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APPENDIX A

South Esk Catchment Site Monitoring Data

All mean and median statistics presented in the following tables have been calculated using half the detection limits of the analyses. Where these were lower than the detection limits, the detection limit has been inserted.

South Esk at Hadspen

	Units	Count	Maximum		Minimum		Mean		Median
Temperature	Celsius	11	20.5		5.8		13.3		11
Conductivity @ 25 °C (field)	µS/cm	10	92		29		58		57
Dissolved Oxygen	mg/L	8	11.3		7.9		9.7		9.8
Field pH		12	7.6		6.1		6.66		6.45
Turbidity	N.T.U.	12	14.8		2.87		6.35		5.35
Suspended Solids	mg/L	12	12	<	1		3.9		2.5
Conductivity @ 25 °C (Lab)	µS/cm	12	114		31		65		75
pH - Lab		12	8.4		5.6		7.2		7.2
Ammonia -N	mg/L	12	0.24	<	0.005		0.029		0.005
Nitrite - N	mg/L	12	0.006	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	12	0.14	<	0.005		0.035		0.015
Total Kjeldahl - N	mg/L	12	1.14	<	0.05		0.273		0.19
Total P	mg/L	12	0.11		0.008		0.029		0.019
Dissolved Reactive P	mg/L	12	0.069	<	0.005		0.011		0.006
#TN by Calc.	mg/L	12	1.145		0.051		0.311		0.217
Colour	Hazen Units	4	70		10		31.3		22.5
TDS	mg/L	4	53		26		36.5		33.5
Hardness	mg/L	4	24		9.2		16.8		17
Total Alkalinity	mg/L	4	8.3		3.6		5.6		5.3
Chloride	mg/L	4	13		4.2		8.5		8.3
Flouride	mg/L	4	< 0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	4	2.5		0.5		1.5		1.45
Iron - Total	mg/L	4	1.2		0.3		0.6		0.52
Manganese - Total	mg/L	4	0.03	<	0.01		0.02		0.02
Calcium	mg/L	4	4.5		2		3.3		3.25
Magnesium	mg/L	4	3.1		1		2.1		2.1
Potassium	mg/L	4	0.77		0.22		0.44		0.38
Sodium	mg/L	4	6.9		2.5		4.6		4.55
Silica (Molybdate Reactive)	mg/L	4	7.1		2.4		3.8		2.85

High max for nutrients due to sewer pollution immediately upstream.

South Esk at Longford										
	Units	Count		Maximum		Minimum		Mean		Median
River Level	metres	38		2.24		0.23		0.63		0.57
Temperature	Celsius	40		20.2		4.6		13.6		12.2
Conductivity @ 25 °C (field)	µS/cm	37		226		22		96		81
Dissolved Oxygen	mg/L	14		13.1		8.3		10.2		10.2
Field pH		39		7.5		5		6.4		6.4
Turbidity	N.T.U.	20		27.8		1.21		8.25		4.89
Suspended Solids	mg/L	41		12	<	1		3.3		3
Conductivity @ 25 °C (Lab)	µS/cm	41		205		23		79		76
pH - Lab		41		7.9		5.9		7.1		7.1
Ammonia -N	mg/L	41		0.018	<	0.005	<	0.005	<	0.005
Nitrite - N	mg/L	41	<	0.005	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	41		0.18	<	0.005		0.028		0.007
Total Kjeldahl - N	mg/L	15		0.46	<	0.05		0.18		0.15
Total P	mg/L	41		0.053	<	0.005		0.016		0.012
Dissolved Reactive P	mg/L	41		0.02	<	0.005		0.005	<	0.005
#TN by Calc.	mg/L	15		0.532		0.035		0.202		0.165
Colour	Hazen Units	6		100		10		37.5		17.5
TDS	mg/L	6		125		5		50.2		50.5
Hardness	mg/L	6		43		5.7		21.8		24
Total Alkalinity	mg/L	6		29		2.8		12.0		8.1
Chloride	mg/L	6		23		2.6		10.9		11.5
Flouride	mg/L	6	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	6		3.4		0.5		2.10		1.95
Iron - Total	mg/L	6		1.7		0.3		0.84		0.6
Manganese - Total	mg/L	6		0.02	<	0.01	<	0.01	<	0.01
Calcium	mg/L	6		7.3		1.2		3.92		4.4
Magnesium	mg/L	6		5.9		0.67		2.90		3.1
Potassium	mg/L	6		0.57		0.16		0.37		0.36
Sodium	mg/L	6		12		1.8		5.88		6.15
Silica (Molybdate Reactive)	mg/L	6		9.8		2.3		5.30		5.2

