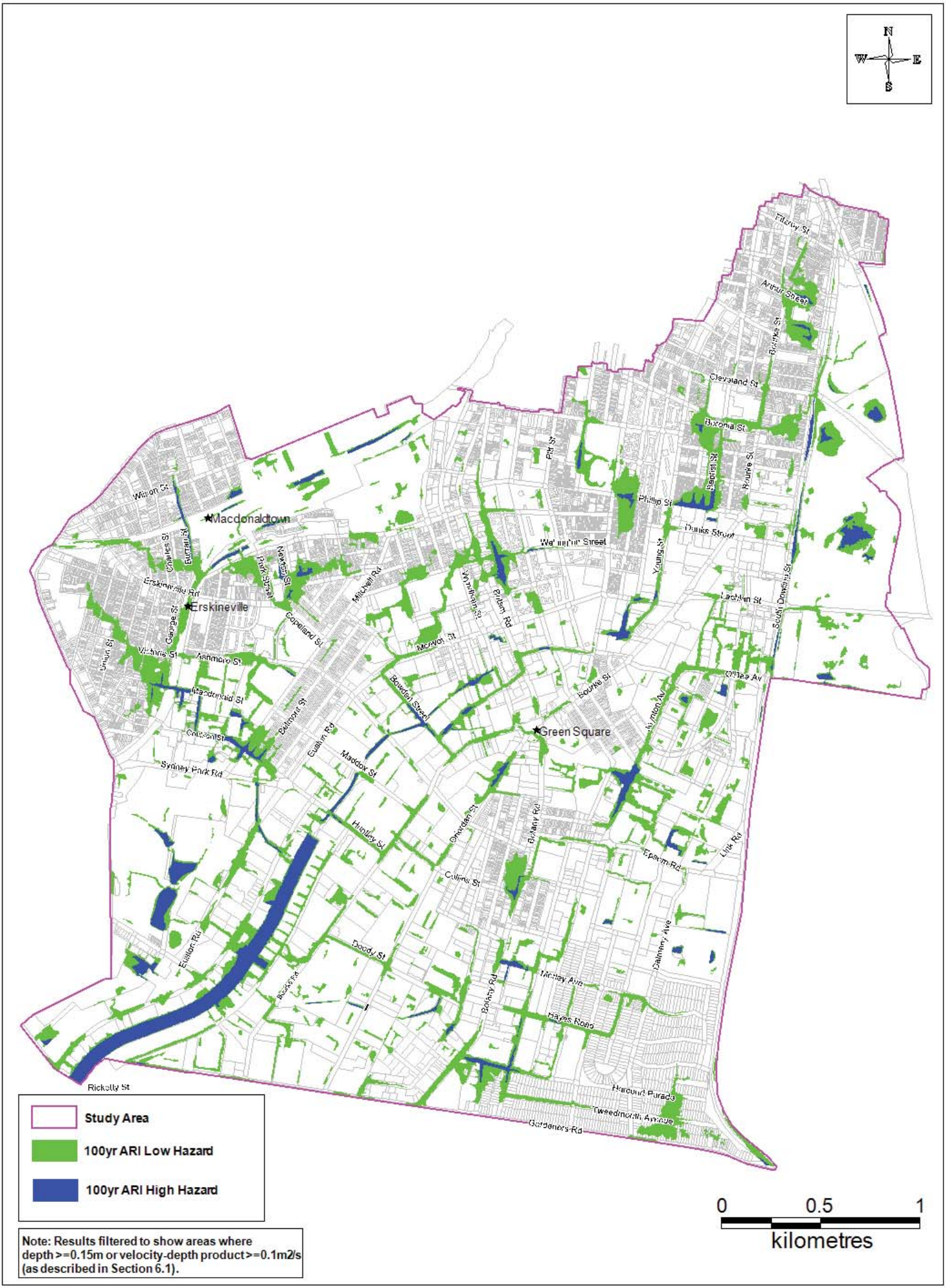


Figure 7.2

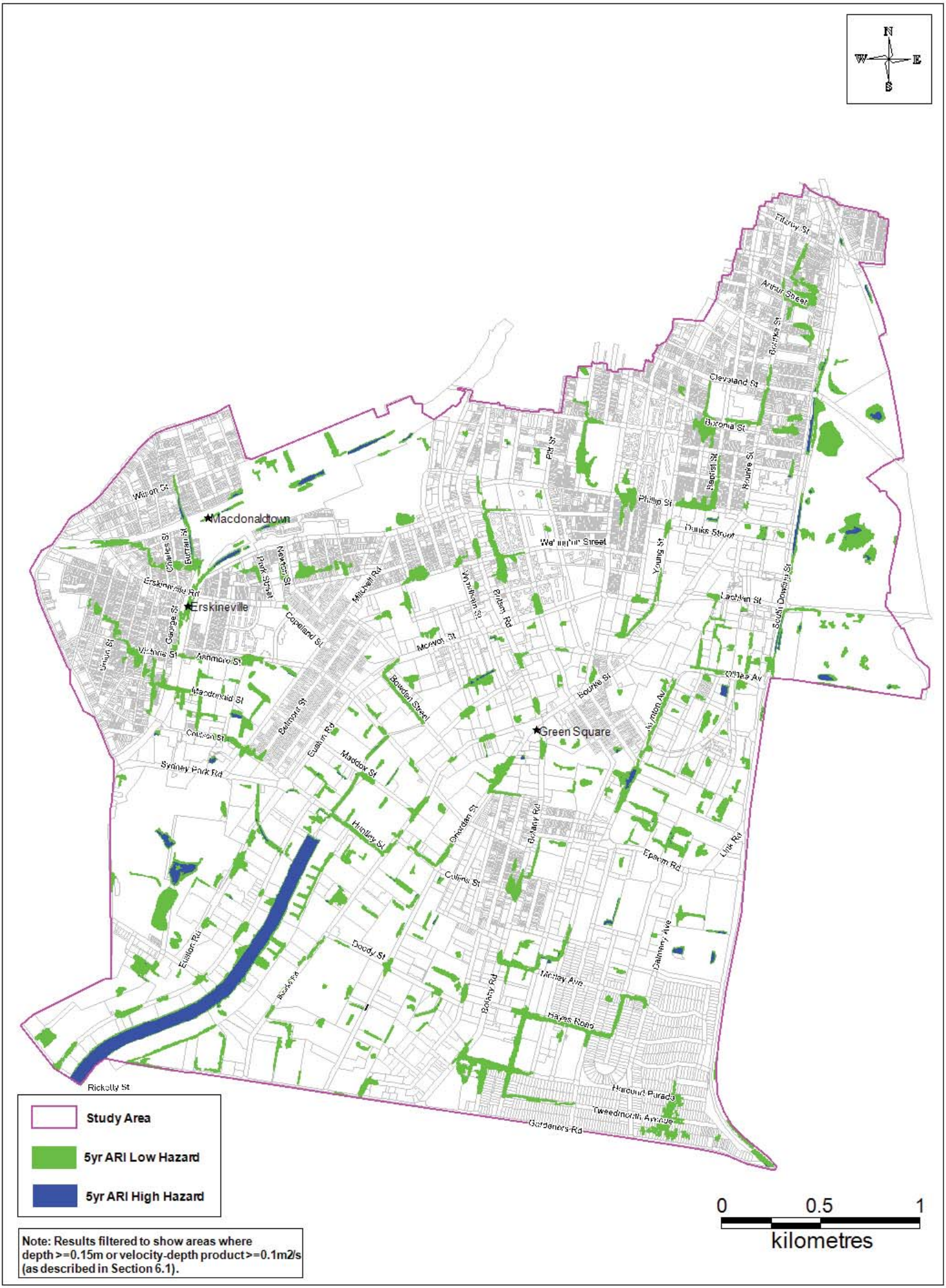
Cardno

ALEXANDRA CANAL CATCHMENT FLOOD STUDY

Flood Hazard - 100yr ARI

W4785

Draft



Note: Results filtered to show areas where depth >=0.15m or velocity-depth product >=0.1m2/s (as described in Section 6.1).

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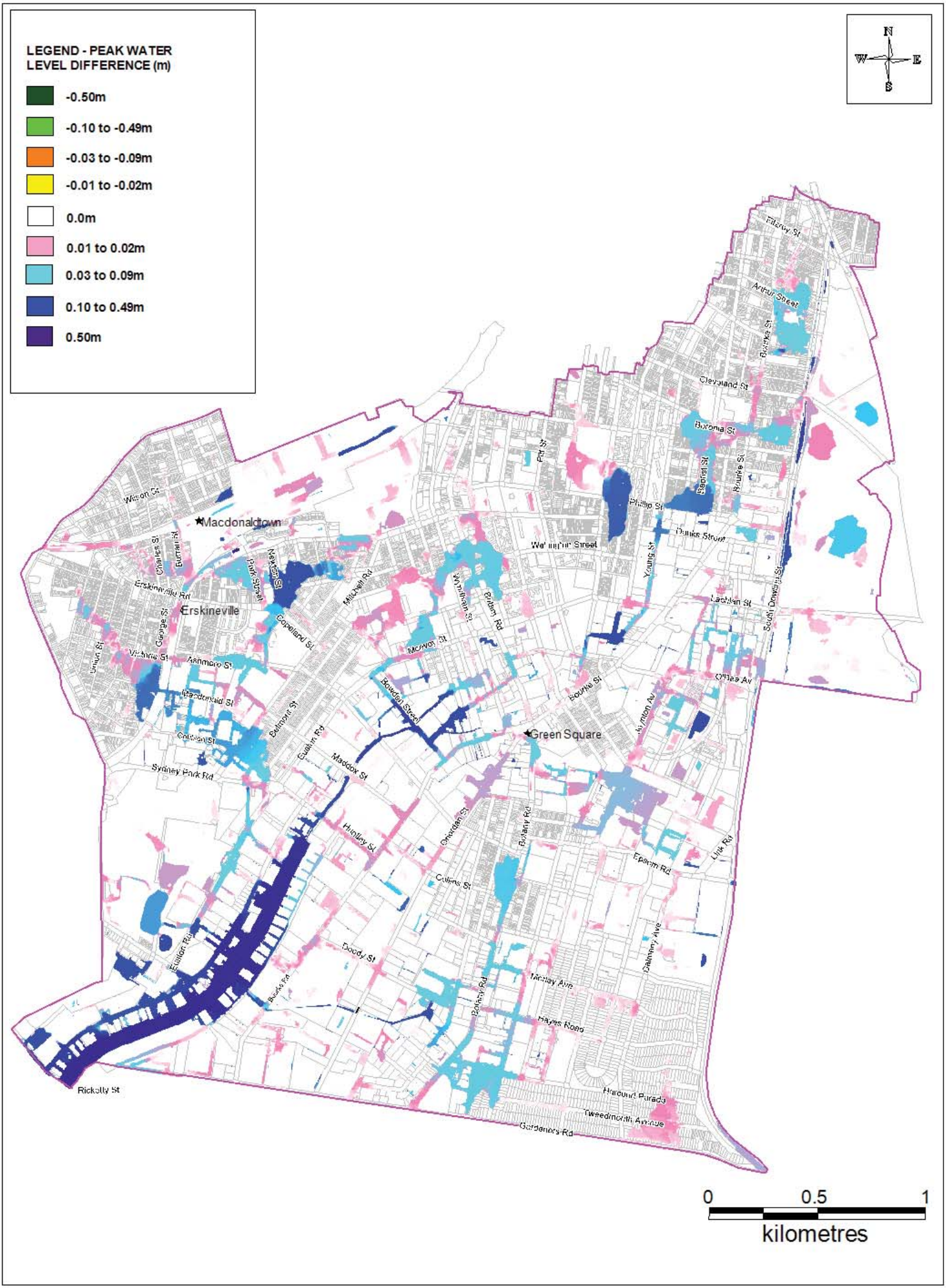
Figure 7.3

Flood Hazard - 5yr ARI



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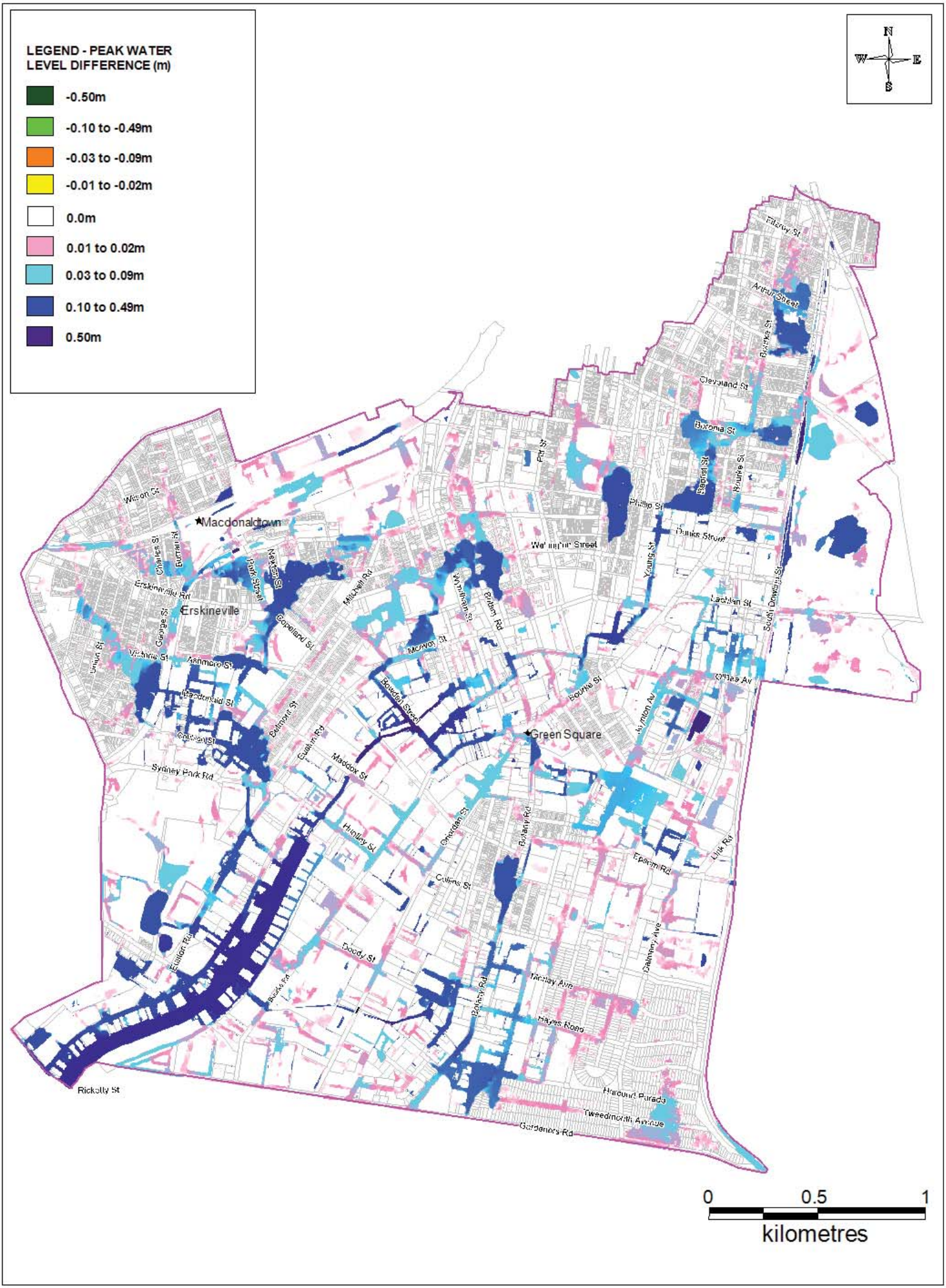
Draft

Figure 8.1

Climate Change
100yr ARI Rainfall Plus 10%



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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