South Esk at Perth										
	Units	Count		Maximum		Minimum		Mean		Median
Flow Range	Cumecs	41		166.1		0.83		17.75		9.63
Temperature	Celsius	39		24.2		4.3		13.2		12.2
Conductivity @ 25 °C (field)	µS/cm	36		144		46		93		97
Dissolved Oxyegen	mg/L	13		12.2		7.34		10.02		10
Field pH		38		7.3		5.6		6.5		6.4
Turbidity	N.T.U.	18		13.3		0.84		4.45		2.38
Suspended Solids	mg/L	41		9	<	1		2.3		2
Conductivity @ 25 °C (Lab)	µS/cm	38		138		50		93		93
pH - Lab		41		8.1		5.9		7.1		7.2
Ammonia -N	mg/L	41		0.06	<	0.005	<	0.005	<	0.005
Nitrite - N	mg/L	41	<	0.005	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	41		0.13		0.002		0.034		0.02
Total Kjeldahl - N	mg/L	14		0.33	<	0.05		0.182		0.205
Total P	mg/L	41		0.14		0.003		0.016		0.011
Dissolved Reactive P	mg/L	41		0.062	<	0.005	<	0.005	<	0.005
#TN by Calc.	mg/L	14		0.355		0.038		0.208		0.218
Colour	Hazen Units	6		70		15		36		20
TDS	mg/L	6		90		37		56.0		53.5
Hardness	mg/L	6		34		18		26.7		26
Total Alkalinity	mg/L	6		20		7.5		13.3		13
Chloride	mg/L	6		17		8.8		13.8		14
Flouride	mg/L	6	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	6		3.8		1.3		3.0		3.4
Iron - Total	mg/L	6		0.92		0.23		0.5		0.5
Manganese - Total	mg/L	6		0.04	<	0.01	<	0.01	<	0.01
Calcium	mg/L	6		6		3.3		4.8		4.6
Magnesium	mg/L	6		4.5		2.5		3.6		3.6
Potassium	mg/L	6		0.74		0.39		0.5		0.5
Sodium	mg/L	6		12		4.8		8.1		7.8
Silica (Molybdate Reactive)	mg/L	6		8.6		5		6.6		6.5

South Esk at Llewellyn										
	Units	Count		Maximum		Minimum		Mean		Median
Flow Range	Cumecs	38		98.73		0.828		14.29		8.7
Temperature	Celsius	37		22.7		5.5		13.15		11.85
Conductivity @ 25 °C (field)	µS/cm	35		177		52		93.7		91.5
Dissolved Oxygen	mg/L	10		11.3		7.8		9.8		10
Field pH		35		7.8		5.3		6.4		6.4
Turbidity	N.T.U.	17		18.5		0.59		3.75		1.64
Suspended Solids	mg/L	38		9	<	1		1.7		1
Conductivity @ 25 °C (Lab)	µS/cm	37		115		59		89.6		90
pH - Lab		37		8.6		5.8		7.2		7.2
Ammonia -N	mg/L	38		0.008	<	0.005	<	0.005	<	0.005
Nitrite - N	mg/L	38		0.012	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	38		0.2	<	0.005		0.069		0.07
Total Kjeldahl - N	mg/L	13		0.27	<	0.05		0.15		0.15
Total P	mg/L	38		0.033	<	0.005		0.011		0.009
Dissolved Reactive P	mg/L	38		0.01	<	0.005	<	0.005	<	0.005
#TN by Calc.	mg/L	13		0.383		0.05		0.201		0.165
Colour	Hazen Units	4		20		15		17.5		17.5
TDS	mg/L	4		69		54		61.25		61
Hardness	mg/L	4		38		24		29.00		27
Total Alkalinity	mg/L	4		12		7.1		9.03		8.5
Chloride	mg/L	4		14		12		12.50		12
Flouride	mg/L	4	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	4		4.4		2.7		3.68		3.8
Iron - Total	mg/L	4		0.54		0.22		0.34		0.305
Manganese - Total	mg/L	4		0.02	<	0.01		0.02		0.02
Calcium	mg/L	4		5.3		4.2		4.85		4.95
Magnesium	mg/L	4		6.1		3.3		4.13		3.55
Potassium	mg/L	4		0.71		0.48		0.60		0.6
Sodium	mg/L	4		9.7		7.5		8.33		8.05
Silica (Molybdate Reactive)	mg/L	4		8.1		4.9		6.28		6.05

South ESk at Avoca										
	Units	Count		Maximum		Minimum		Mean		Median
River Level	metres	36		3.24		1.45		1.92		1.78
Temperature	Celsius	36		21.8		5.7		12.9		12.3
Conductivity @ 25 °C (field)	µS/cm	33		109		43		92.2		79.6
Dissolved Oxygen	mg/L	10		12.1		8.1		10.3		10.4
Field pH		36		7.7		5.3		6.4		6.4
Turbidity	N.T.U.	16		9.9		0.81		2.99		1.41
Suspended Solids	mg/L	37		15	<	1		2.1	<	1
Conductivity @ 25 °C (Lab)	µS/cm	34		110		45		79		78
pH - Lab		37		8.4		5.8		7.1		7.1
Ammonia -N	mg/L	37		0.01	<	0.005		0.005	<	0.005
Nitrite - N	mg/L	37	<	0.005	<	0.005		0.005	<	0.005
Nitrate - N	mg/L	37		0.2	<	0.005		0.083		0.084
Total Kjeldahl - N	mg/L	12		0.27		0.05		0.143		0.13
Total P	mg/L	37		0.028		0.004		0.01		0.008
Dissolved Reactive P	mg/L	37		0.009	<	0.005		0.005	<	0.005
#TN by Calc.	mg/L	12		0.365		0.06		0.204		0.197
Colour	Hazen Units	4		50		15		25		17.5
TDS	mg/L	4		62		44		49.7		46.5
Hardness	mg/L	4		31		19		23.5		22
Total Alkalinity	mg/L	4		11		5.2		7.5		6.8
Chloride	mg/L	4		11		1.3		8.33		10.5
Flouride	mg/L	4	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	4		8.2		2.9		5.65		5.75
Iron - Total	mg/L	4		0.62		0.24		0.42		0.405
Manganese - Total	mg/L	4		0.07		0.02		0.04		0.03
Calcium	mg/L	4		4.7		3.7		4.18		4.15
Magnesium	mg/L	4		4.6		2.2		3.13		2.85
Potassium	mg/L	4		0.71		0.43		0.59		0.6
Sodium	mg/L	4		8.6		4.8		6.8		6.9
Silica (Molybdate Reactive)	mg/L	4		7.1		5		6.23		6.4

St Pauls River u/s South Esk

	Units	Count	Maximum		Minimum		Mean		Median
Flow Range	Cumecs	37	30.2		0.028		2.16		0.362
Temperature	Celsius	36	22.5		4.9		13.4		12.3
Conductivity @ 25 °C (field)	µS/cm	32	208		71		133		128
Dissolved Oxyegen	mg/L	10	11.3		7.6		9.74		9.95
Field pH		33	7.7		5.3		6.5		6.5
Turbidity	N.T.U.	14	26.2		0.59		4.02		2.22
Suspended Solids	mg/L	37	6	<	1		1.08	<	1
Conductivity @ 25 °C (Lab)	µS/cm	34	230		77		132		125
pH - Lab		36	8.9		5.8		7.2		7.3
Ammonia -N	mg/L	37	0.03	<	0.005	<	0.005	<	0.005
Nitrite - N	mg/L	37	0.011	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	37	0.23	<	0.005		0.017	<	0.005
Total Kjeldahl - N	mg/L	12	0.32	<	0.05		0.188		0.185
Total P	mg/L	37	0.032		0.002		0.009		0.009
Dissolved Reactive P	mg/L	37	0.018	<	0.001		0.003		0.002
#TN by Calc.	mg/L	13	0.453		0.034		0.223		0.214
Colour	Hazen Units	4	30		20		25		25
TDS	mg/L	4	100		63		88.50		95.5
Hardness	mg/L	4	56		38		46.75		46.5
Total Alkalinity	mg/L	4	18		13		15.25		15
Chloride	mg/L	4	30		15		21.50		20.5
Flouride	mg/L	4	0.1	<	0.1	<	0.10	<	0.1
Suplhate	mg/L	4	1.6		0.9		1.30		1.35
Iron - Total	mg/L	4	0.72		0.18		0.39		0.335
Manganese - Total	mg/L	4	0.01	<	0.01	<	0.01	<	0.01
Calcium	mg/L	4	9.6		6.7		8.30		8.45
Magnesium	mg/L	4	7.8		5.1		6.33		6.2
Potassium	mg/L	4	0.57		0.42		0.47		0.45
Sodium	mg/L	4	15		11		12.25		11.5
Silica (Molybdate Reactive)	mg/L	4	14.3		9.5		11.10		10.3