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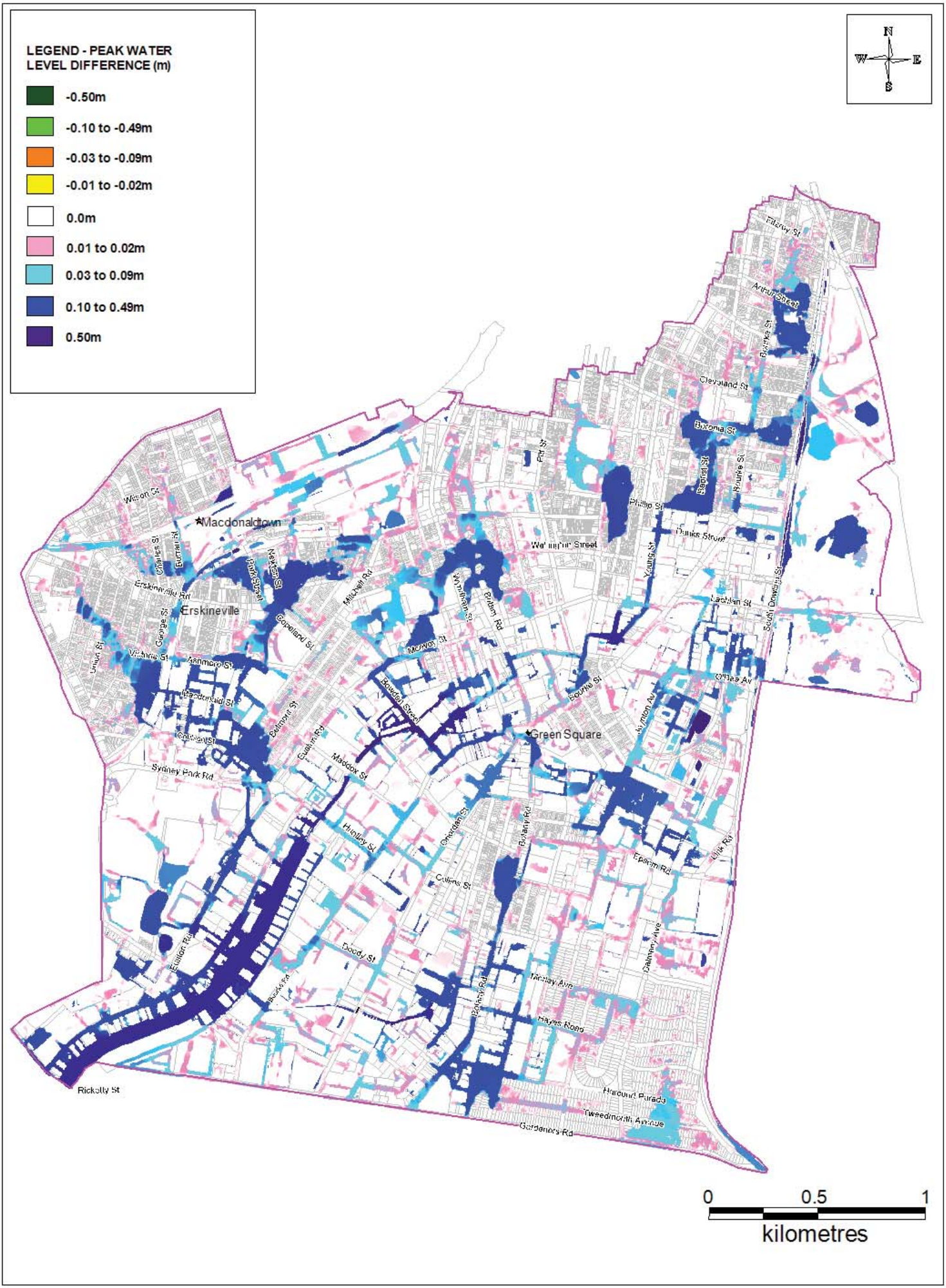
Figure 8.2

Climate Change
100yr ARI Rainfall Plus 20%



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ALEXANDRA CANAL CATCHMENT FLOOD STUDY