South Esk at Fingal										
	Units	Count		Maximum		Minimum		Mean		Median
PARAMETERS										
River Level	metres	36		3.93		1.34		2.03		1.79
Temperature	Celsius	35		22.5		5.1		12.2		10.2
Conductivity @ 25 °C (field)	µS/cm	33		387		39		80		73
Dissolved Oxygen	mg/L	10		11.8		6.8		9.6		10.05
Field pH		34		7.8		5.6		6.5		6.4
Turbidity	N.T.U.	16		32.5		1.5		4.98		2.02
Suspended Solids	mg/L	36		33	<	1		4.6		2
Conductivity @ 25 °C (Lab)	µS/cm	34		125		41		68		66
pH - Lab		36		8.7		5.9		7.08		7.1
Ammonia -N	mg/L	35		0.082	<	0.005		0.01	<	0.005
Nitrite - N	mg/L	36		0.003	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	36		0.25		0.022		0.128		0.13
Total Kjeldahl - N	mg/L	11		0.31		0.05		0.195		0.21
Total P	mg/L	36		0.07		0.002		0.013		0.01
Dissolved Reactive P	mg/L	36		0.012	<	0.005	<	0.005	<	0.005
#TN by Calc.	mg/L	11		0.465		0.15		0.298		0.298
Colour	Hazen Units	4		150		20		55.00		25
TDS	mg/L	4		54		44		49.50		50
Hardness	mg/L	4		20		12		15.75		15.5
Total Alkalinity	mg/L	4		21		3.1		9.05		6.05
Chloride	mg/L	4		10		6.3		8.83		9.5
Flouride	mg/L	4	<	< 0.1	<	< 0.1	<	< 0.1	<	< 0.1
Suplhate	mg/L	4		1.4		0.5		0.78		0.6
Iron - Total	mg/L	4		2		0.24		0.86		0.59
Manganese - Total	mg/L	4		0.06		0.02		0.04		0.03
Calcium	mg/L	4		3.8		2.1		2.85		2.75
Magnesium	mg/L	4		2.7		1.6		2.13		2.1
Potassium	mg/L	4		0.76		0.5		0.66		0.68
Sodium	mg/L	4		7.8		4.5		6.20		6.25
Silica (Molybdate Reactive)	mg/L	6		6.8		5.4		6.30		6.45

South Esk at Mathinna											
	Units	Count		Maximum		Minimum		Mean		Median	
Parameters											
Temperature	Celsius	11		17		5.6		11		11.5	
Conductivity @ 25 °C (field)	µS/cm	10		55		33		43.5		44.5	
Field pH		11		7.4		5.5		6.6		6.6	
Suspended Solids	mg/L	11		3	<	1	<	1	<	1	
Conductivity @ 25 °C (Lab)	µS/cm	11		57		32		43		45	
pH - Lab		11		7		6		6.7		6.9	
Ammonia -N	mg/L	11	<	0.005	<	0.005	<	0.005	<	0.005	
Nitrite - N	mg/L	11	<	0.005	<	0.005	<	0.005	<	0.005	
Nitrate - N	mg/L	11		0.18		0.044		0.127		0.13	
Total P	mg/L	11		0.01	<	0.005		0.005		0.006	
Dissolved Reactive P	mg/L	11	<	0.005	<	0.005	<	0.005	<	0.005	