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Figure 8.3

Climate Change
100yr ARI Rainfall Plus 30%

Appendix A

Rainfall Event Rating

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	8	11	1984	22	24	90	180	>100yr
2	8	11	1984	22	54	66	132	~100yr
3	26	1	1991	14	54	60	120	~50yr
4	26	1	1991	15	24	55	110	20yr-50yr
5	20	11	1961	11	54	49	98	~20yr
6	21	8	1971	17	24	48	96	10yr-20yr
7	21	8	1971	17	54	46	92	10yr
8	20	11	1932	7	54	45	90	10yr
9	20	11	1961	12	24	45	90	10yr
10	10	3	1975	9	54	44	88	~10yr
11	10	3	1975	10	24	44	88	~10yr
12	15	2	1984	13	24	44	88	~10yr
13	26	10	1922	22	24	42	84	5yr-10yr
14	6	1	1989	14	54	42	84	5yr-10yr
15	10	4	1998	10	24	42	84	5yr-10yr
16	8	11	1984	23	24	40	80	5yr
17	20	3	1914	23	24	40	80	5yr
18	25	9	1951	18	24	38	76	~5yr
19	1	3	1977	10	24	38	76	~5yr
20	31	1	1938	6	54	38	76	~5yr
21	31	1	1938	7	24	38	76	~5yr
22	16	2	1932	0	54	37	74	2yr-5yr
23	19	1	1926	20	54	36	72	2yr-5yr
24	8	11	1967	2	54	35	70	2yr-5yr
25	8	11	1967	2	24	35	70	2yr-5yr
26	23	1	1933	3	54	34	68	2yr-5yr
27	29	9	1943	8	24	34	68	2yr-5yr
28	29	9	1943	8	54	34	68	2yr-5yr
29	10	11	1976	18	54	34	68	2yr-5yr
30	26	10	1922	21	54	34	68	2yr-5yr
31	8	11	1984	23	54	34	68	2yr-5yr
32	9	12	1988	19	24	33	66	2yr-5yr
33	15	3	1956	15	24	33	66	2yr-5yr
34	15	2	1984	12	54	33	66	2yr-5yr
35	10	3	1975	10	54	33	66	2yr-5yr
36	29	12	1934	15	24	32	64	2yr-5yr
37	10	11	1976	18	24	32	64	2yr-5yr
38	15	3	1956	15	54	32	64	2yr-5yr
39	8	11	1984	8	24	32	64	2yr-5yr
40	27	12	1955	13	54	31	62	2yr
41	8	1	1973	1	24	31	62	2yr
42	8	1	1973	1	54	31	62	2yr
43	8	1	1973	2	24	31	62	2yr
44	20	11	1932	8	24	31	62	2yr
45	1	3	1977	9	54	31	62	2yr
46	10	4	1998	9	54	31	62	2yr
47	6	9	2006	22	54	30	60	2yr
48	23	1	1933	4	24	30	60	2yr
49	21	3	1983	15	54	30	60	2yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	8	11	1984	22	54	119	119	>100yr
2	8	11	1984	23	54	101	101	>100yr
3	10	3	1975	10	54	88	88	50yr
4	10	3	1975	9	54	74	74	20yr
5	21	8	1971	17	54	74	74	20yr
6	21	8	1971	18	54	69	69	10yr-20yr
7	20	11	1961	12	54	69	69	10yr-20yr
8	29	9	1943	8	54	68	68	10yr-20yr
9	10	4	1998	10	54	67	67	10yr-20yr
10	31	1	1938	7	54	67	67	10yr-20yr
11	26	1	1991	15	54	65	65	10yr-20yr
12	20	11	1961	11	54	64	64	10yr
13	8	11	1967	2	54	64	64	10yr
14	8	1	1973	1	54	62	62	~10yr
15	8	1	1973	2	54	62	62	~10yr
16	29	9	1943	9	54	61	61	~10yr
17	20	11	1932	8	54	60	60	5yr-10yr
18	26	1	1991	14	54	60	60	5yr-10yr
19	31	1	1938	6	54	59	59	5yr-10yr
20	25	9	1951	18	54	59	59	5yr-10yr
21	9	2	1958	1	54	59	59	5yr-10yr
22	20	11	1932	7	54	55	55	5yr
23	26	10	1922	22	54	54	54	~5yr
24	8	11	1967	3	54	52	52	~5yr
25	29	3	1957	1	54	52	52	~5yr
26	1	2	1973	8	54	52	52	~5yr
27	15	6	1949	8	54	51	51	2yr-5yr
28	19	5	1933	19	54	51	51	2yr-5yr
29	12	7	1960	16	54	51	51	2yr-5yr
30	17	3	1983	0	54	50	50	2yr-5yr
31	12	7	1960	15	54	50	50	2yr-5yr
32	9	2	1958	0	54	49	49	2yr-5yr
33	15	2	1984	13	54	48	48	2yr-5yr
34	16	2	1932	1	54	48	48	2yr-5yr
35	23	1	1955	6	54	48	48	2yr-5yr
36	23	1	1955	5	54	48	48	2yr-5yr
37	12	11	1995	0	54	47	47	2yr-5yr
38	1	2	1973	7	54	47	47	2yr-5yr
39	1	5	1955	0	54	47	47	2yr-5yr
40	30	4	1955	23	54	46	46	2yr-5yr
41	1	3	1977	10	54	46	46	2yr-5yr
42	19	11	1961	3	54	46	46	2yr-5yr
43	19	11	1961	2	54	46	46	2yr-5yr
44	1	5	1955	1	54	46	46	2yr-5yr
45	23	1	1933	4	54	46	46	2yr-5yr
46	10	11	1976	19	54	46	46	2yr-5yr
47	10	3	1975	11	54	45	45	2yr-5yr
48	25	5	1925	18	54	45	45	2yr-5yr
49	10	6	1991	22	54	44	44	2yr-5yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	8	11	1984	23	54	156	104.00	>100yr
2	10	3	1975	11	54	113	75.33	>100yr
3	10	3	1975	10	24	111	74.00	100yr
4	8	11	1984	22	24	110	73.33	100yr
5	8	1	1973	2	54	93	62.00	20yr-50yr
6	21	8	1971	19	24	87	58.00	20yr-50yr
7	29	9	1943	10	24	83	55.33	20yr
8	29	9	1943	8	54	83	55.33	20yr
9	21	8	1971	17	54	82	54.67	~20yr
10	31	1	1938	7	24	80	53.33	10yr-20yr
11	31	1	1938	8	54	79	52.67	10yr-20yr
12	20	11	1961	13	24	76	50.67	10yr-20yr
13	20	11	1961	11	54	73	48.67	10yr
14	1	2	1973	8	54	73	48.67	10yr
15	10	4	1998	11	54	73	48.67	10yr
16	9	11	1984	1	24	73	48.67	10yr
17	10	4	1998	10	24	72	48.00	10yr
18	23	1	1955	7	24	70	46.67	5yr-10yr
19	1	5	1955	1	24	70	46.67	5yr-10yr
20	30	4	1955	23	54	70	46.67	5yr-10yr
21	19	11	1961	4	24	69	46.00	5yr-10yr
22	9	2	1958	1	24	68	45.33	5yr-10yr
23	23	1	1933	5	54	67	44.67	5yr-10yr
24	20	11	1932	8	54	67	44.67	5yr-10yr
25	8	11	1967	2	54	66	44.00	5yr-10yr
26	8	11	1967	4	24	66	44.00	5yr-10yr
27	29	3	1957	2	54	66	44.00	5yr-10yr
28	9	2	1958	2	54	65	43.33	5yr-10yr
29	26	1	1991	16	24	65	43.33	5yr-10yr
30	8	1	1973	1	24	63	42.00	5yr
31	25	9	1951	19	24	62	41.33	5yr
32	27	3	1942	20	54	62	41.33	5yr
33	12	7	1960	16	24	61	40.67	~5yr
34	17	3	1983	1	24	60	40.00	~5yr
35	26	1	1991	14	54	60	40.00	~5yr
36	5	8	1986	14	54	59	39.33	2yr-5yr
37	16	2	1932	2	54	59	39.33	2yr-5yr
38	9	3	1913	1	24	59	39.33	2yr-5yr
39	19	5	1933	20	54	58	38.67	2yr-5yr
40	8	1	1973	4	24	58	38.67	2yr-5yr
41	12	7	1960	17	54	58	38.67	2yr-5yr
42	26	10	1922	23	54	58	38.67	2yr-5yr
43	27	3	1942	22	24	57	38.00	2yr-5yr
44	19	5	1933	19	24	57	38.00	2yr-5yr
45	23	1	1955	5	54	56	37.33	2yr-5yr
46	28	3	1919	1	24	56	37.33	2yr-5yr
47	15	6	1949	10	24	55	36.67	2yr-5yr
48	15	6	1949	8	54	55	36.67	2yr-5yr
49	16	2	1932	1	24	54	36.00	2yr-5yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	8	11	1984	23	54	180	90	>100yr
2	9	11	1984	1	54	139	69.5	>100yr
3	10	3	1975	11	54	127	63.5	>100yr
4	8	1	1973	3	54	113	56.5	50yr-100yr
5	8	1	1973	1	54	94	47	20yr-50yr
6	1	5	1955	1	54	93	46.5	20yr
7	21	8	1971	19	54	88	44	10yr-20yr
8	31	1	1938	7	54	88	44	10yr-20yr
9	29	9	1943	9	54	84	42	10yr-20yr
10	30	4	1955	23	54	84	42	10yr-20yr
11	21	8	1971	17	54	83	41.5	10yr-20yr
12	31	1	1938	9	54	82	41	10yr-20yr
13	20	11	1961	13	54	82	41	10yr-20yr
14	27	3	1942	21	54	82	41	10yr-20yr
15	10	3	1975	9	54	80	40	10yr
16	19	11	1961	3	54	80	40	10yr
17	23	1	1955	7	54	79	39.5	10yr
18	8	11	1967	3	54	78	39	~10yr
19	12	7	1960	17	54	77	38.5	5yr-10yr
20	20	11	1961	11	54	76	38	5yr-10yr
21	1	2	1973	9	54	75	37.5	5yr-10yr
22	10	4	1998	11	54	74	37	5yr-10yr
23	19	11	1961	5	54	72	36	5yr-10yr
24	9	2	1958	1	54	71	35.5	5yr-10yr
25	29	3	1957	3	54	71	35.5	5yr-10yr
26	9	3	1913	1	54	71	35.5	5yr-10yr
27	20	11	1932	9	54	70	35	5yr
28	23	1	1933	5	54	69	34.5	5yr
29	5	8	1986	15	54	68	34	~5yr
30	9	2	1958	3	54	67	33.5	2yr-5yr
31	24	10	1987	21	54	67	33.5	2yr-5yr
32	29	3	1957	1	54	66	33	2yr-5yr
33	26	1	1991	17	54	65	32.5	2yr-5yr
34	26	1	1991	15	54	65	32.5	2yr-5yr
35	17	3	1983	1	54	64	32	2yr-5yr
36	25	9	1951	19	54	63	31.5	2yr-5yr
37	5	11	1984	15	54	62	31	2yr-5yr
38	19	5	1933	19	54	62	31	2yr-5yr
39	29	9	1943	11	54	62	31	2yr-5yr
40	26	10	1922	23	54	62	31	2yr-5yr
41	23	1	1955	5	54	61	30.5	2yr-5yr
42	7	9	2006	1	54	60	30	2yr-5yr
43	28	3	1919	1	54	60	30	2yr-5yr
44	12	7	1960	15	54	60	30	2yr-5yr
45	20	4	1945	13	54	59	29.5	2yr-5yr
46	26	5	1919	7	54	59	29.5	2yr-5yr
47	19	5	1933	21	54	59	29.5	2yr-5yr
48	16	2	1932	3	54	59	29.5	2yr-5yr
49	16	2	1932	1	54	59	29.5	2yr-5yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	8	11	1984	23	54	191	63.67	>100yr
2	9	11	1984	2	54	189	63.00	>100yr
3	10	3	1975	11	54	135	45.00	~100yr
4	1	5	1955	2	54	132	44.00	50yr-100yr
5	10	3	1975	14	54	130	43.33	50yr-100yr
6	8	1	1973	2	54	128	42.67	50yr-100yr
7	8	1	1973	5	54	126	42.00	50yr-100yr
8	10	4	1998	11	54	104	34.67	~20yr
9	27	3	1942	23	54	97	32.33	10yr-20yr
10	30	4	1955	23	54	97	32.33	10yr-20yr
11	31	1	1938	8	54	95	31.67	10yr-20yr
12	27	3	1942	20	54	94	31.33	10yr-20yr
13	5	8	1986	17	54	94	31.33	10yr-20yr
14	5	8	1986	14	54	92	30.67	10yr
15	23	1	1955	8	54	91	30.33	10yr
16	21	8	1971	20	54	91	30.33	10yr
17	9	2	1958	2	54	89	29.67	5yr-10yr
18	31	1	1938	11	54	89	29.67	5yr-10yr
19	12	7	1960	17	54	88	29.33	5yr-10yr
20	20	11	1961	14	54	87	29.00	5yr-10yr
21	8	11	1967	2	54	87	29.00	5yr-10yr
22	8	11	1967	5	54	87	29.00	5yr-10yr
23	24	10	1987	23	54	85	28.33	5yr-10yr
24	29	9	1943	11	54	85	28.33	5yr-10yr
25	19	11	1961	5	54	85	28.33	5yr-10yr
26	5	11	1984	17	54	84	28.00	5yr-10yr
27	9	3	1913	2	54	83	27.67	5yr-10yr
28	29	9	1943	8	54	83	27.67	5yr-10yr
29	21	8	1971	17	54	83	27.67	5yr-10yr
30	20	11	1961	11	54	80	26.67	5yr
31	23	1	1933	5	54	79	26.33	5yr
32	30	4	1988	17	54	78	26.00	5yr
33	1	2	1973	11	54	78	26.00	5yr
34	10	4	1998	14	54	77	25.67	2yr-5yr
35	1	2	1973	8	54	77	25.67	2yr-5yr
36	12	7	1960	20	54	76	25.33	2yr-5yr
37	17	1	1988	5	54	75	25.00	2yr-5yr
38	26	5	1919	8	54	75	25.00	2yr-5yr
39	20	11	1932	11	54	74	24.67	2yr-5yr
40	9	2	1958	5	54	74	24.67	2yr-5yr
41	29	3	1957	2	54	74	24.67	2yr-5yr
42	29	3	1957	5	54	74	24.67	2yr-5yr
43	10	5	1925	14	54	74	24.67	2yr-5yr
44	27	4	1966	11	54	73	24.33	2yr-5yr
45	24	10	1987	20	54	73	24.33	2yr-5yr
46	20	4	1945	14	54	73	24.33	2yr-5yr
47	17	1	1988	2	54	73	24.33	2yr-5yr
48	27	4	1966	14	54	72	24.00	2yr-5yr
49	17	1	1988	8	54	71	23.67	2yr-5yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	23	3	1966	20	54	68	136	100yr
2	13	12	1963	3	54	45	90	10yr-20yr
3	11	11	1970	19	24	43	86	5yr-10yr
4	23	3	1966	21	24	42	84	5yr-10yr
5	8	11	1984	10	24	41	82	5yr-10yr
6	14	9	1990	18	24	39	78	~5yr
7	10	3	1975	10	24	38	76	2yr-5yr
8	13	12	1963	2	24	34	68	2yr-5yr
9	11	11	1970	19	54	34	68	2yr-5yr
10	10	3	1975	15	24	33	66	2yr-5yr
11	10	3	1975	10	54	32	64	2yr-5yr
12	10	3	1975	11	24	32	64	2yr-5yr
13	8	11	1984	9	54	32	64	2yr-5yr
14	28	2	1970	1	24	30	60	~2yr
15	17	2	1993	9	24	30	60	~2yr
16	9	4	1973	6	54	29	58	1yr-2yr
17	13	12	1963	4	54	29	58	1yr-2yr
18	20	11	1988	23	24	29	58	1yr-2yr
19	21	3	1983	16	24	29	58	1yr-2yr
20	21	8	1971	9	54	29	58	1yr-2yr
21	31	8	1978	9	54	29	58	1yr-2yr
22	7	3	1994	0	54	29	58	1yr-2yr
23	10	6	2004	21	24	28	56	1yr-2yr
24	27	11	1985	15	24	28	56	1yr-2yr
25	27	3	1987	19	54	28	56	1yr-2yr
26	13	12	1963	2	54	28	56	1yr-2yr
27	4	3	1977	8	24	28	56	1yr-2yr
28	3	3	1978	2	24	28	56	1yr-2yr
29	13	12	1963	4	24	27	54	1yr-2yr
30	17	10	1976	22	54	27	54	1yr-2yr
31	5	8	1986	11	54	27	54	1yr-2yr
32	17	2	1993	9	54	27	54	1yr-2yr
33	22	1	1999	5	54	26	52	1yr-2yr
34	9	4	1973	7	24	26	52	1yr-2yr
35	27	11	1985	14	54	26	52	1yr-2yr
36	7	3	1994	0	24	26	52	1yr-2yr
37	13	12	1963	3	24	26	52	1yr-2yr
38	31	8	1978	10	24	26	52	1yr-2yr
39	6	8	1967	20	24	26	52	1yr-2yr
40	29	3	1975	16	24	25	50	1yr-2yr
41	4	3	1979	14	54	25	50	1yr-2yr
42	14	9	1993	1	24	25	50	1yr-2yr
43	1	3	1977	9	54	25	50	1yr-2yr
44	28	2	1970	0	54	25	50	1yr-2yr
45	8	1	1973	0	54	24	48	1yr-2yr
46	6	10	1978	3	54	24	48	1yr-2yr
47	5	12	1992	14	54	24	48	1yr-2yr
48	6	3	1970	20	24	24	48	1yr-2yr
49	8	1	1973	2	54	24	48	1yr-2yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	23	3	1966	20	54	78	78	20yr-50yr
2	23	3	1966	21	54	78	78	20yr-50yr
3	10	3	1975	10	54	69	69	10yr-20yr
4	10	3	1975	11	54	63	63	10yr
5	13	12	1963	4	54	63	63	10yr
6	13	12	1963	3	54	61	61	5yr-10yr
7	11	11	1970	19	54	58	58	5yr-10yr
8	8	11	1984	10	54	57	57	5yr-10yr
9	8	11	1984	9	54	48	48	2yr-5yr
10	9	4	1973	7	54	48	48	2yr-5yr
11	14	9	1990	18	54	48	48	2yr-5yr
12	13	12	1963	2	54	46	46	2yr-5yr
13	17	2	1993	9	54	44	44	2yr-5yr
14	31	1	2001	2	54	43	43	2yr-5yr
15	5	8	1986	12	54	42	42	2yr
16	5	8	1986	11	54	42	42	2yr
17	24	1	1999	6	54	41	41	~2yr
18	24	1	1999	7	54	41	41	~2yr
19	13	5	2003	10	54	40	40	1yr-2yr
20	8	1	1973	3	54	40	40	1yr-2yr
21	11	3	1974	22	54	40	40	1yr-2yr
22	10	3	1975	15	54	39	39	1yr-2yr
23	31	8	1978	10	54	39	39	1yr-2yr
24	8	1	1973	4	54	39	39	1yr-2yr
25	4	2	1971	5	54	39	39	1yr-2yr
26	17	10	1976	23	54	38	38	1yr-2yr
27	7	3	1994	0	54	38	38	1yr-2yr
28	21	3	1983	16	54	38	38	1yr-2yr
29	13	4	2009	17	54	38	38	1yr-2yr
30	6	8	1967	20	54	38	38	1yr-2yr
31	31	1	2001	1	54	37	37	1yr-2yr
32	4	3	1977	8	54	37	37	1yr-2yr
33	14	9	1993	1	54	37	37	1yr-2yr
34	6	3	1970	20	54	37	37	1yr-2yr
35	28	2	1970	1	54	37	37	1yr-2yr
36	22	1	1999	6	54	36	36	1yr-2yr
37	11	3	1974	21	54	36	36	1yr-2yr
38	21	8	1971	9	54	36	36	1yr-2yr
39	24	10	1987	20	54	36	36	1yr-2yr
40	13	5	2003	9	54	36	36	1yr-2yr
41	21	8	1971	10	54	35	35	1yr-2yr
42	11	12	1984	19	54	35	35	1yr-2yr
43	7	3	1994	1	54	35	35	1yr-2yr
44	27	4	1966	6	54	35	35	1yr-2yr
45	8	1	1973	2	54	34	34	1yr-2yr
46	25	9	1995	5	54	34	34	1yr-2yr
47	11	11	1970	20	54	34	34	1yr-2yr
48	4	3	1979	14	54	34	34	1yr-2yr
49	17	10	1976	22	54	34	34	1yr-2yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	13	12	1963	5	54	89	59.33	20yr-50yr
2	10	3	1975	11	54	88	58.67	20yr-50yr
3	13	12	1963	4	24	88	58.67	20yr-50yr
4	23	3	1966	22	24	79	52.67	10yr-20yr
5	23	3	1966	20	54	79	52.67	10yr-20yr
6	8	11	1984	10	24	73	48.67	10yr
7	10	3	1975	10	24	61	40.67	2yr-5yr
8	8	11	1984	11	54	60	40.00	2yr-5yr
9	11	11	1970	20	54	59	39.33	2yr-5yr
10	13	12	1963	2	54	59	39.33	2yr-5yr
11	11	11	1970	19	24	58	38.67	2yr-5yr
12	11	3	1974	23	54	58	38.67	2yr-5yr
13	8	1	1973	4	24	58	38.67	2yr-5yr
14	31	1	2001	2	54	56	37.33	2yr-5yr
15	11	3	1974	22	24	56	37.33	2yr-5yr
16	8	1	1973	5	54	54	36.00	2yr-5yr
17	28	2	1970	1	24	53	35.33	2yr-5yr
18	24	1	1999	8	54	53	35.33	2yr-5yr
19	17	2	1993	10	24	53	35.33	2yr-5yr
20	24	1	1999	7	24	52	34.67	2yr-5yr
21	21	3	1983	17	54	51	34.00	2yr-5yr
22	13	5	2003	10	24	51	34.00	2yr-5yr
23	10	3	1975	16	24	51	34.00	2yr-5yr
24	14	9	1990	19	24	50	33.33	2yr-5yr
25	31	1	2001	4	24	49	32.67	2yr-5yr
26	5	8	1986	13	24	49	32.67	2yr-5yr
27	31	8	1978	11	54	49	32.67	2yr-5yr
28	9	4	1973	8	54	49	32.67	2yr-5yr
29	9	4	1973	7	24	48	32.00	2yr
30	5	8	1986	11	54	48	32.00	2yr
31	30	4	1988	7	24	47	31.33	1yr-2yr
32	30	4	1988	8	54	47	31.33	1yr-2yr
33	27	4	1966	7	24	47	31.33	1yr-2yr
34	21	3	1983	16	24	46	30.67	1yr-2yr
35	7	3	1994	1	24	45	30.00	1yr-2yr
36	8	1	1973	2	54	44	29.33	1yr-2yr
37	22	1	1999	7	24	44	29.33	1yr-2yr
38	4	2	1971	5	54	43	28.67	1yr-2yr
39	13	5	2003	11	54	43	28.67	1yr-2yr
40	4	2	1971	7	24	42	28.00	1yr-2yr
41	13	4	2009	17	54	42	28.00	1yr-2yr
42	6	3	1970	22	24	42	28.00	1yr-2yr
43	6	8	1967	20	54	42	28.00	1yr-2yr
44	4	3	1977	8	54	42	28.00	1yr-2yr
45	10	4	1998	8	54	42	28.00	1yr-2yr
46	23	6	1976	17	54	42	28.00	1yr-2yr
47	23	6	1976	16	24	41	27.33	1yr-2yr
48	13	10	1973	8	54	41	27.33	1yr-2yr
49	14	9	1993	2	54	41	27.33	1yr-2yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	13	12	1963	3	54	103	51.5	20yr-50yr
2	10	3	1975	11	54	96	48	20yr-50yr
3	13	12	1963	5	54	93	46.5	20yr
4	8	11	1984	11	54	88	44	10yr-20yr
5	23	3	1966	21	54	79	39.5	~10yr
6	8	11	1984	9	54	79	39.5	~10yr
7	23	3	1966	23	54	78	39	5yr-10yr
8	8	1	1973	5	54	77	38.5	5yr-10yr
9	8	1	1973	3	54	69	34.5	~5yr
10	11	3	1974	23	54	69	34.5	~5yr
11	10	3	1975	13	54	67	33.5	2yr-5yr
12	31	1	2001	3	54	65	32.5	2yr-5yr
13	30	4	1988	7	54	61	30.5	2yr-5yr
14	11	11	1970	21	54	59	29.5	2yr-5yr
15	27	4	1966	7	54	59	29.5	2yr-5yr
16	11	11	1970	19	54	59	29.5	2yr-5yr
17	17	2	1993	9	54	58	29	2yr-5yr
18	21	3	1983	17	54	58	29	2yr-5yr
19	28	2	1970	1	54	58	29	2yr-5yr
20	30	4	1988	9	54	57	28.5	2yr-5yr
21	5	8	1986	11	54	57	28.5	2yr-5yr
22	4	3	1977	9	54	56	28	2yr-5yr
23	5	8	1986	13	54	56	28	2yr-5yr
24	17	2	1993	11	54	56	28	2yr-5yr
25	24	1	1999	7	54	55	27.5	2yr-5yr
26	31	8	1978	11	54	55	27.5	2yr-5yr
27	24	1	1999	9	54	54	27	2yr-5yr
28	10	3	1975	15	54	53	26.5	2yr
29	13	5	2003	11	54	52	26	1yr-2yr
30	14	9	1990	19	54	50	25	1yr-2yr
31	9	4	1973	7	54	50	25	1yr-2yr
32	8	1	1973	1	54	50	25	1yr-2yr
33	10	4	1998	9	54	49	24.5	1yr-2yr
34	10	3	1975	17	54	49	24.5	1yr-2yr
35	9	4	1973	9	54	49	24.5	1yr-2yr
36	11	3	1974	21	54	48	24	1yr-2yr
37	10	6	1991	23	54	48	24	1yr-2yr
38	13	10	1973	9	54	48	24	1yr-2yr
39	14	9	1993	1	54	48	24	1yr-2yr
40	25	9	1995	7	54	48	24	1yr-2yr
41	26	2	1967	1	54	48	24	1yr-2yr
42	7	3	1994	1	54	48	24	1yr-2yr
43	24	10	1987	21	54	47	23.5	1yr-2yr
44	17	1	1972	5	54	47	23.5	1yr-2yr
45	22	1	1999	7	54	46	23	1yr-2yr
46	13	4	2009	19	54	46	23	1yr-2yr
47	31	1	1971	17	54	46	23	1yr-2yr
48	17	1	1972	3	54	46	23	1yr-2yr
49	4	2	1990	5	54	46	23	1yr-2yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	13	12	1963	5	54	138	46.00	~100yr
2	8	11	1984	11	54	105	35.00	~20yr
3	10	3	1975	11	54	101	33.67	10yr-20yr
4	10	3	1975	14	54	100	33.33	10yr-20yr
5	8	1	1973	5	54	99	33.00	10yr-20yr
6	13	12	1963	8	54	96	32.00	10yr-20yr
7	30	4	1988	8	54	86	28.67	5yr-10yr
8	8	1	1973	2	54	84	28.00	5yr-10yr
9	11	3	1974	23	54	83	27.67	5yr-10yr
10	23	3	1966	23	54	79	26.33	~5yr
11	23	3	1966	20	54	79	26.33	~5yr
12	10	3	1975	17	54	77	25.67	2yr-5yr
13	31	1	2001	5	54	75	25.00	2yr-5yr
14	27	4	1966	8	54	75	25.00	2yr-5yr
15	4	3	1977	8	54	72	24.00	2yr-5yr
16	12	3	1974	2	54	71	23.67	2yr-5yr
17	13	12	1963	2	54	68	22.67	2yr-5yr
18	30	4	1988	11	54	68	22.67	2yr-5yr
19	31	1	2001	2	54	68	22.67	2yr-5yr
20	5	8	1986	14	54	67	22.33	2yr-5yr
21	8	1	1973	8	54	66	22.00	2yr-5yr
22	4	2	1990	8	54	64	21.33	2yr-5yr
23	14	11	1969	8	54	64	21.33	2yr-5yr
24	4	3	1977	11	54	64	21.33	2yr-5yr
25	31	8	1978	11	54	64	21.33	2yr-5yr
26	17	2	1993	11	54	64	21.33	2yr-5yr
27	24	10	1987	20	54	64	21.33	2yr-5yr
28	31	8	1978	14	54	64	21.33	2yr-5yr
29	20	2	1976	20	54	63	21.00	2yr-5yr
30	4	2	1990	5	54	63	21.00	2yr-5yr
31	21	3	1983	17	54	62	20.67	2yr-5yr
32	5	8	1986	11	54	62	20.67	2yr-5yr
33	11	11	1970	23	54	61	20.33	~2yr
34	17	1	1972	5	54	61	20.33	~2yr
35	11	11	1970	20	54	61	20.33	~2yr
36	25	9	1995	8	54	61	20.33	~2yr
37	9	4	1973	8	54	61	20.33	~2yr
38	24	1	1999	8	54	60	20.00	~2yr
39	10	6	1991	23	54	60	20.00	~2yr
40	8	11	1984	14	54	60	20.00	~2yr
41	13	4	2009	17	54	59	19.67	1yr-2yr
42	28	2	1970	2	54	59	19.67	1yr-2yr
43	11	6	1991	2	54	59	19.67	1yr-2yr
44	12	6	1991	2	54	59	19.67	1yr-2yr
45	24	10	1987	23	54	59	19.67	1yr-2yr
46	21	3	1983	20	54	58	19.33	1yr-2yr
47	17	1	1988	5	54	57	19.00	1yr-2yr
48	14	9	1993	2	54	57	19.00	1yr-2yr
49	16	10	1972	14	54	56	18.67	1yr-2yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	17	2	1993	9	30	58	116	~50yr
2	26	1	1991	15	0	52	104	~20yr
3	26	1	1991	15	30	48	96	10yr-20yr
4	10	4	1998	10	30	44	88	10yr
5	14	9	1993	1	0	38	76	5yr
6	10	4	1998	11	0	37	74	~5yr
7	17	2	1993	9	0	33	66	2yr-5yr
8	10	4	1998	7	30	33	66	2yr-5yr
9	9	4	1998	18	30	32	64	2yr-5yr
10	26	2	2006	21	0	32	64	2yr-5yr
11	10	4	1998	8	0	30	60	2yr-5yr
12	10	4	1998	17	0	29	58	2yr
13	15	2	1991	21	30	29	58	2yr
14	7	9	2006	6	0	29	58	2yr
15	17	2	1993	10	0	28	56	1yr-2yr
16	9	6	2007	7	0	26	52	1yr-2yr
17	13	4	1994	20	0	26	52	1yr-2yr
18	15	2	1991	21	0	26	52	1yr-2yr
19	17	1	2001	21	30	25	50	1yr-2yr
20	7	9	2006	5	30	24	48	1yr-2yr
21	17	1	2001	22	0	24	48	1yr-2yr
22	7	12	2007	16	0	24	48	1yr-2yr
23	3	12	2007	13	30	24	48	1yr-2yr
24	5	5	2001	15	0	24	48	1yr-2yr
25	14	9	1993	0	30	23	46	1yr-2yr
26	9	2	1992	3	0	23	46	~1yr
27	26	2	2006	21	30	22	44	~1yr
28	5	5	2001	14	30	22	44	~1yr
29	16	1	2006	4	30	22	44	~1yr
30	19	5	1998	3	30	22	44	~1yr
31	7	3	1994	5	0	22	44	~1yr
32	6	12	2007	8	0	21	42	<1yr
33	10	4	1998	17	30	21	42	<1yr
34	7	3	1994	4	30	20	40	<1yr
35	7	12	2007	15	30	20	40	<1yr
36	10	4	1998	16	30	20	40	<1yr
37	15	8	2006	16	30	20	40	<1yr
38	6	5	2001	8	30	20	40	<1yr
39	13	4	1994	20	30	19	38	<1yr
40	15	6	2007	0	0	19	38	<1yr
41	6	5	2001	9	0	19	38	<1yr
42	19	11	2001	2	30	18	36	<1yr
43	10	6	2004	21	30	18	36	<1yr
44	7	3	1993	21	30	18	36	<1yr
45	31	1	2001	3	30	18	36	<1yr
46	11	12	2007	23	0	18	36	<1yr
47	27	11	2007	3	0	18	36	<1yr
48	7	3	1993	22	0	18	36	<1yr
49	23	3	2003	22	30	18	36	<1yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	17	2	1993	10	0	72	72	20yr
2	26	1	1991	16	0	54	54	5yr
3	26	1	1991	15	0	52	52	~5yr
4	10	4	1998	8	0	48	48	2yr-5yr
5	14	9	1993	1	0	47	47	2yr-5yr
6	10	4	1998	11	0	45	45	2yr-5yr
7	14	9	1993	2	0	44	44	2yr-5yr
8	10	4	1998	17	0	44	44	2yr-5yr
9	10	4	1998	18	0	44	44	2yr-5yr
10	15	2	1991	22	0	43	43	2yr-5yr
11	10	4	1998	9	0	42	42	2yr-5yr
12	26	2	2006	22	0	40	40	2yr
13	17	2	1993	9	0	38	38	1yr-2yr
14	26	2	2006	21	0	38	38	1yr-2yr
15	17	2	1993	11	0	38	38	1yr-2yr
16	10	4	1998	12	0	38	38	1yr-2yr
17	7	9	2006	6	0	38	38	1yr-2yr
18	9	6	2007	7	0	36	36	1yr-2yr
19	13	4	1994	21	0	34	34	1yr-2yr
20	9	4	1998	19	0	34	34	1yr-2yr
21	9	2	1992	4	0	34	34	1yr-2yr
22	7	9	2006	7	0	34	34	1yr-2yr
23	31	1	2001	4	0	34	34	1yr-2yr
24	5	5	2001	16	0	32	32	1yr-2yr
25	5	5	2001	15	0	32	32	1yr-2yr
26	9	6	2007	8	0	32	32	1yr-2yr
27	9	2	1992	3	0	32	32	1yr-2yr
28	31	1	2001	3	0	31	31	1yr-2yr
29	13	4	1994	20	0	30	30	~1yr
30	6	5	2001	9	0	30	30	~1yr
31	19	5	1998	4	0	29	29	<1yr
32	10	4	2001	4	0	28	28	<1yr
33	13	10	1999	6	0	28	28	<1yr
34	4	2	2002	19	0	28	28	<1yr
35	4	2	2002	18	0	27	27	<1yr
36	10	4	2001	3	0	27	27	<1yr
37	23	3	2003	23	0	26	26	<1yr
38	7	12	2007	16	0	26	26	<1yr
39	15	2	1991	21	0	26	26	<1yr
40	6	5	2001	10	0	26	26	<1yr
41	9	2	1992	13	0	26	26	<1yr
42	16	6	2007	17	0	26	26	<1yr
43	17	1	2001	22	0	26	26	<1yr
44	7	12	2007	17	0	26	26	<1yr
45	9	2	1992	12	0	25	25	<1yr
46	27	11	2007	4	0	25	25	<1yr
47	7	3	1993	22	0	25	25	<1yr
48	9	2	1992	18	0	25	25	<1yr
49	3	12	2007	14	0	24	24	<1yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	17	2	1993	10	30	83	55.33	20yr
2	10	4	1998	9	0	58	38.67	2yr-5yr
3	10	4	1998	18	0	56	37.33	2yr-5yr
4	26	1	1991	16	30	54	36.00	2yr-5yr
5	26	1	1991	15	0	52	34.67	2yr-5yr
6	14	9	1993	1	30	52	34.67	2yr-5yr
7	15	2	1991	22	30	46	30.67	2yr
8	17	2	1993	9	0	46	30.67	2yr
9	10	4	1998	12	0	46	30.67	2yr
10	14	9	1993	3	0	44	29.33	1yr-2yr
11	10	4	1998	10	30	44	29.33	1yr-2yr
12	31	1	2001	3	0	43	28.67	1yr-2yr
13	26	2	2006	22	30	42	28.00	1yr-2yr
14	7	9	2006	7	30	42	28.00	1yr-2yr
15	7	9	2006	6	0	42	28.00	1yr-2yr
16	9	6	2007	7	30	42	28.00	1yr-2yr
17	31	1	2001	4	30	41	27.33	1yr-2yr
18	9	2	1992	4	30	40	26.67	1yr-2yr
19	17	2	1993	12	0	40	26.67	1yr-2yr
20	5	5	2001	16	30	39	26.00	1yr-2yr
21	13	4	1994	21	0	38	25.33	1yr-2yr
22	26	2	2006	21	0	38	25.33	1yr-2yr
23	4	2	2002	19	30	38	25.33	1yr-2yr
24	10	4	1998	7	30	38	25.33	1yr-2yr
25	9	4	1998	19	30	38	25.33	1yr-2yr
26	19	5	1998	4	30	37	24.67	1yr-2yr
27	13	10	1999	6	0	36	24.00	1yr
28	10	4	1998	19	30	36	24.00	1yr
29	9	2	1992	3	0	36	24.00	1yr
30	4	2	2002	18	0	36	24.00	1yr
31	15	6	2007	0	0	36	24.00	1yr
32	13	10	1999	7	30	36	24.00	1yr
33	7	3	1994	6	0	34	22.67	<1yr
34	6	5	2001	9	0	34	22.67	<1yr
35	9	6	2007	9	0	33	22.00	<1yr
36	6	5	2001	10	30	32	21.33	<1yr
37	9	2	1992	18	0	32	21.33	<1yr
38	24	3	2003	0	0	32	21.33	<1yr
39	5	5	2001	15	0	32	21.33	<1yr
40	9	2	1992	13	30	32	21.33	<1yr
41	7	9	2006	1	30	30	20.00	<1yr
42	10	4	2001	4	30	30	20.00	<1yr
43	8	11	1999	18	0	30	20.00	<1yr
44	7	9	2006	0	0	29	19.33	<1yr
45	7	8	1998	21	0	28	18.67	<1yr
46	24	1	1999	7	30	28	18.67	<1yr
47	9	2	1992	12	0	28	18.67	<1yr
48	4	2	2002	9	0	28	18.67	<1yr
49	7	3	1993	22	30	28	18.67	<1yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	17	2	1993	10	0	87	43.5	~20yr
2	17	2	1993	12	0	87	43.5	~20yr
3	10	4	1998	10	0	64	32	~5yr
4	10	4	1998	18	0	60	30	2yr-5yr
5	10	4	1998	20	0	58	29	2yr-5yr
6	14	9	1993	2	0	56	28	2yr-5yr
7	26	1	1991	16	0	54	27	2yr-5yr
8	26	1	1991	18	0	54	27	2yr-5yr
9	10	4	1998	8	0	52	26	2yr-5yr
10	31	1	2001	4	0	49	24.5	~2yr
11	10	4	1998	12	0	48	24	~1yr
12	16	2	1991	0	0	47	23.5	~1yr
13	15	2	1991	22	0	46	23	1yr-2yr
14	9	2	1992	4	0	46	23	1yr-2yr
15	9	2	1992	6	0	46	23	1yr-2yr
16	7	9	2006	8	0	46	23	1yr-2yr
17	27	2	2006	0	0	45	22.5	1yr-2yr
18	4	2	2002	20	0	45	22.5	1yr-2yr
19	7	9	2006	6	0	44	22	1yr-2yr
20	9	6	2007	8	0	44	22	1yr-2yr
21	14	9	1993	4	0	44	22	1yr-2yr
22	26	2	2006	22	0	44	22	1yr-2yr
23	19	5	1998	4	0	44	22	1yr-2yr
24	7	3	1994	8	0	42	21	1yr-2yr
25	5	5	2001	18	0	42	21	1yr-2yr
26	5	5	2001	16	0	41	20.5	1yr-2yr
27	7	3	1994	6	0	40	20	1yr-2yr
28	9	4	1998	20	0	40	20	1yr-2yr
29	13	4	1994	22	0	40	20	1yr-2yr
30	31	1	2001	6	0	39	19.5	~1yr
31	10	4	2001	6	0	39	19.5	~1yr
32	10	4	1998	14	0	38	19	~1yr
33	6	5	2001	10	0	38	19	~1yr
34	15	6	2007	2	0	38	19	~1yr
35	13	10	1999	8	0	38	19	~1yr
36	8	11	1999	18	0	38	19	~1yr
37	8	11	1999	20	0	38	19	~1yr
38	19	5	1998	6	0	38	19	~1yr
39	4	2	2002	18	0	38	19	~1yr
40	13	10	1999	6	0	38	19	~1yr
41	27	11	2007	6	0	38	19	~1yr
42	15	6	2007	0	0	38	19	~1yr
43	9	2	1992	18	0	37	18.5	<1yr
44	9	2	1992	20	0	37	18.5	<1yr
45	9	2	1992	14	0	36	18	<1yr
46	10	4	2001	4	0	36	18	<1yr
47	7	9	2006	2	0	36	18	<1yr
48	24	3	2003	0	0	35	17.5	<1yr
49	9	2	1992	12	0	34	17	<1yr