Trevallyn Dam at Ski Jetty											
	Units	Count		Maximum		Minimum		Mean		Median	
PARAMETERS											
Temperature	Celsius	24		21.8		6.1		13.1		12.8	
Conductivity @ 25 °C (field)	µS/cm	22		206		34		85		81	
pH - strip		22		7.8		5.6		6.5		6.5	
Turbidity	N.T.U.	25		41		2.4		12.4		7.2	
Suspended Solids	mg/L	25		17	<	1		3.1		2	
Conductivity @ 25 °C (Lab)	µS/cm	22		140		35		78		75	
pH - Lab		25		7.5		6.4		7.1		7.1	
Ammonia -N	mg/L	25		0.009	<	0.005	<	0.005	<	0.005	
Nitrite - N	mg/L	25		0.006	<	0.001	<	0.005	<	0.005	
Nitrate - N	mg/L	25		0.26	<	0.001		0.078		0.04	
Total P	mg/L	25		0.063	<	0.005		0.023		0.021	
Dissolved Reactive P	mg/L	25		0.021	<	0.001		0.007		0.005	

Turbidity from the RWSC Water treatment plant used.

Break O'Day at Killymoon Br										
	Units	Count		Maximum		Minimum		Mean		Median
PARAMETERS										
Flow Range	Cumecs	36		5.851		0.001		0.692		0.197
Temperature	Celsius	35		23.2		4.8		12.8		12.9
Conductivity @ 25 °C (field)	µS/cm	34		510		131		193		183
Dissolved Oxygen	mg/L	10		12.4		4.89		8.11		7.75
Field pH		34		7.7		6.2		6.6		6.5
Turbidity	N.T.U.	16		31.1		1.21		4.03		2.13
Suspended Solids	mg/L	36		4	<	1		1.375		1
Conductivity @ 25 °C (Lab)	µS/cm	34		245		47		177		180
pH - Lab		36		8.5		6.2		7.1		7.1
Ammonia -N	mg/L	36		0.018	<	0.005	<	0.005	<	0.005
Nitrite - N	mg/L	36		0.006	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	36		0.23	<	0.005		0.026		0.008
Total Kjeldahl - N	mg/L	12		0.74		0.08		0.34		0.31
Total P	mg/L	36		0.054		0.007		0.021		0.021
Dissolved Reactive P	mg/L	36		0.022	<	0.005		0.006	<	0.005
#TN by Calc.	mg/L	12		0.976		0.091		0.374		0.325
Colour	Hazen Units	4		40		20		25		20
TDS	mg/L	4		135		90		118		122.5
Hardness	mg/L	4		69		47		58		58
Total Alkalinity	mg/L	4		25		13		21		22
Chloride	mg/L	4		30		13		25		27.5
Flouride	mg/L	4	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	4		5.4		2.1		3.75		3.75
Iron - Total	mg/L	4		0.79		0.16		0.41		0.34
Manganese - Total	mg/L	4		0.05		0.01		0.02		0.015
Calcium	mg/L	4		17		11		13.75		13.5
Magnesium	mg/L	4		6.6		5.1		5.88		5.9
Potassium	mg/L	4		1.2		0.73		0.94		0.91
Sodium	mg/L	4		22		15		19		19.5
Silica (Molybdate Reactive)	mg/L	4		10.7		5.7		7.9		7.6

Back Creek @ Bass Hwy										
	Units	Count		Maximum		Minimum		Mean		Median
PARAMETERS										
Flow Range	Cumecs	16		1.2		0.003		0.52		0.62
Temperature	Celsius	15		25.9		6.5		13.93		11.9
Conductivity @ 25 °C (field)	µS/cm	15		1091		31.5		406.51		148
Dissolved Oxygen	mg/L	12		12.1		8.6		10.27		9.825
Field pH		12		8.35		7.25		7.81		7.77
Turbidity	N.T.U.	16		171		13.1		44.08		25.7
Suspended Solids	mg/L	15		68		6		23.53		19
Conductivity @ 25 °C (lab)	µS/cm	15		1170		32		332.27		110
pH - Lab		14		8.3		6.3		7.33		7.25
Ammonia -N	mg/L	16		9.2		0.015		2.82		0.985
Nitrite - N	mg/L	16		0.12	<	0.001		0.03		0.0155
Nitrate - N	mg/L	16		5.6		0.01		0.83		0.17
Total Kjeldahl - N	mg/L	15		20		0.27		5.34		2.3
Total P	mg/L	16		3.2		0.039		0.93		0.505
Dissolved Reactive P	mg/L	16		2.2		0.01		0.52		0.34
#TN by Calc.	mg/L	15		25.625		0.287		6.25		2.485
Colour	Hazen Units	4		125		40		78.33		70
TDS	mg/L	4		380		29		124.25		44
Hardness	mg/L	4		110		7.7		34.43		10
Total Alkalinity	mg/L	4		20		4.2		10.18		8.25
Chloride	mg/L	4		154		7.3		46.75		12.85
Flouride	mg/L	4	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	4		4.8		< 0.5		1.39		< 0.5
Iron - Total	mg/L	4		2.1		0.79		1.41		1.37
Manganese - Total	mg/L	4		0.23		0.03		0.10		0.07
Calcium	mg/L	4		14		1.4		4.70		1.7
Magnesium	mg/L	4		18		1		5.48		1.45
Potassium	mg/L	4		6.3		0.57		2.07		0.695
Sodium	mg/L	4		83		5.9		26.03		7.6
Silica (Molybdate Reactive)	mg/L	4		4.8		1.7		2.73		2.2