Rank	Date			Time		Depth(mm)	Intensity	ARI
1	17	2	1993	12	0	98	32.67	10yr-20yr
2	10	4	1998	12	0	78	26.00	5yr
3	10	4	1998	9	0	64	21.33	2yr-5yr
4	10	4	1998	21	0	63	21.00	2yr-5yr
5	10	4	1998	18	0	62	20.67	2yr-5yr
6	10	4	2001	6	0	58	19.33	2yr
7	14	9	1993	3	0	57	19.00	2yr
8	9	2	1992	6	0	56	18.67	1yr-2yr
9	31	1	2001	6	0	55	18.33	1yr-2yr
10	26	1	1991	18	0	54	18.00	1yr-2yr
11	10	4	1998	15	0	53	17.67	1yr-2yr
12	26	1	1991	15	0	52	17.33	1yr-2yr
13	19	5	1998	6	0	52	17.33	1yr-2yr
14	4	2	2002	21	0	52	17.33	1yr-2yr
15	7	9	2006	9	0	50	16.67	1yr-2yr
16	27	2	2006	0	0	50	16.67	1yr-2yr
17	16	2	1991	0	0	50	16.67	1yr-2yr
18	17	2	1993	15	0	50	16.67	1yr-2yr
19	9	6	2007	9	0	50	16.67	1yr-2yr
20	9	2	1992	3	0	49	16.33	1yr-2yr
21	31	1	2001	3	0	48	16.00	1yr-2yr
22	27	11	2007	6	0	48	16.00	1yr-2yr
23	17	2	1993	9	0	48	16.00	1yr-2yr
24	7	9	2006	3	0	47	15.67	1yr-2yr
25	4	2	2002	18	0	46	15.33	1yr-2yr
26	7	3	1994	9	0	46	15.33	1yr-2yr
27	7	9	2006	6	0	46	15.33	1yr-2yr
28	14	9	1993	6	0	46	15.33	1yr-2yr
29	6	5	2001	9	0	46	15.33	1yr-2yr
30	31	8	1996	6	0	46	15.33	1yr-2yr
31	13	10	1999	6	0	46	15.33	1yr-2yr
32	13	10	1999	9	0	46	15.33	1yr-2yr
33	5	5	2001	18	0	45	15.00	~1yr
34	9	2	1992	15	0	45	15.00	~1yr
35	4	2	2002	9	0	44	14.67	<1yr
36	6	5	2001	12	0	44	14.67	<1yr
37	13	4	1994	21	0	44	14.67	<1yr
38	4	2	2002	12	0	42	14.00	<1yr
39	9	2	1992	12	0	42	14.00	<1yr
40	24	3	2003	3	0	42	14.00	<1yr
41	14	5	2003	12	0	42	14.00	<1yr
42	9	2	1992	21	0	41	13.67	<1yr
43	15	6	2007	3	0	41	13.67	<1yr
44	9	4	1998	21	0	41	13.67	<1yr
45	21	10	2004	6	0	40	13.33	<1yr
46	7	3	1994	6	0	40	13.33	<1yr
47	7	8	1998	21	0	40	13.33	<1yr
48	16	6	2007	3	0	40	13.33	<1yr
49	8	11	1999	21	0	40	13.33	<1yr

Appendix B

Community Questionnaire

ACTION

This brochure is to inform you about a Flood Study that is being prepared for the Alexandra Canal Catchment area, and invites you to contribute to the successful completion of the study.

COMMITTEE

A Floodplain Management Committee will soon be formed, which will be made up of a number of representatives from relevant authorities as well as community members. This committee will oversee the floodplain management process, and contribute to revisions and reviews.

EXHIBITION

The Draft Flood Study is currently scheduled for completion in June 2010. The community will be invited to view and comment on the Draft Study, when it is displayed at the City's One Stop Shop, neighbourhood service centres and libraries.

www.cityofsydney.nsw.gov.au

YOUR HELP PLEASE?

Our community consultation includes this brochure and questionnaire (for collection of historical flood data). Residents and business operators' local knowledge of the catchment and personal experiences of flooding provide an invaluable source of data. We are specifically interested in any historical records of flooding that the residents might hold, including photos, flood marks or observations. This information would allow the City to understand the current flooding mechanisms in more detail, allowing the City to later invest in the most effective flood hazard management measures.

Please complete the questionnaire and return it in the reply paid envelope, or complete it online at www. cityofsydney.nsw.gov.au (preferred).

FOR FURTHER DETAILS?

Please contact:

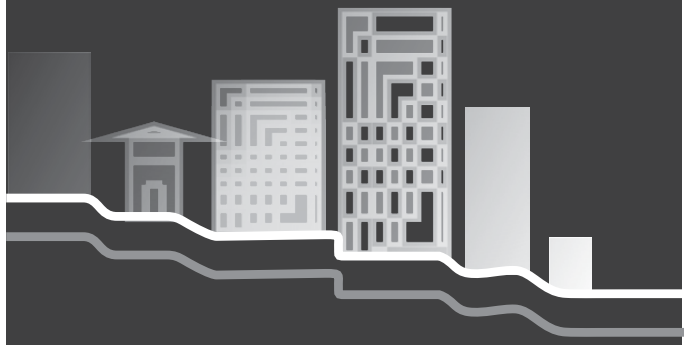
Cardno Lawson Treloar
Rhys Thomson
Ph: 9499 3000

City of Sydney
Myl Senthilvasan
Ph: 9246 7223

To access the questionnaire online visit:
www.cityofsydney.nsw.gov.au

2009

Alexandra Canal Catchment Flood Study



The implementation of sound flood management is important to reduce flood damages, improving social and economic opportunities.

INTRODUCTION

The City of Sydney Council has resolved to undertake a Flood Study for the Alexandra Canal Catchment area. The purpose of the Flood Study is to identify the nature of flooding in the catchment area to enable the City to better understand, plan and manage the potential flood risk.

Under the NSW Government Flood Prone Land Policy, management of flood prone land is, primarily, the responsibility of councils. The Policy specifies a staged approach to the floodplain management process (see flowchart). The City will follow this process in order to manage the floodplain in your area.

OBJECTIVES OF THE FLOOD STUDY

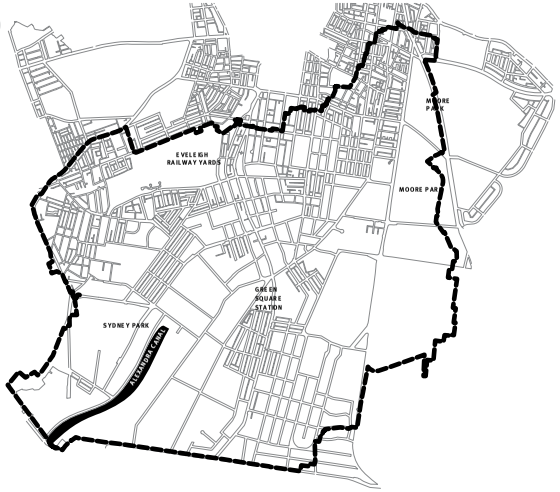
The objectives of the Alexandra Canal Catchment Flood Study are to:

- Investigate historical flooding in the Alexandra Canal Catchment;
- Develop an electronic flood model that can be used to predict the magnitude and extent of future floods; and
- Provide the City with the necessary information to make effective investments in flood management in the future.

THE STUDY AREA AND FLOODING ISSUES

The Alexandra Canal Catchment includes the suburbs of Alexandria, Erskineville, Waterloo, Surry Hills, Rosebery, Beaconsfield, Redfern, Newtown, Eveleigh, Moore Park and Zetland. Their combined catchment area is approximately 14km², and includes residential, commercial and industrial properties, and parkland including Sydney Park and Waterloo Park.

In the past, flooding in the Alexandra Canal Catchment has caused property damage, and posed a hazard to people close to the main drainage channels or drainage paths. Flooding may also occur along natural depressions and near stormwater pits. The City is currently attempting to quantify and understand the extent of these types of flooding within the Alexandra Canal Catchment.

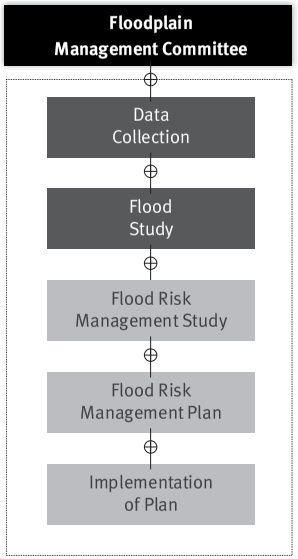


THE FLOOD STUDY

The Alexandra Canal Catchment Flood Study will be based on historical data, and include an electronic model that represents flooding in your area. The information from the Flood Study will help future planning in the City of Sydney LGA.

Following the Flood Study, a Flood Risk Management Study and Plan will be prepared, where specific flood management options will be investigated.

FLOW CHART



Introduction

City of Sydney Council has resolved to undertake a Flood Study for the Alexandra Canal Catchment. The purpose of the Flood Study is to identify the nature of flooding in the catchment area to enable Council to better understand, plan and manage the potential flood risk.

Your local knowledge of the catchment and personal experiences of flooding provide an invaluable source of data.

Question 1

Can you please provide us with the following details? We may contact you to discuss some of the information that you provide in this questionnaire.

Name: _____
Address: _____
Email: _____
Phone(B/H): _____

Question 2

How long have you lived or worked in this locality?

_____ Years _____ Months

Question 3

How aware are you of stormwater flooding from streets or channels in the catchment? (Please tick one)

- ☐ Aware
- ☐ Some knowledge
- ☐ Not aware

Question 8

Did you notice any bridges and/or culverts to be blocked during the event?

☐ Yes ☐ No

If Yes, please provide details (please mark the location on the map if possible, and how blocked would you say it was? (e.g. 50% blocked, 80% blocked). What was causing the blockage?

_____

_____

Question 9

Do you have any evidence of past flood events (eg photos, video footage, watermarks on walls or posts)?

☐ Yes ☐ No

If YES, please give as much detail as possible:

_____

_____

_____

_____

Question 10

If you have any additional information that would facilitate the Alexandra Canal Catchment Flood Study, please provide it in the space below:

_____

_____

_____

_____

_____

Question 11

Are you interested in participating in the Floodplain Risk Management Committee?

☐ Yes ☐ No

If Yes please provide your contact details in Question 1 for Council staff to contact you

Thank you for providing this information. Please remember to place all pages in the reply paid envelope and send to Cardno Lawson Treloar by 28 September 2009. A representative from Cardno Lawson Treloar may contact you in the near future to discuss your response.

Council will keep any persons who respond to the questionnaire included in future mail outs (related to the project).

Your input will allow Council to better understand the current flooding mechanisms, allowing Council to later invest in the most effective flood hazard management measures.

Question 4

Have you ever been inconvenienced by uncontrolled floodwater/stormwater from streets or channels in this locality?

☐ Yes ☐ No

✓	Answer	Dates / Times / Description
	My/our daily routine was affected (eg it was difficult to get to work)	
	My/our safety was threatened	
	Access to our property was affected (eg driveways or roads flooded)	
	Our property and/or its contents were damaged	
	My/our business was unable to operate during the flooded period	
	Other (*please specify*)	

Question 5

Can you remember when that was?

☐ Yes ☐ No

If you answered Yes, please give us as much detail as possible. To assist, flooding may have occurred on the following dates:

June 2007 ☐ February 2001 ☐ April 1998 ☐ February 1993 ☐
January 1991 ☐ January 1989 ☐ November 1988 ☐ Other ☐

Question 6

Has your residential/commercial property been flooded because of uncontrolled floodwater/stormwater from streets or channels in this locality? (surcharge of pits?)

☐ Yes ☐ No

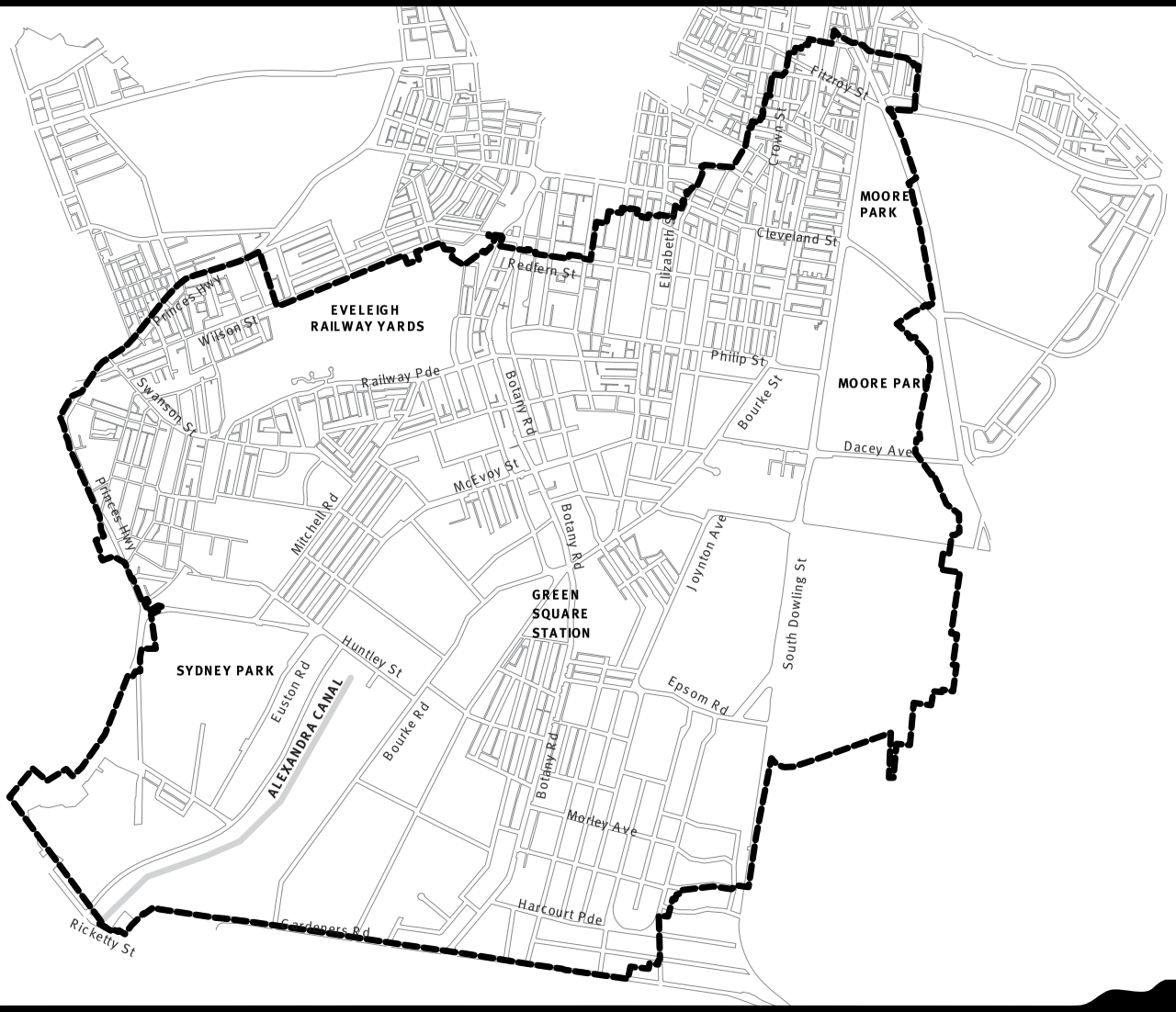
If you answered Yes, where was your property flooded, and when did it occur? (You may tick more than one)

✓	Location	Dates/ Times/ Description
	Frontyard or Backyard	
	Garage or Shed	
	Residential (below floor level)	
	Residential (above floor level)	
	Commercial (eg. Shops) (above floor level)	
	Commercial (below floor level)	
	Industrial (eg. Factories)	
	Other (please specify)	

Question 7

If you have experienced flooding, what other areas have you seen flooded?
(please mark the location on the enclosed map and include with the questionnaire in the reply paid envelope)

✓	Location	Address	Description
	Residential or Commercial		
	Roads or Footpaths		
	Parks		
	Other (please specify)		



CITY OF SYDNEY

Cardno
Shaping the Future

W4785 ALEXANDRA CANAL CATCHMENT FLOOD STUDY

	Q1		Q2		Q3					Q4 Comments											Q5												
Number	Street	Suburb	How long lived or worked in locality? Years	Months	Aware	Some Knowledge	Not Aware	Y	N	Routine affected	Comment	Safety Threatened	Comment	Access affected	Comment	Damage	Comment	Business affected	Comment	Other	Remember When? Yes/No	Jun-07	Feb-01	Apr-98	Feb-93	Jan-91	Jan-89	Nov-88	Other	Property flooded? Yes/No	Front/ Back Yard	Comment
1	Belmont Street	Alexandria	24		1			1		1	I can't be specific - at least six times in past 24 years - Belmont and adjacent streets have been flooded up to doorstep of my house as water has flowed from north to south accumulating in depression at corner of Belmont/Huntley Streets.	1		1		0		0			N									N		
2	Brandling St	Alexandria	3	6			1		1																					N		
3	Victoria Rd	Bellevue Hill	18	6	1			1						1	Various dates/times - usually after heavy rains						N									N		
4	Ralph St	Alexandria	7		1				1																					N		
5	Botany Rd	Alexandria	26		1			1												Clients cars damaged by water (1m high) in Morley Ave - opposite.	N									N		
6	South Dowling St & Epsom Rd	Alexandria	15				1		1																					N		
7	Holdsworth St	Newtown	60				1		1																					N		
8	Bridge St	Erskineville	4		1			1												Intersection between Bridge St & Victoria Rd Erskineville was under water (approx 1 foot deep). Happens about once yearly on average after torrential rain	N									N		
9	Burrows Rd	St Peters	11		1			1		1	Difficult to get to work due to flooding of Burrows Rd.	0		1	Flooded road between Huntley & Canal Rd.	0		0			N									Y		
10	Mandible St	Alexandria		6			1		1												N									N		
11	Telopea St	Redfern	10				1		1																					N		
12	Belmont Street	Alexandria	2			1			1																					N		
13	Shirley St	Alexandria	1	1			1		1																					N		
14	Gowrie St	Newtown	19			1			1																					N		
15	Brennan St	Alexandria	7	2		1			1											Have floodwater when rains heavily - cnr McEvoy & Brennan St.	Y							When it rains	N		
16	Mitchell Rd	Erskineville	15	5		1			1												N											
17	Pleasant Ave	Erskineville	26	1	1			1		1	Can't remember exact dates - think it was 1984 evening had to take time off work.					1	Carpet in kitchen & living room had to be replaced.				Y								1984?	Y	1	Backyard
18	Holdsworth St	Newtown	9	5			1		1												N									N		
19	Loveridge St	Alexandria	5			1		1		1	Winter/Spring 2007/2008 Stormwater covering Loveridge, Brennan, McAvoy St, impeding pedestrian access	0		1		0		0		While stormwater was severe, pedestrians were impeded but little risk to safety. Significant safety issue for vehicles.	Y	1							N		
20	Mitchell Rd	Erskineville	16				1		1																					N		
21	Cope St	Waterloo	1	6	1				1																					Y		

	Q1		Q2		Q3					Q4 Comments											Q5											
Number	Street	Suburb	How long lived or worked in locality? Years	Months	Aware	Some Knowledge	Not Aware	Y	N	Routine affected	Comment	Safety Threatened	Comment	Access affected	Comment	Damage	Comment	Business affected	Comment	Other	Remember When? Yes/No	Jun-07	Feb-01	Apr-98	Feb-93	Jan-91	Jan-89	Nov-88	Other	Property flooded? Yes/No	Front/ Back Yard	Comment
22	Marriott St	Redfern	30			1		1								1	Flooded 900deep 1984 October				Y								Oct-84	Y		
23	PO Box 616	Botany	3	8			1																									
24	Brandling St	Alexandria	2	1	1			1		1	Over past 2 yrs there has been 2-3 times when heavy storms cause Newton Lane (at rear of my residence) to flood due to inadequate drainage at low point.			1		1	Unable to get car out of garage & flooding caused damage to garage roller door and woodrot in timber frame due to extended water exposure.				N									Y		
25	Brandling St	Alexandria	14		1			1		1	Good Friday 10/4/98 8am approx.			1	Car in garage existing in Newton lane was flooded	1	Garage flooded				Y			1						Y	1	backyard Good Friday 10/4/98
26	Mitchell Rd	Erskineville	3				1		1																					N		
27	Septimus St	Erskineville	16				1		1												N									N		
28	Cope St	Waterloo	1	2			1		1																					N		
29	Grandstand Pde	Zetland	6	9	1			1												Traffic issue had to cross to other side of road to get to destination.	Y									N		
30	Macdonald St	Erskineville	10		1			1		1	Driving to work thru Alexandria especially corner Mitchell & Coulson St.										N									N		
31	Bowden St	Alexandria	20		1			1		1				1							N									Y		
32	Burrows Rd	Alexandria	15		1			1		1	Numerous heavy downpours.			1	Numerous heavy downpours						N								Throughout the years- various times Burrows Rd gets flooded.	Y		
33	Charles St	Redfern	1				1		1												N									N		
34	Eve St	Erskineville	5			1		1		1	Spring/summer 2007 - storm led to flooded streets - King St, Coulson St, Lord St.										N								late 2007	N		
35	Pitt St	Redfern	52	11			1	1		1	At times we have to go 50m to cross road when it rains - not othertimes.									Check if stormwater pits are the correct level for water to flow. Sorry - work in some cases.	N							Every time it rains.	N		
36	Mitchell Rd	Erskineville	7				1		1												N									N		
37	Lachlan St	Waterloo	4	6	1			1						1	2007 O'dea Ave was flooded - could not get to unit.						Y	1								N		
38	Ralph St	Alexandria	7				1		1												N									N		
39	Queen St	Rosebery	4	4		1			1																					N		
40	Napolean St	Mascot	7			1		1													N									N		

	Q1		Q2		Q3					Q4 Comments											Q5										
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41	Baptist St	Redfern	40	3	1				1							1	Our roof, ceiling in 1 bedroom, bed & bedlinen. Garden & flowers.			Main area which is severely affected is Baptist St between Phillip to Zamia Streets.	Y			1					1985 & hailstorm in April 1999.			
42	Renwick St	Alexandria	21	4	1			1		1	Not sure of dates.			1							N									N		
43	Spencer St	Rose Bay	20				1	1						1	Nov-88						Y						1			N		
44	Huntley St	Alexandria	7				1		1																					N		
45	Mandible St	Alexandria	2				1		1												N									N		
46	GPO Box 1393	Sydney	48	9	1			1						1	Long time ago						Y								Late 1960's early 1970's	Y		
47	Coulson St	Erskineville	9	6			1		1												N									N		
48	Buckland St	Alexandria	9		1			1												A couple of winters. Our local corner has flooded during heavy rain. Cnr. Buckland/Gerard Sts.	N									N		
49	Morley Ave	Rosebery	13	2	1				1																					N		
50	Eve St	Erskineville	5			1			1																							
51	Boronia St	Redfern	5	5	1															Travelling South down Bourke Rd to Bunnings have driven through water over the road.	Y	1								N		
53	Newton St	Alexandria	5				1		1												N									N		
54	Bowden St	Alexandria	2				1		1																					N		
55	Belmont Street	Alexandria	20				1		1												N									N		
56	Renwick St	Alexandria	4			1			1																					N		
57	Ralph St	Alexandria	3	6		1		1		1	Botany St flooded 40cm water traffic stopped.			1	Issues to & from work damage to car being stuck in water.	1	June 07 flooding of water destroyed nature strips (Ralph/Gillespie Ave)				Y	1							Oct/Sep 2008	N		
58	Botany Rd	Rosebery	22		1			1						1							N	1								Y		
59	Botany Rd	Rosebery	22		1			1						1							N	1								Y		
60	Railway Pde			6			1		1												N									N		
61	Chalmers St	Redfern	3	2		1		1						1	9th Sept. 2009 Even a small storm like this caused inconvenience to people walking on the street.	1	7 Dec 2007 Water ran into our apartment. 26Feb 2008 garage and damaged one of our lifts.				Y							See Q4	Y		
62	Dowell St	Waterloo	1	10		1			1												N									N		
63	Holdsworth St	Newtown	7		1			1		1	Water running down Holdsworth St above level of gutter, ponded at bottom of street against embankment, so deep that there were wheelie bins floating in it.			1							N								Can't remember dates, but it has happened twice in last 5 years - each time there was a day of very heavy rain in a longer spell of wet weather.	N		
64	Wattle St	Ultimo	2				1		1												N									N		
65	Park St	St Kilda West	5				1		1												N									N		
67	Eve St	Erskineville	4	11			1		1																					Y		
68	Highclese Ave	Rockdale	rental property				1		1																					N		
69	Victoria Rd	Beaconsfield	3	4			1	1		1	Flooding on Botany Road 2008. Stormwater near McDonalds Alexandria.																				N		

	Q1		Q2		Q3					Q4 Comments											Q5										
Number	Street	Suburb	How long lived or worked in locality? Years	Months	Aware	Some Knowledge	Not Aware	Y	N	Routine affected	Comment	Safety Threatened	Comment	Access affected	Comment	Damage	Comment	Business affected	Comment	Other	Remember When? Yes/No	Jun-07	Feb-01	Apr-98	Feb-93	Jan-91	Jan-89	Nov-88	Other	Property flooded? Yes/No	Front/ Back Yard	Comment
70	Jones St	Ultimo	5		1				1												N								N		
71	Botany Rd	Beaconsfield	16		1			1		1				1		1					N	1	1	1				Several times since we have lived here.	Y	1	Several times during heavy rain
72	Eve St	Erskineville		4			1		1																				N		
73	Buckland St	Alexandria	10	1			1		1																				N		
74	Clifford St	Mosman					1		1												N								N		
75	Beamish St	Campsie	5	3			1		1												N								N		
76	Mount St	Redfern	12		1			1		1	Numerous times during heavy rain Bourke St North of Green Square & O'Riordan St Sth of Green Square become flooded making driving dangerous. On a couple of occasions in last 3 yrs O'Riordan St has been closed due to flooding.			1	Date unsure, but in last 2 years, street drain at corner of Mount & Charles Streets Redfern was blocked & floodwaters blocked access to our front door.							N								N		
77	Chapman St	Surry Hills	6				1		1																				N		
78	Belmont Street	Alexandria	7	6			1		1																				N		
79	Mitchell Rd	Erskineville	3	7			1		1												N								N		
80	Park St	Erskineville		5		1			1																				N		
81	Smiths Lane	Erskineville	6		1			1		1	Walking Victoria St & Ashmore Rd blocked.			1	Smiths Lane flooded to just over footpaths.						N								N		
82	Mitchell Rd	Erskineville		10			1														N								N		
83	Burren St	Erskineville	4			1		1												Cars on street affected ie rising stormwater from gutters rose & entered many cars on Burren St. Erskinville.	Y							Around early 2009 , late 2008	N		
84	Lawrence St	Alexandria	4	4	1				1																				N		
85	Alexander St	Alexandria	15		1			1						1	Street flooded - blocked drains.						Y			1					N		
86	Rochschild Ave	Rosebery		9			1		1																				N		
87	Ralph St	Alexandria	5	2			1		1																				N		
88	Sterling Circuit	Camperdown	3	6			1		1												N								N		
89	Gadigal Ave, Victoria Park	Zetland	6		1			1												In heavy rain intersection of Gadigal and Joynton Aves flooded, water almost reached restaurant on north west corner of our building.	Y	1							N		
90	Bradford Street	Alexandria	9				1		1																				N		