Back Creek u/s Longford STP						
	Units	Count	Maximum	Minimum	Mean	Median
PARAMETERS						
Flow Range	Cumecs	3	0.045	0.006	0.025	0.006
Temperature	Celsius	4	11.5	9.3	10.33	10.25
Conductivity @ 25 °C (field)	µS/cm	4	900	64	584.5	687
Dissolved Oxygen	mg/L	4	14.6	9.5	11.73	11.4
Field pH		3	6.5	6.4	6.433	6.4
Turbidity	N.T.U.	4	100	5.6	41.65	30.5
Suspended Solids	mg/L	3	14	2	9.333	12
Conductivity @ 25 °C (lab)	µS/cm	3	750	115	468.3	540
pH - Lab		3	7	6.7	6.9	7
Ammonia -N	mg/L	3	0.048	0.005	0.022	0.013
Nitrite - N	mg/L	3	0.072	0.006	0.032	0.019
Nitrate - N	mg/L	3	0.9	0.096	0.555	0.67
Total Kjeldahl - N	mg/L	2	1.3	0.83	1.065	1.065
Total P	mg/L	3	0.125	0.053	0.081	0.066
Dissolved Reactive P	mg/L	3	0.047	0.028	0.038	0.04
#TN by Calc.	mg/L	3	2.272	0.102	1.298	1.519
Colour	Hazen Units	1	150			
TDS	mg/L	1	360			
Hardness	mg/L	1	120			
Total Alkalinity	mg/L	1	6.1			
Chloride	mg/L	1	144			
Flouride	mg/L	1	0.11			
Sulphate	mg/L	1	2.4			
Iron - Total	mg/L	1	2.2			
Manganese - Total	mg/L	1	0.16			
Calcium	mg/L	1	16			
Magnesium	mg/L	1	20			
Potassium	mg/L	1	4.1			
Sodium	mg/L	1	58			
Silica (Molybdate Reactive)	mg/L	1	3.9			

Meander Catchment Site Monitoring Data

Meander River at Strath Bridge									
	Units	Count	Maximum		Minimum		Mean		Median
PARAMETERS									
Flow Range	Cumecs	44	117.6		0.35		13.3		6.05
Temperature	Celsius	42	23.8		4.4		11.7		9.95
Conductivity @ 25 °C (field)	µS/cm	41	196.3		49.5		86.3		81.3
Dissolved Oxygen	mg/L	15	12.03		7.3		10.1		10.4
Field pH		39	7.7		6.25		7.2		7.09
Turbidity	N.T.U.	23	21		1.43		7.3		4.43
Suspended Solids	mg/L	43	35	<	1		4.1		3
Conductivity @ 25 °C (lab)	µS/cm	41	135		45		78		74
pH - Lab		41	8.2		6		7.12		7.2
Ammonia -N	mg/L	43	0.053	<	0.005		0.011	<	0.005
Nitrite - N	mg/L	43	0.009	<	0.001	<	0.005	<	0.005
Nitrate - N	mg/L	43	0.54		0.001		0.162		0.089
Total Kjeldahl - N	mg/L	18	0.55		0.05		0.274		0.255
Total P	mg/L	43	0.41		0.007		0.034		0.022
Dissolved Reactive P	mg/L	43	0.03		0.002		0.009		0.007
#TN by Calc.	mg/L	18	0.955		0.106		0.441		0.286
Colour	Hazen Units	7	150		15		60.71		50
TDS	mg/L	7	75		35		55.00		54
Hardness	mg/L	7	44		20		28.14		25
Total Alkalinity	mg/L	7	30		6.2		17.26		20
Chloride	mg/L	7	11		5.2		8.53		9.2
Flouride	mg/L	7	0.12	<	0.1	<	0.10	<	0.1
Sulphate	mg/L	7	3.4		0.6		2.00		2.3
Iron - Total	mg/L	7	3.1		0.29		1.05		0.9
Manganese - Total	mg/L	7	0.08		0.01		0.04		0.03
Calcium	mg/L	7	11		3.9		6.19		5
Magnesium	mg/L	7	4		2.3		3.06		3.1
Potassium	mg/L	7	0.88		0.35		0.67		0.7
Sodium	mg/L	7	6.2		3.6		5.11		5.2
Silica (Molybdate Reactive)	mg/L	7	7.7		3.3		5.41		4.9