	Q1		Q2		Q3					Q4 Comments											Q5												
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91	Hunter Street	Waterloo	6		1				1																					N		
92	Ada St	Erskineville	15			1		1						1	3 times in last 15 yrs. Street under 300mm of water						N	1		1	1				2/3 yrs ago, 4/5 yrs ago & 10 yrs ago.	N		
93	Morley Ave	Rosebery	2	1		1			1												N									N		
94	Powell St	Waterloo	4			1		1		1				1						Both of these stem from the fact that when there is heavy rain the area where Powell St meets Bourke St in Waterloo becomes flooded.	Y							When ever rain is particularly heavy			
95	Laveridge St	Alexandria	8	2	1			1		1	Henderson Rd was flooded										N							About 2 months ago.	N		
96	Victoria Rd	Beaconsfield	2				1		1																				N		
97	Bunyip Blue Gum Rd	Faulconbridge	Not at all.				1		1																							
98	Cope St	Waterloo	11		1			1				1	Work as Psychologist in area & patients car was flooded in Cope St. This distressed her greatly & did expensive damage which still causes problems 2.5 yrs later.	1							All cars at the lower end of Cope St were flooded internally causing much permanent damage.	Y	1							N	1	Frontyard received high water.
99	Royal St	Maroubra	30				1		1												N								N		
100	Shirley St	Alexandria		4		1			1												N								N		
101	Rothschild Ave	Rosebery		9			1		1																				N		
102	Olivia Lane	Surry Hills	3	6	1				1																				N		
103	Lachlan St	Waterloo					1		1											No specific flooding that disrupted.	N								N		
104	Queen Street	Rosebery	6	5		1		1		1	Heavy rain in Winter 2006 flooded Gardners Rd near O'Riordan St and Kent Road.										Y							Winter 2006	Y		
105	Belmont Street	Alexandria	10		1			1		1										Projects on which I worked were affected & we made special provisions for future flooding (flood barrier) along Powel St in Waterloo for the developments on the former Chubb site.	N								N		
106	Coulson St	Erskineville	12	9	1			1						1	Flash flooding over last decade causing road flooding.						N								Y		
107	Mitchell Rd	Alexandria				1			1												N								N		
108	Telopea St	Redfern	7			1			1												N								N		

	Q1		Q2		Q3					Q4 Comments											Q5											
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109	Pleasant Ave	Erskineville	15			1		1						1	Our street/pavement outside our house has flooded about 5 times.						N									N		
110	Stedman St	Rosebery		10		1			1												N									N		
111	Bourke Rd	Alexandria	4	4		1		1		1	Road flooded cnr. Bourke Rd & Huntley St Alexandria & Bourke Rd & Gardeners Rd.										N									N		
112	Brennan St	Alexandria	7	6		1			1												N									N		
113	Nobbs St	Surry Hills	3				1														N									N		
114	Nobbs St	Surry Hills	14	11		1		1						1	Limited flooding in underground garage						N									Y		
115	Bourke Rd	Redfern	8				1		1																					N		
116	Baptist St	Redfern	5		1				1												N									N		
117	Nobbs St	Surry Hills	3	2			1		1																					N		
118	Mitchell Rd	Erskineville	6	7		1			1																					N		
119	Joynton Ave	Zetland	7	3	1				1												N									N		
120	Belmont Street	Alexandria	27			1			1																					N		
121	Mandible St	Alexandria	4		1			1						1	Road flooding 7/12/07 difficult to access area.					Botany Rd, O'Riodan St frequently flood over with excess water. Also Henderson Rd frequently floods with excessive rain.	Y							April 2008?	N		
122		Erskineville	4			1			1												N									N		
123	Lawrence St	Alexandria	28	9	1			1						1	Regularly after heavy rains Lawrence St gutters are running 2-3m wide.	1	During 1999 Hailstorm minor damage - water ingress via hail damaged skylight.			Flooding thru Sydney Park pond system to top of handrail on pond with island.										Y	1	Backyard Nov88? Yard 150mm under
124	Victoria Park Pde	Zetland	3	2			1		1												N											
125	Botany Rd	Waterloo	8		1			1		1	Slowly down O'riordan St.										N									N		
126	Ralph St	Alexandria	3				1		1																					N		
127	Boronia St	Redfern	9		1				1																					N		
128	Dellview St	Tamarama	2				1		1																					N		
129	Pindari Ave	Camden	27				1		1												N									N		
130	Mitchell Rd	Alexandria	2				1		1												N									N		
131	Mitchell Rd	Erskineville	9		1				1											Not a daily occurrence, just affected on ad hoc basis driving down streets impassable by stormwater flooding - around Canal Rd	Y	1	1							N		

	Q1		Q2		Q3					Q4 Comments											Q5												
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132	Cornelia St	Wiley Park	4	6	1				1																					N		
133	Ashmore St	Erskineville	26		1				1												N									N		
134	Rothschild Ave	Rosebery		3		1			1											Live in new apartment in rosebery - never been inconvenienced by uncontrolled floodwater or stormwater.										N		
135	Victoria St	Beaconsfield	60		1			1								1	Mainly carpets replacement.			Since 1951 have been flooded out many times - but not past few years - carpets had to be replaced - water came up thru bathroom & kitchen floor.	Y							Before these dates.	Y	1	
136	Nobbs St	Surry Hills	31			1		1						1	4 January 1989 in afternoon. 8 November 1984 in morning. 5 August 1986 day time.					I have exact times of rainfall events from pluviograph data since I published in 1994 a detailed analysis of Sydney flash floods 1957 to 1991 from a meteorological perspective. Please note - worked as meteorologist in Bureau of Met. Sydney and am now Visiting Research Fellow at Climate Change Research Centre UNSW.	Y						1	1	Y		
137	Walker St	Waterloo	10			1		1						1	Following all heavy downpours water builds to 75-100mm deep in kerb & gutter immediately outside my property.						Y							All heavy downpours.	N		
138	Eve St	Erskineville	4	5			1		1												N									N		
139	Lawrence St	Alexandria	10		1			1		1				1						Whenever it rains heavily our street is flooded to bottom of car doors as drains overflow.	Y		1						Every heavy rainfall.	N		
140	PO Box 795	Woy Woy 2256	45			1		1		1				1							N									N		
141	Park St	Erskineville	24				1		1																					N		
142	Jennings St	Alexandria	10		1			1		1	Flooding in Maddox St years ago.																			N		
143	Grandstand Pde	Zetland	6				1	1		1	During or after big rain.			1	During or right after big rain.					Our cars swimming in flooded road, damaging the engine.	Y/N							Right after or during big rain.	N		
144	Gadigal Ave,	Zetland	5	8		1			1																					N		
145	Mandible St	Alexandria	2			1			1																					N		
146	Abercrombie St	Darlington	25	1	1			1		1	Flooding occurred early Oct. 1984 my car was flooded up to seats - engine damaged - unable to go to work.					1	10/1984 flooding - back part of my house was flooded & backyard.				Y							Oct-84	Y	1	
147	Rothschild Ave	Rosebery		9			1		1												N									N		
148	Bowden St	Alexandria	9			1			1																					N		
149	Powell St	Waterloo	5	9	1			1		1	On Joynton Ave near Elizabeth St.										Y	1								N		
150	Young St	Redfern	9			1			1												N									N		
151	Harbourview Cres.	Millsons Point 20	5		1				1																					N		
152	Newton St	Alexandria	9			1															N									Y	1	

	Q1		Q2		Q3					Q4 Comments											Q5												
Number	Street	Suburb	How long lived or worked in locality? Years	Months	Aware	Some Knowledge	Not Aware	Y	N	Routine affected	Comment	Safety Threatened	Comment	Access affected	Comment	Damage	Comment	Business affected	Comment	Other	Remember When? Yes/No	Jun-07	Feb-01	Apr-98	Feb-93	Jan-91	Jan-89	Nov-88	Other	Property flooded? Yes/No	Front/ Back Yard	Comment
153	Botany Rd	Alexandria	2				1		1																					N		
154	Brandling St	Alexandria	72	8	1			1						1	15-20 years ago? Approx, cars & houses were flooded at bottom of street.					My house is 1/4 way up from bottom of street luckily house is built higher from ground - the water did come up to front gate.	N							1980's?	N		
155	Botany Rd	Alexandria		11	1			1						1							N								N		
156	Lawrence St	Alexandria	17		1			1		1	Laurence St - huge volume of water runs down street during storms. Level rises to pavement regardless of drian (corner of Maddox & Laurence Streets) spreads across street.			1	Prior to street level being raised, small cars often flooded (floor level) if parked parallel to pavement. Significant volumes of water run down street to go down drain at corner of Huntley & Laurence Sts.						N							The situation occurs with storm flooding.	Y	1	Due to volumes of water in Laurence St water seems to push back up my drain pipes (possibly original 1880) and small front yard is flooded. Has not risen above 10cm step into my house.
157	Grandstand Pde	Zetland	6	10			1		1												N								N		
158	Belmont Street	Alexandria	4	5		1		1												Walking across road to bus stop was difficult due to flooding - had to walk around drains.	N								N		
159	Cope St	Waterloo		6		1			1																				N		
160	Eve St	Erskineville	2	6		1		1		1	Unable to walk to station via normal route.										Y							Dec.2007 Area marked on map flooded for a few days.	N		
161	Belmont Street	Alexandria	20			1														Minor flooding at cnr. Belmont & Huntley St many years ago no inconvenience experienced.	N								N		
162	Erskineville Road	Newtown	1	5			1		1												N								N		
163	McDonald St	Mordialloc 3195	Investor				1		1												N								N		
164	Phillip St	Waterloo	4	3			1		1																				N		
165	Shirley St	Alexandria	5	4			1		1												N								N		
166	Nobbs St	Surry Hills	1				1		1																				N		
167	PO Box 7056	Brighton 3186	1				1		1												N								N		
168	Chalmers St	Redfern	1	6	1			1						1	Feb 2007 excessive flooding into carpark of building caused lift malfunction. Inconvenienced for 1 week.						Y							Feb-07	Y		
169	Norman St	Darlinghurst	6				1		1																				N		
170	Erskineville Road	Newtown	6	9		1		1						1	Angel St					Difficulty crossing King St at corner of Wilson St. Also staying dry on Erskineville Rd at Bridge due to flooding on road.								Aug-04	N		

	Q1		Q2		Q3					Q4 Comments											Q5											
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171	Park St	Erskineville	4		1			1		1	O'Riordan St in Alexandria was closed/flooded several times during heavy rain. Sometimes it is closed off, or if not it is unuseable & dangerous to drive thru.										Solander Park on Park St Erskineville gets flooded very easily. Creates a very muddy area.	Y	1								N		
172	Berith St	Auburn	3		1			1													N									N		
173	Victoria Park Pde	Zetland	2	2		1		1		1	2009 Can't remember exact date - raining after work - a lot of water on street - not floodwater.											Y								1	N		
174	Phillip St	Waterloo	4	1	1			1		1	Cnr Young & Danks St - late afternoon - Danks St Festigal 2007 - half road inundated after heavy downpour.	1	See previous	1	Oct/Nov 2007 - but numerous times					These flooding episodes happen when there is a quick but severe storm.	Y	1						Late Oct 2007 during Danks St Festival.		Y			
175	Mullens St	Balmain	8	6		1		1		1	Sunday Afternoon Early 2006		Not really, however road was closed to public on hour later.		Our address was unaffected.	0				Nothing of any significance - only area reguarly flooding is Rickerty St & Canal Rd near Airport.	N									N		
176	Rosedale Rd	St Ives	29	6			1		1												N									N		
177	Harcourt Pde	Rosebery	40		1			1		1	Luckily mainly on weekends or evenings so getting to work or school not a problem			1	Dates unknown - driveway, road & footpath knee deep.	1	Water did not enter house.				Y							Jan 1996 & Jul 2009		N	1	Water reached first step leading to house - could not see the grass.
178	Phillip St (now 3 Bank St Richmond 3121	Waterloo	7				1		1												N									N		
179	Morley Ave	Rosebery	4	11	1			1		1				1	2007? Morley Ave flooded during heavy rain.						Y	1								N		
180	Brandling St	Alexandria	50+		1			1		1	1980's			1		1	Vehicles				N									Y	1	Front - 1980's
181	Kingsclear Rd	Alexandria	39		1			1								1	Good Friday 1997 house flooded.				Y									Y		
182	PO Box 24	Nowra 2541	15	5			1		1																					N		
183	Shirley St	Alexandria	7			1		1						1	The apartment complex has driveway access in Ralph St in heavy rains it floods here.						Y							2008 & 2009		N		

	Q1		Q2		Q3						Q4 Comments										Q5											
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184	Bourke Rd	Surry Hills	18	10	1			1		1	Difficult to get to work as it was necessary to walk thru water.			1	Difficult to access front door.					This incident of flooding was sometime in the early 90's and water just came pouring down Rainford St right up to my front step. If it had come over step water would have been inside house.	Y				1	1				Y	1	Feb 1993/7pm thru to midnight. Water rushing down Rainford St.
185	Phillip St	Waterloo	30		1			1		1	1985					1					Y								Aug or Sept 1985	Y	1	
186	Grandstand Pde	Zetland	2				1		1												N									N		
187	Cope St	Waterloo	4	6	1			1												My company car has been flooded twice resulting in damaged carpets & computer under dash board.	?								October 07?	Y	1	Flooded up to front tiles.
188	Cope St	Waterloo	25		1			1		1				1							N			?	?	?				N		
189	Chalmers St	Redfern	2	6	1			1		1	7/12/2007 stormwater flooded building garage and lift well breaking the lift. 26/2/2008	1	As previous	1	As previous					On both occasions stormwater flooded from the street into our building and from there into lift well, breaking lift. We have had to install extra concrete step in front of lift to prevent further damage.	Y									Y		
190	Park St	Erskineville	25		1			1		1	Minor change of route because of water over roadways.										N								Every heavy rainfall.	N		
191	Rothschild Ave	Rosebery		6			1		1												N									N		

	Q1		Q2		Q3					Q4 Comments											Q5												
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192	Kingsclear Rd	Alexandria	27		1			1						1		1				During heavy downpour storm water flowing down Kingsclear Lane could not drain from this "dead end" St (due to high retaining wall) The banked up water flowed thru properties on Kingsclear Rd also some properties in Alexander St including the Benevolent Society Nursing Home yard.	Y							1	Best I can remember is mid or late 80's	Y	1	Water built up in back land and flowed thru several houses in Eastern side of Kingsclear Rd, also property in Alexander St. Water rose 300mm above floor level in my property
193	Wilson St	Newtown	8				1	1						1	June 2009 water flooding out of street gutter across path and into house path. Due to slope water then sits on house pathway. Flood risk as house has basement - some minor water seepage suffered into basement.						Y								During wet weather spell in June 2009 - I think.	Y	1	June 2009, front path, standing water
194	Nobbs St	Surry Hills	7		1			1												My apartment ground floor was flood damaged prior to my purchase in 2002.									Friends in Arthur St Surry Hills were affected which is next to Nobbs St. Surry Hills flooded after 1995 - not sure of date.	Y		
195																																
196																																
197																																
198	Eve St	Erskineville	16				1		1							1	Only large hail storm May 1999.												N		
199	Morley Ave	Rosebery	2	5		1										1	1.5 yrs ago approx. my car was completely flooded by flooding of stormwater drain in Morley Ave.				N								N		
200	Phillip St	Waterloo	14				1		1																				N		
201	Macdonald St	Erskineville	2	9		1		Y												Path through the industrial estate was flooded.		1							N		
202	Epsom Rd	Zetland	10				1		1																				N		
203	Unwins Bridge Rd	St Peters	30				1		1												N								N		
204	Buckland St	Alexandria	26		1			Y								1	Nov 1988 my kitchen floor was almost level with backyard surface and the constant rain soaked soil & rainwater could not run off properly and the water covered the kitchen floor.					Y						1		Y	See Q4	
205	Baptist St	Redfern	5				1		1																				N		

	Q1		Q2		Q3					Q4 Comments											Q5												
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206	Newton St	Alexandria	12				1		1												N								N		
207	Spring St	Rosebery	1				1														N								N		
208	Hunter Street	Waterloo	2	2		1		1						1	Approx Nov 2007 Hunter St & Bourke St Waterloo Flooded after a heavy storm.						Y							Nov 2007 approx.	N		
209	Restwell Road	Bossley Park	rental property				1		1												N								N		
210	Arthur St	Surry Hills	15			1			1												N								N		
211	Renwick St	Alexandria	27		1				1																				Y		
212	Powell St	Waterloo	9		1			1				1	Flooding around Bourke St & Powell St intersection (near The Taylors College/Jimmy Possum Store) when there is heavy rainfall.	1						Y							Winter (July) 2009	N		
213	Spring St	Rosebery		3	1				1												N								N		
214	Victoria St	Beaconsfield	4		1			1				1	I was concerned that my car would not make it thru the flooded section.							Y	1								N		
215	Botany Rd	Waterloo	15			1		1		1				1			No, but water came very close to entering the shops.	1		The stormwater drainage does not cope with heavy rainfall on our part of Botany Rd.	Y							Latest was 2008 - we rang Council.			
216	Locked bag 5010	Alexandria	26		1			1								1		1			N							About 2-3 times/year!!!	Y		
217	Weedmouth Ave	Rosebery	36	2	1			1		1	1974, 1986, 1989 - could not get through Lentall St (near Epsom Rd)					1	Slightly - backyard was flooded, mulch & debris flowed in from neighbouring properties & pets would have drowned had I not been home.				Y					1		1987 or 1986 and 1974	Y	1	1973 or 1974, 1989 Jan
218	MacDonald St	Erskineville	13		1				1																				N		
219	Grandstand Pde	Zetland				1			1												N								N		

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	Q6													Q7											Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
1																Have not seen other areas flooded because I could not leave my house!!!								N		N		
2																								N		N		
3																	1	Birmingham St, Alexandria	Road & footpath flooded - Ellis Ave Cnr.					N		N		
4																												Canal behind our business complex needs cleaning of litter etc as its' a fire hazard. City of Sydney own the land but will not attend to area.
5														1	Botany Rd	Between Morely Ave & Beaconsfield Rd.	1	Between Morely Ave & Beaconsfield Rd.						N		Y	Have photos (somewhere) of flooding in Morely Ave & Botany Rd, Alexandria	
6																								N		N		
7																								N		N		
8																	1	Corner Bridge St & Victoria St Erskineville	Area under railway bridge completely inaccessible to car and pedestrian due to flooding.					Y	Passage underneath railway Bridge (cnr Bridge & Victoria St - at least a foot of water - Cncl erected road closure sign - 100% closed.	Y	Believe council may have records of road closure. Also have access to photo of area showing flooding occuring as early as the 60's.	Notes on map.
9							1							1	Burrows Rd	Driveways & offices	1	Rds & footpaths						N		N		
10																								N		N		
11																								N		N		
12																	1	Across the road from Belmont St	Whenever it rains, water creates large pool in gutter about 1m across, 10m long.					N		N		Mark on map
13																								N		N		
14																								N		N		
15																	1	McEvoy & Brennan St.	Can't explain.					N		N		
16																								N		N		Live in an apartment block - walk to work - don't think my info is that useful.
17			1	Kitchen & Living room																				N		N		Were told that it was combination of very heavy rain & king tide. Drains were too small to cope. Since then back lane drains have been enlarged. Back lane is Parker Lane at rear of Pleasant Ave.
18																								N		N		
19																	1	Brennan, Loveridge, McEvoy Streets.	Stormwater up to 40cm deep at curb & covering east.....Lane in McEvoy St.					N		N		Mark on map
20																								N		N		
21			1	Car Park																				N		N		

	Q6													Q7										Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	Res/ Com	Address	Description	Roads/ Footpaths	Address	Description	Parks	Address	Description	Other	Yes/No	Comment	Yes/No	Comment	Additional Information
22					1	Oct.1984 approx 10p.m.							Flooded to a depth 900mm in 1984. The Waterboard was doing large excavation work at North end of our street at the time.				1	Our address	At least two occasions since 1984 - approx 1994 the water has risen to our front door since.					N		N		Drains in our street are sometimes full of refuse. We have contacted Council and they come and clean it. However this should be done on an annual basis.
23																	1	Cnr. Pitt & Cleveland Sts on side same as PO Building	There is a large pool of water that collects on road which sprays pedestrians.	1	Alfred Park	The track crossing park turns into a bog when it rains. Pathway by school is too broken.		N		N		Why is there no water harvesting done in Sydney. There is a valuable resource going to waste into the sea. Collect this water & purify it then sorts the water shortages out!!
24	1	Believe it was Winter 2008.												1	Brandling St.	See Q4								N		Y	Damage to garage - watermarks & woodrot.	
25	1	Garage			1								All storm drains were blocked on Friday 10/4/98.				1	Brandling St, Newton Lane, Kingsclear St.										Flooding in Brandling St, Newton Lane & Kingsclear St caused damage to most parked cars. (the Alex.Canal was flooded) Storm drains in these streets could not accept the rainwater. I had my car repaired at a cost of $1,000. Reported flood at time to Mr. Philip Gratton at City of Sydney Cncl.
26																										N		
27																								N		N		
28																								N		N		
29																	1	Cnr. Danks & Young St Waterloo	Suspect drains blocked, several occasions each year water on road required travel other side follows heavy rainfalls.					N		N		Mark on map
30			1														1							N		N		
31													Driveway flooded could not enter our complex.											Y	90%	N		
32													Road at front of building gets serious flooding on many occasions.				1	Burrows, Euston Rds.								Y	Garden beds eroded.	
33																								N		N		
34																				1	Sydney Park, Alexandria	Sydney Park is regularly flooded & water takes months to drain properly away.		N		N		
35																	1	Pitt & Wells St crossing becomes little river.	Flooding because stormwater pipes blocked by debris - need clearing regularly plus barrier to stop debris.					N		N		
36																								N		N		
37														1	Lachlan St.	Outside Lachlan St.	1	O'dea Ave	Near Kennards Storage.					N		N		
38																								N		N		
39																								N		N		
40																								N		N		

	Q6													Q7											Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
41																												When it rains the water is unable to go into gutters (street gutters) unaided because of the tree roots.
42														1	Intersection of Mitchell Rd & Anderson St.		1	Botany Rd, Odea Ave, Bourke Rd.						N		N		
43														1	Mitchell Rd		1	local		1	Erskinville Oval			N		N		
44																										N		
45																								N		N		
46											1	Late 1960's early 1970's												N		N		
47																								N		N		
48																	1	Cnr Buckland/Gerard	During heavy rain the whole corner floods - nearly to our house.					N		N		
49																								N		N		
50	1		1	At times of heavy rain, parts of our common parking area become flooded (there are 2 dips where it occurs). Last up to 1 hour - Eve St. Erskineville														1	Cnr. Bridge & Victoria St Erskineville	About 1 foot of water of about 50 square metres.	1	Sydney Park	Large puddles & muddy lasting for weeks.		N		N		
51														1	Surry Hills Shopping Centre car park	Localised flooding in bottom section of carpark approx 200mm deep.							Young St end of Boronia St water on road up to footpath.	N		N	Neighbour has lived in area 40 years & tells stories of having to replace the carpet twice but a new drain has fixed this problem in Boronia St.	Mark on map
53																								N		N		
54																										N		
55																								N		N		
56																	1	Botany Rd near Wellington St Waterloo	Road flooding 2007					N		N		Mark on map
57																	1	Botany Rd 2008, McEvoy 2008/07, Ralph St 2008.		1	Alexandria Park 2007			N		N		Mark on map
58									1					1	Botany Rd Alexandria & Rosebery	50cm of water	1	Botany Rd Alexandria & Rosebery	50cm of water					N		N		
59									1					1	Botany Rd Alexandria & Rosebery	50cm of water	1	Botany Rd Alexandria & Rosebery	50cm of water					N		N		
60																								N		N		
61	1	As per Q4 - apartment,garage was flooded during these two events.															1	Bourke Rd Alexandria	Sections of the street were flooded immediately after thunderstorm. I was travelling from Green Square Junction to Gardeners Rd using Bourke Rd.					N		N		
62																								N		N		
63																	1	Wilson St.	Drains blocked or backed up and water up to and over gutters.					N		N		Mark on map
64																								N		N		
65																								N		N		
67			1	Unerground carpark Oct/Nov 2004.													1	Cnr. Mitchell Rd & Coulsen Sts.	Flooding Gutters					N		N		Mark on map
68																										N		
69																	1	Botany Rd	Various in stormwater flooding	1	Sydney Park	Paths flooded		N		N		

	Q6													Q7										Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
70																								N		N		
71					1	Several times during heavy rain								1	Corner of Botany Rd & Collins St.		1	Corner of Botany Rd and collins St.						N		Y	Some old photographs showing "tide marks" in our house and yard sunken corner of our front courtyard.	
72																										N		
73																								N		N		
74																								N		N		While it is obvious this issue is a problem for some. I have never experienced any problems. I own an investment in the area which has not suffered. I lived within the wider area (Newtown) from 2005 to 2009 (early).
75																								N		N		
76																	1	Bourke St North of Dacey Ave. O'riordan Street South of Green Square	Roads & footpaths flood during heavy rain. On two occasions I have seen O'riordan St closed by floodwaters.					N		Y	Flooding caused by blocked drain on cnr. of Mount and Charles St. Redfern caused the footpath to subside couple of inchs. Damage was repaired but is still evident on closer inspection. Part of the roadway at this point has also subsided.	Mark on map
77																										N		
78																										N		
79																								N		N		
80																	1	Ashmore Rd	Beneath Rail Bridge/Intersection ..... St, Erskinville Road severely flooded.					N		N		
81																	1			1	Harry Noble Park	Large ponds near playground up to 4 days after heavy rain.		N		N		
82																								N		N		
83																	1	Burren St (near dead end)	Leaves blocked drains, water rose to such an extent that it rose above doors & flooded several cars.					Y	100% blocked drains (what are culverts?) Leaves & rubbish.	N		Mark on map
84																								Y	80% debris caught in grids in gutters.	N		
85																								N		N		
86																	1	Alex- O'riordan St	Flooding					N		N		
87																								N		N		
88																								N		N		
89																	1	Joynton Ave south of Elizabeth St intersection.						Y	Cnr Gadigal & Joynton	N		Sketch on submission
90																										N		

	Q6													Q7										Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
91																	1	Hunter St Waterloo [see (1) on map] Bourke St at Powell St Junction Waterloo [see (2) on map]	Flash floods due to heavy rain. Cars were washed down street on one occasion. Happens during heavy rain regularly. Road surface regularly washed away during heavy rain. New road surface already breaking up.					N		N		Mark on map
92																	1	Ada St	Water build up during & after torrential rain, road 300mm under water					Y	Road/kerbside drains were blocked (see map)	N		Mark on map
93																								N		N		
94																	1	Cnr. Bourke St & Powell St Waterloo	So much water amasses quite quickly that one drives around another way.							N		
95																				1	Technology Park Oval	I was partially flooded.		N		N		
96													Botany Rd & McEvoy Rd Alexandria. Street closed off for months & affected traffic flow in both directions											N		N		
97																												
98																	1	Cope St Waterloo	High water getting inside the whole street of parked cars.					N	Did not go into street but was told by rescue team that the stormwater channel was blocked and overflowed huge amounts of water.	Y	Sydney City Mission who previously owned my property were aware of my property being flooded about 25-30 years ago.	An officer should keep regular checks on all stormwater channels to make sure they are not blocked - in case of a heavy downpour of rain. Mark on map
99																								N		N		
100																								N		N		
101																								N		N		
102																								N		N		
103														1	Victoria St, Potts Point	Everytime in heavy rain street would flood in gutters making it impossible to cross street. *Not relevant for this area.	1	Johnton Ave	Heavy rain gutters blocked & was difficult to cross road.					Y	Gutter about 50% blocked with leaves/sticks.	N		Mark on map
104			1	Basement after heavy rain - can't remember when.																				N		N		
105																	1	Powell St, Bourke Rd, Bowden St, Cnr of Lawrence & Fountain St. Euston Rd	Occurs at every heavy downpour.					Y	Debris/leaves/branches	N		Mark on map
106														1			1							Y	Soil from streets leaves from neighbouring property's trees	N		Mark on map. Have frequently phoned to ask for stormwater drains to be cleared on corner of Eve St & Coulson St.
107																								N		N		
108																	1	Telopea St	Flooding of kerbside to centre of road					N		N		Please contact by email only

	Q6													Q7										Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
109																	1	Pleasant Ave	Road & footpath outside our house	1	Victoria St	Under railway bridge sometimes too much to drive through		Y	Couldn't drive under the railway bridge in Victoria Rd. Blocked by excessive water on road too deep to drive thru.	Y	Sketch on survey form.	
110																								N		N		
111																	1	Parramatta Rd. Summer Hill	Varies across the lanes to 400-500mm deep					N		N		
112														1	Botany Rd	Not due to rainwater but construction destroying a water main	1			1	Alexander Park	Small areas in park in heavy rain have large area of water		N		N		
113																										N		
114	1	Underground garage slight flooding.																						N		N		
115																								N		N		
116																								N		N		High level of rising damp in houses/buildings in some parts of the catchment - altered subterranean flows. It would be important to investigate/map/quantify subterranean water especially as aquifers are known to occur with increased hard surfaces & obstructed water flow (eg tunnels, underground buildings, cuttings.
117																								N		N		
118																				1	Sydney Park, Erskineville	Footpaths & grassed areas.		N		N		
119																	1	Cnr Joynton Ave & O'Dea Ave	Water overflows from kerb to footpath during heavy rain					N		N		Marks on map
120																								N		N		
121																	1	Botany Rd (near Henderson Rd)	river of water (no drainage?)					N		N		Marks on map
122																								N		N		
123					1	Units across road had carpark flooded to 1 metre.								1		Unit carpark flooded Lawrence St Alex. SES/Fire Brigade pumped it out.	1	Lawrence St between Maddox & Huntley	Road up to 300mm deep at gutter.	1	Sydney park			Y	Cardboard 95% blocked laneway drains - since the conc.lintel added. Trapped pits not maintained enough & plastic bottles floating/blocking pits.	Y	Sighting of flood at top railing of bridge on pond in Sydney Park - Nov.08?	Marks on map
124																												
125																	1	O'Riordan St.						N		N		
126																								N		N		
127																								N		N		
128																								N		N		
129																								N		N		
130																								N		N		
131																	1	Canal Rd, Euston Rd? (not sure of name) Street surrounding back of tip off Canal Rd.						N		N		

	Q6													Q7										Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
132																							N		N		
133																	1	Victoria Rd Erskineville	Water on Rd under railway overpass.					Y	50% water	N		Mark on map
134																							N		N		
135	1		1		1		1		1		1		All of these - can't remember dates.										N		N		
136			1	Kentall St 8 Nov. 1984 when rainwater from st. entered under front door at floor level.													1	Nobbs St, Surry Hills. Kendall St Surry Hills	Road flooding.	1	Centennial Park	Allison Rd flooding.		Y	Road 80% blocked outside Nobbs St on 4 Jan. 1989 - litter most likely.	N		Marks on map
137																	1	Walker St, Waterloo	As previously described.					N		N		
138																							N		N		
139																	1	Cnr Maddox & Lawrence Sts also cnr Maddox & Bourke Rd.						N				Marks on map
140																	1							Y	100% general rubbish	N		
141																							N		N		
142																							N		N		
143																	1	Johnton Ave						Y	80% blocked by leaves & rubbish.	N		
144																							N		N		
145																							N		N		
146					1								Car - engine flooded Oct 1984.				1	Buckland & Wyndham Sts.	Flooded very high and moving very fast.	1	Buckland St.	Alexandria Park		Y	Drains on all corners of Buckland St & Wyndham St intersection were approx 80% blocked from leaves etc.	N		October 84 floods - there had been heavy rain for several days prior. Streets were not cleaned regularly (as they now are) and the build-up of leaves etc. in gutters caused blocked drains when the rain came.
147																							N		N		
148																							N		N		There is a canal in front of my warehouse, but we have not had flooding or overflow of the canal in the last 9 years. (2000 - 2009)
149																	1	Joynton Ave near Elizabeth St.						N		N		Have heard that Wyndham St near Green Square can flood but have not witnessed it. Mark on map
150																							N		N		
151																									N		
152					1	Not sure of date - happened before moved in. Neighbours in block told me.																	N		N		

	Q6													Q7										Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
153																										N		
154														1	End of Kingsclear Rd	Last house in street had extensive damage.	1	Allan Lane end of Brandling St & Kingsclear Rd.						N		N		Mark on map. Bigger drains were put in and improved the drainage in our street & Lanes. I have seen water come up the street if the drains are blocked with leaves. This happens when there are very heavy rain falls.
155																	1	Botany Rd						N		N		
156																	1	Cnr. Maddox & Laurence St. Alexandria	Flooded road - remains after storm - work done on that corner has not really fixed the drainage problem - gum trees along Laurence & Maddox Sts drop leaves continually so block drains.					Y	Cnr Maddox & Laurence St blocked by leaf litter - water spreading down Laurence St to Huntley St.	N		Gum trees have increased level of rubbish in streets - Council needs to clear and mayby plant different trees.
157																								N		N		
158																	1	Belmont Lane near Huntley St. Mitchell St near Coulson	Flooding near drains due to heavy rainfall and leaves.					N		N		
159																								N		N		
160																								N		N		Mark on map
161																								N		N		Have recently found that stormwater pipes under road near my property partly blocked with sand/soil because of gaps in them This could cause local flooding.
162																								N		N		
163																										N	Tennant never mentioned it.	You may get a better response from tennants than owners. The map enclosed was missing all streets in Victoria Park eg. Gadigal Ave, Grandstand Pde, etc.
164																								N		N		
165																								N		N		
166																								N		N		There are always floods on main road (O'Riordan) just outside and past Green Square Station. Everytime it rains there are huge puddles and it is impossible to drive. I take that road everyday to work. I marked the area on the map included. Mark on map.
167																								N		N		
168	1												Also Redfern Park - frequently floods after heavy rain - serious pooling of water.							1	As previous.			N		N		
169																								N		N		
170																	1	King St (corner of Wilson St)						N		N		