Liffey River at Carrick										
	Units	Count	Maximum		Minimum		Mean		Median	
PARAMETERS										
Flow Range	Cumecs	48	17.95		0.095		2.97		1.65	
Temperature	Celsius	42	22.9		4.3		11.5		10.1	
Conductivity @ 25 ^{o}C (field)	µS/cm	38	228		33		72.9		60.8	
Dissolved Oxygen	mg/L	10	12.4		6.4		9.9		10.3	
Field pH		29	7.8		6.4		6.78		6.85	
Turbidity	N.T.U.	27	125		4.74		25		9.09	
Suspended Solids	mg/L	47	100		< 1		13.4		4	
Conductivity @ 25 ^{o}C (lab)	µS/cm	43	150		33		63.8		58	
pH - Lab		45	8.4		5.5		7.06		7	
Ammonia -N	mg/L	48	0.09	<	0.005		0.012	<	0.005	
Nitrite - N	mg/L	48	0.009	<	0.001	<	0.005	<	0.005	
Nitrate - N	mg/L	48	0.47	<	0.005		0.122		0.051	
Total Kjeldahl - N	mg/L	23	1		0.05		0.376		0.29	
Total P	mg/L	48	0.13		0.007		0.028		0.017	
Dissolved Reactive P	mg/L	48	0.015	<	0.001	<	0.005		0.003	
#TN by Calc.	mg/L	23	1.473		0.061		0.522		0.338	
Colour	Hazen Units	6	175		20		60.83		40	
TDS	mg/L	6	105		22		52.50		48.5	
Hardness	mg/L	6	26		11		18.83		19	
Total Alkalinity	mg/L	6	23		4.5		9.23		6.1	
Chloride	mg/L	6	22		3.4		10.48		9.4	
Flouride	mg/L	6	0.1		0.1		0.10		0.1	
Sulphate	mg/L	6	3.5		1		2.05		1.9	
Iron - Total	mg/L	6	7.3		0.34		2.46		1.25	
Manganese - Total	mg/L	6	0.21		0.02		0.08		0.065	
Calcium	mg/L	6	4.8		2.4		3.75		3.95	
Magnesium	mg/L	6	3.5		1.3		2.25		2.2	
Potassium	mg/L	6	1.2		0.4		0.73		0.75	
Sodium	mg/L	6	9.8		2.7		5.47		5.5	
Silica (Molybdate Reactive)	mg/L	6	8.2		2.6		4.80		4.55	