	Q6													Q7										Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	Res/ Com	Address	Description	Roads/ Footpaths	Address	Description	Parks	Address	Description	Other	Yes/No	Comment	Yes/No	Comment	Additional Information
171																	1	O'Riordan St, Alexandria		1	Solander Park, Park St, Erskineville.			N		N		
172																								N		N		
173																								N		N		
174	1	Basement carpark - our residential development was built on top of old water reservoir according to Council Documents. It is possible the water table rises & partially floods our basement carpark (in corner) due to this history.															1	Cnr Young & Kanks St, Young & Phillips, O'riordan St & Botany St.	Road flooded - Waterloo	1	Cnr Driver Rd & Lang Rd Centennial Park, Waterloo Oval	Severe flooding at the intersection.		Y	With exception of corner of Young St & Phillip St (50% blocked by leaf litter) all other examples cited are 100% blocked - See Map	Y	Watermarks on walls & Photos in terms of the underground basement carpark.	The installation of bioswales & stormwater traps in new developments and in problem areas should be carried out. New infill development in Waterloo eg along Danks St should have bioswales. Alexandria Canal should be restored or upgraded to accommodate larger floods.
175														1	MacDonaldtown Station	As per Q4	1	Erskineville Park	Minor Rd & Footpath.					Y	100% closure of Burren St under rwy bridge at Macdonaldtown Station.	N		Marks on map
176																								N		N		
177																								N		N		Harcourt Parade mainly floods in heavy rains due to dirty gutters that then block drains stopping water flowing. On many occasions I have unblocked drains in heavy rains to stop us flooding.
178																								N		N		
179																	1	Mascot, near airport tunnel.						N		N	Morly Ave flooding -cars damaged - photo's (digital)	
180	1	1980's	1	1980's													1	Henderson Rd						Y	80% blockes by leaves	N		Lower part of Brandling St has been subjected to flooding many times over the years due to blocked drains mainly from leaves. Trees are type that constantly drop leaves. Regular cleaning of drains can assist.
181			1	Good Friday 1997	1	Good Friday 1997								1	Kingsdeer Rd,Alexandria	Good Friday 1997								N		Y	Watermarks on walls plus Insurance claims	
182																								N		N		
183																	1	Eastside of Botany Rd. Westside of Botany Rd	Just south of Green Square bus stop. Just south of Storage King Both are flooding across road from kerb,especially on heavy rain days.					N		N		

	Q6													Q7											Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
184													In this area of Surry Hills we have a high water table so any flooding accentuates this and the result is rising damp and movement of the buildings causing cracks, etc.											N		N		Mark on map
185			1		1								It was midnight, just going to bed. At this time we lived at Marriott St. Water poured in under front door & upstairs in rooms & bathroom. Swept water under house thru removed floor boards to cavity under floor 1 m deep which filled up.	1	Bourke St. Redfern. Phillip St Waterloo & Young St - Walker St.	Houses were flooded in area of Telopea St.								N	Drains were blocked with hay washed from Police Academy in Bourke St. In our part of Marriot St there was a big trench down the middle of the road where a new sewer pipe was to be put in . Planks of wood floated.	N	SAS pumped us out twice.	Marks on map
186																							N		N		
187														1	Cope St	Around large drains that feed small canal.							Y	Large volume of rain & the canal overflowed and backed up drains.	N		
188			1											1			1						Y	90% blocked the canal on cope St between Botany Rd & Cope St.	Y		I would like to be informed as to the results of this study and future plans for stormwater drainage. Marks on map.
189	1	7/12/2007, 26/02/2008																					N		N		
190																	1	Fountain St, Alexandria Cnr Belmore/Cnr Lawrence	Blocked drains on street corners, every time heavy rain. Flooding easily preventable by street cleaning, especially if done by local proprietors & residents. Laziness & stupidity on the part of locals.				McEvoy St/Bourke St/Lachlan Ave intersection	N		N		Many heavy rain events cause rubbish - leaves & plastics to block street drains. Council could cleanup regularly or provide street sweeps prior to forcast rain or patrol & clean up blocked drains during heavy rains and encourage local businesses & residents to clear blocked drains & report same. Marks on map.
191																							N		N		

	Q6													Q7										Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
192	1		1		1								The lane has had a build up of water at other times but not sufficient to cause me any damage.											N	Existing drains could not handle flow also at the time it was reported that the downpour happened at the same time as a king tide in canal.	N		It is noted that plans for a recent (07-08) development application for property on Kingsclear Rd depicts a design to allow flood water to pass under the proposed new structure (not yet built) It appears Council officers are aware of the potential problem.
193			1	Standing water caused some seepage into subfloor basement.																				Y	Generally appeared to be leaves covering drains. Also caused by parked cars - washed out leaves/rubbish back up behind car wheels, reducing gutter capacity, causing water to flood across footpath.			Marks on map
194			1	Carpet was taken up & relaid.																				N		N		
195																												
196																												
197																												
198																								Y	Culvert - street drain blocked corner Eve St & Caulson St due to heavy vegetation & sand bags left by builders in area.	N		
199																	1	Morley Ave, Botany Rd near rosebery	Subway flooding of stormwater on roads.					N		N		
200																								N		N		
201																	1	Victoria St Erskineville	Road flooded near railway overpass.					N		N		Mark on map
202																								N		N		
203																								Y	There is sometimes debris in the canal, trees & general rubbish - say 30%.	N		
204			1	It was above floor level													1	Botany Rd near Buckland St Alexandria	Water covered the roadway & footpath. Police were redirecting traffic so vehicles could not travel thru area.					N		Y	A photo "somewhere" from 2008!	Although this is late, it does explain the circumstances in my location.Mark on map.
205																												

	Q6													Q7										Q8		Q9		Q10
Number	Garage/Shed	Comment	Res. below flr.level	Comment	Res.above flr.level	Comment	Com.above flr. level	Comment	Com.below flr.level	Comment	Industrial	Comment	Other	**Res/ Com**	Address	Description	**Roads/ Footpaths**	Address	Description	**Parks**	Address	Description	**Other**	Yes/No	Comment	Yes/No	Comment	Additional Information
206																												
207																								N		N		
208																	1	Hunter St Waterloo	Hunter St flooded together with Powell & Bourke St after heavy rain.					N		Y	Took a photo of Hunter St.	Marks on map.
209																								N		N		
210																								N		N		
211			1	Over 27 years during extremely heavy downpours.													1	Mitchell Rd	Major flooding forming a dam effect in various sections along the road - i.e. end of Renwick & Mitchell					N		Y	Photos of watermarks against side of my house.	
212																								N		N		
213																								N		N		Residents would give more feed back if they can get more educations about stormwater flooding!!!
214																	1	Near cnr of Botany Rd & Bourke St	Deep flooding over Botany Rd.					N		N		
215																	1	Botany Rd, Waterloo						N		N		
216									1	Commercial offices flooded at floor level				1	King St Mascot	Commercial offices flooded.								N		N		You need to build protection walls to prevent water overflowing from the canal into my property.
217	1	1973 or 1974, 1989 Jan															1	Corner of Dalmeny Ave & Gardeners Rd, Rosebery	Making a left hand turn from Dalmeny Ave into Gardeners Rd was not possible (water subsided quickly after rain ceased)					N		N		Marks on map
218																	1	Victoria St Erskineville under railway line	Flooded road					N		N		I understand that my local area was once swamps - It would be great to restore some areas for natural infiltration and overland flow. Especially the buffer zones along either side of the Erskineville railway line.
219																								N		N		

Appendix C

Calibration Results

Table C.1: November 1984 Calibration Results

Location ID	Location	Description	Source	Observed Flood Depth (m)	Modelled Flood Depth (m)	Observed Level (m AHD)	Modelled Level (m AHD)	Difference		Comments
								Diff. (m)	Based on (D= Depth, WL= Water Level)	
A	Joynton Ave, Patient Care Facility/Footpath	Flood Depth of 1.0m in a patient care area of the South Sydney hospital (Joynton Ave)	WMA	1.00-1.20m	1.07m	18.80-19.30	18.85	0.05	WL	Satisfactory comparison between observed and modelled level.
B	Milroy Ave	Flooded 83 properties in the West Kensington areas including locations in McDougall Street, Milroy Avenue, Lenthall Street and Balfour Street. 27 of these properties were flooded above the main floor level.	WMA		0.55	25.2-25.5	24.98	-0.22	WL	The model shows that the properties in the street are flooded and the depth refers to the low point on the street.
C	Lenthall Street	Same as Above	WMA		0.78	21.3-21.7	21.63	-0.07	WL	Satisfactory comparison between observed and modelled level.
D	McDougall Street	Same as Above	WMA		1.23	24.60-24.90	24.68	-0.10	WL	The model shows that the properties in the street are flooded and the depth refers to the low point on the street.

Location ID	Location	Description	Source	Observed Flood Depth (m)	Modelled Flood Depth (m)	Observed Level (m AHD)	Modelled Level (m AHD)	Difference		Comments
E	25 Pleasant Ave, Erskineville	Backyard flooded. Flooding above Floor Level. Carpet in kitchen & living room had to be replaced.	CC		0.60		10.04		WL	Floor Level= 9.61. The model shows that the property is flooded and the depth and WL refer to the backyard.
F	141 Marriott St, Redfern.	Flooded to a depth 900mm in 1984. The Waterboard was doing large excavation work at North end of our street at the time. Drains in our street are sometimes full of refuse.	CC	0.90	1.00	N/A	29.49	0.10	D	Floor Level= 28.79. The model shows that the property is flooded and the depth refers to the front of the property.
G	15 Bourke Road	Flood Level was identified at S & S Scrap Metal Pty Ltd, 15 Bourke Rd and recorded above the FFL.	HT& PC		0.63	8.96	9.08	0.12m	WL	Satisfactory comparison between observed and modelled level.
H	9/15, Bowden Street		WMA *		0.80	7.85	8.10	0.25	WL	Reasonable comparison between observed and modelled level.
I	Low Point in Bowden Street. (Upstream of Channel)	Above Floor Level. Insufficient capacity within the road reserve to contain flows generated by storm event. Evidence in the 1984 storm event suggested backflows from drains and sewers.	WMA *	1.00	1.71	7.86	8.10	0.24	WL	The flood depth in the paper store was about 1m.

Location ID	Location	Description	Source	Observed Flood Depth (m)	Modelled Flood Depth (m)	Observed Level (m AHD)	Modelled Level (m AHD)	Difference		Comments
J	38 Bowden Street	Above Floor Level.	WMA *			7.93	8.10	0.10	WL	Satisfactory comparison between observed and modelled level.
K	STC Alcatel Building – Bowden Street.		WMA *			7.86	8.06	0.20	WL	Satisfactory comparison between observed and modelled level.
L	Intersection of Collins Street and Botany Road	29 houses and 4 shops flooded. Depth of water ranged from 0.05 to 0.5. Associated low point at the intersection of Collins Street and Botany Road.	HT& PC	0.05-0.5	0.94		13.79		D	The modelled depth of 0.9m is determined at the properties fronting Botany Road near the intersection. Floor levels would be expected to be above the modelled levels thus the model is considered satisfactory.

WMA = Webb, McKeown & Associates Pty Ltd (2008), CC = Community Consultation, HT&PC = HughesTrueman & Perrens Consultants Pty Ltd (2003), WMA *= Webb, McKeown & Associates Pty Ltd (1991)

Table C.2: - 26 January 1991 Calibration Results

Location ID	Location	Description	Source	Observed Flood Depth (m)	Modelled Flood Depth (m)	Observed Level (m AHD)	Modelled Level (m AHD)	Difference		Comments
								Diff. (m)	Based on (D= Depth, WL= Water Level)	
A	Upstream of Hiles Street	Debris on fence.	WMA			9.22	9.38	0.16	WL	Satisfactory comparison between observed and modelled level.
B	Roko Packaging Pty Ltd, No 44 Hiles Street	Distinct mark on the outside wall.	WMA			9.18	9.27	0.09	WL	Satisfactory comparison between observed and modelled level.
C	Between Hiles Street Bridge and A.T.Hydraulic Driveway.	Debris on fence.	WMA			9.10	9.25	0.15	WL	Satisfactory comparison between observed and modelled level.
D	A.T.Hydraulic , Hiles Street.	Distinct mark on the outside wall.	WMA			8.79	9.17	0.38	WL	Observed level is queried. Model is consistent comparing the upstream and downstream levels.

Location ID	Location	Description	Source	Observed Flood Depth (m)	Modelled Flood Depth (m)	Observed Level (m AHD)	Modelled Level (m AHD)	Difference		Comments
E	Between A.T.Hydraulic Driveway and McCauley Lane Bridge.	Debris on fence.	WMA			9.01	9.13	0.11	WL	Satisfactory comparison between observed and modelled level.
F	McCauley Lane Bridge	Debris on fence.	WMA			8.77	8.81	0.04	WL	Satisfactory comparison between observed and modelled level.
G	Upstream of McCauley Lane Bridge	Debris on Fence.	WMA			8.67	8.40	-0.27	WL	The model shows that flood water overtopped the McCauley Bridge.
H	Downstream of McCauley Lane Bridge	Debris on Fence.	WMA		0.35	8.42	8.23	-0.19	WL	Satisfactory comparison between the observed WL.
I	Just Behind S.T.C.Building, Bowden Street.	Distinct mark on overbank.	WMA			7.51	7.54	0.03	WL	Satisfactory comparison between the observed WL.
J	S.T.C.Building, Bowden Street.	Distinct mark on the wall facing Bowden Street. Flood marks are clearly seen on the front wall next to the channel in	WMA	0.30	0.33	7.11	6.74	-0.37	D	Water ponding at the low point on Bowden Street.

Location ID	Location	Description	Source	Observed Flood Depth (m)	Modelled Flood Depth (m)	Observed Level (m AHD)	Modelled Level (m AHD)	Difference		Comments
		Bowden street 0.30m above the drive way.								
K	Alexandria and Main Channel Confluence	Debris on overbank – note that the reported level is rated as "Level unsure, location well defined" in the original document.	WMA			5.40	6.02	0.62	WL	The reported level is not confirmed and the modelled results are considered satisfactory the other calibration points upstream for this and the 1984 event.
L	Just before Maddox St car park.	Debris on overbank – note that the reported level is rated as "Level unsure, location well defined" in the original document. A subsequent inspection noted that "water might just reached the top of the coping."	WMA			4.94	5.48	0.54	WL	The top of bank for the channel is modelled as RL 4.97m. The carpark constructed over the channel constrains the flows and increases the flood level above the coping. The modelled results are satisfactory considering the other calibration points upstream for this and the 1984 event.

Location ID	Location	Description	Source	Observed Flood Depth (m)	Modelled Flood Depth (m)	Observed Level (m AHD)	Modelled Level (m AHD)	Difference		Comments
M	Cope Street and Wellington Street	At the junction of Cope Street and Wellington Street water was 0.40m to 0.50m deep over the footpath.	WMA	0.40m-0.50m	0.51m		15.42	0.12	D	Satisfactory comparison to the observed depth.
N	Boronia Street and Marriott Street	It was 0.40m deep over the footpath at the Boronia Street and Marriott Street intersection.	WMA	0.40m	0.40m		30.57		D	Satisfactory comparison to the observed depth.
O	Charles Street and Boronia Street	Flooding at Charles Street and Boronia Street was reported to be 0.40m deep	WMA	0.40m	0.38m			0.03m	D	Satisfactory comparison to the observed depth.

Webb, McKeown & Associates Pty Ltd (August 1991), Sheas Creek Flood Study.

Table C.3: Validation Details - 28 February 2001 Event

Location ID	Location	Description	Source	Observed Flood Depth (m AHD)	Modelled Flood Depth (m AHD)	Observed Level (m AHD)	Modelled Level (m AHD)	Difference		Comments
								Diff. (m)	Based on (D= Depth, WL= Water Level)	
A	20 O'Riordan Street	Extent of road inundation at the peak during the event on 28th February was about100m long.	HT&PC		0.38	11.21	11.28	0.07	WL	The model shows water ponding at an extent of 100m along the street.
B	Botany Road (Green Square Station)	There was clear evidence that water had entered the escalator/stairwell located on the western side of Botany Road not far from a local trapped depression point in Botany Road.	HT&PC		0.22		13.63		WL	The depth refers at the low point on the street. Pit blockage in Botany Road may have caused local flooding.
C	Joynton Avenue	Joynton Avenue flooded outside the Mercedes Dealership to a level just inside the property boundary at the driveway entry.Flood Depth is 0.2 to 0.3m above the top of kerb level.	HT&PC	0.2-0.3	0.25	16.95-17.00	17.24	-	D	The discrepancy is due to the ground level in the model at this location of 17.0m AHD that is based on ALS data.

Location ID	Location	Description	Source	Observed Flood Depth (m AHD)	Modelled Flood Depth (m AHD)	Observed Level (m AHD)	Modelled Level (m AHD)	Difference		Comments
D	Hunter Street	The trapped depression in Hunter Street flooded during the event resulting in damage to at least one parked vehicle, and contributing in part to material damage sustained by the adjacent business on the east side of Hunter St.	HT&PC	0.50-0.60	0.52		19.96	-	D	Reasonable comparison between the observed depths as shown in a photo taken during the event.
E	Wyndham Street	The Wyndham Street trapped depression provided clear evidence of pit blockage contributing to flooding.	HT&PC		0.12		9.50		WL	The model shows water ponding at the low point on the street.
F	Cope Street	Flooding just above the footpath/culvert level on top of the channel.	HT&PC	0.15 - 0.20	0.20		14.60	0.02		The model shows water ponding at the low point on the street. The depth refers at the low point on the street.

HT&PC = HughesTrueman & Perrens Consultants Pty Ltd (2003)