Meander River at Deloraine								
	Units	Count	Maximum		Minimum		Mean		Median
Flow Range	Cumecs	43	132		0.49		12.06		7.3
Temperature	Celsius	40	22		3.9		10.8		9.3
Conductivity @ 25 ^{o}C (field)	µS/cm	39	170		26		68.7		63
Dissolved Oxygen	mg/L	15	12.6		7.9		10.4		10.6
Field pH		10	7.85		6.9		7.23		7.19
Turbidity	N.T.U.	19	12.9		2.73		6.04		5.07
Suspended Solids	mg/L	43	38	<	1		3.8		2
Conductivity @ 25 ^{o}C (lab)	µS/cm	39	163		38		66.6		57
pH - Lab		42	10.8		6.3		7.2		7.2
Ammonia -N	mg/L	43	0.1	<	0.005		0.015	<	0.005
Nitrite - N	mg/L	43	0.007	<	0.001	<	0.005	<	0.005
Nitrate - N	mg/L	43	0.59		0.033		0.185		0.14
Total Kjeldahl - N	mg/L	18	0.37		0.05		0.179		0.165
Total P	mg/L	43	0.103		0.004		0.015		0.011
Dissolved Reactive P	mg/L	43	0.016	<	0.001	<	0.005	<	0.005
#TN by Calc.	mg/L	18	0.965		0.096		0.356		0.302
Colour	Hazen Units	6	50		15		29.17		25
TDS	mg/L	6	80		19		48.83		48
Hardness	mg/L	6	55		18		31.00		22.5
Total Alkalinity	mg/L	6	30		5.7		16.80		18
Chloride	mg/L	6	5.9		3.7		4.78		4.85
Flouride	mg/L	6	0.1	<	0.1	<	0.10	<	0.1
Sulphate	mg/L	6	3.1		1		1.87		1.75
Iron - Total	mg/L	6	3.1		0.22		0.49		0.505
Manganese - Total	mg/L	6	0.1	<	0.01		0.04		0.02
Calcium	mg/L	6	15		3.6		7.72		4.85
Magnesium	mg/L	6	3.8		1.8		2.52		2.1
Potassium	mg/L	6	0.73		0.28		0.57		0.62
Sodium	mg/L	6	4.1		2.6		3.43		3.4
Silica (Molybdate Reactive)	mg/L	6	7.1		5.3		6.68		6.95

Meander River at Meander										
	Units	Count	Maximum		Minimum		Mean		Median	
PARAMETERS										
River Level	m	42	1.63		0.28		0.58		0.55	
Temperature	Celsius	41	18.4		3		9.1		8.4	
Conductivity @ 25 °C (field)	µS/cm	38	42		20		30.5		29	
Dissolved Oxygen	mg/L	15	12.68		8.4		11.14		11.6	
Field pH		10	7.53		6.45		7.1		7.17	
Turbidity	N.T.U.	18	8.07		0.28		1.56		1.05	
Suspended Solids	mg/L	42	13	<	1		1.6		1	
Conductivity @ 25 °C (lab)	µS/cm	38	42		22		31.8		32	
pH - Lab		41	8.1		5.8		7.11		7.2	
Ammonia -N	mg/L	42	0.08	<	0.005		0.01	<	0.005	
Nitrite - N	mg/L	42	0.005	<	0.001	<	0.005	<	0.005	
Nitrate - N	mg/L	42	0.99		0.023		0.099		0.077	
Total Kjeldahl - N	mg/L	17	0.26	<	0.005		0.098		0.08	
Total P	mg/L	42	0.018		0.001		0.006		0.005	
Dissolved Reactive P	mg/L	42	0.005	<	0.001	<	0.005		0.002	
#TN by Calc.	mg/L	17	1.25		0.08		0.22		0.14	
Colour	Hazen Units	7	30		5		15.00		15	
TDS	mg/L	7	55		15		32.43		33	
Hardness	mg/L	7	13		8		9.50		8.3	
Total Alkalinity	mg/L	7	29		3.5		10.06		9.3	
Chloride	mg/L	7	3.8		2.6		3.04		2.9	
Flouride	mg/L	7	0.1	<	0.1	<	0.1	<	0.1	
Sulphate	mg/L	7	1.5		0.5		1.03		1	
Iron - Total	mg/L	7	0.27		0.03		0.15		0.11	
Manganese - Total	mg/L	7	0.1	<	0.01		0.02	<	0.01	
Calcium	mg/L	7	2.9		1.7		2.04		1.8	
Magnesium	mg/L	7	1.5		0.87		1.10		0.99	
Potassium	mg/L	7	0.38		0.19		0.28		0.27	
Sodium	mg/L	7	2.8		2.2		2.46		2.4	
Silica (Molybdate Reactive)	mg/L	7	8.4		5.4		6.69		6.4	

Quamby Brook d/s Eden Rvt									
	Units	Count	Maximum		Minimum		Mean		Median
PARAMETERS									
Flow Range	Cumecs	44	12.3		0.03		1.24		0.411
Temperature	Celsius	40	19.5		2.7		9.3		8.9
Conductivity @ 25 ^{o}C (field)	µS/cm	38	172		64		93		86
Dissolved Oxygen	mg/L	21	12.7		7.3		10.7		11
Field pH		42	7.76		6.55		7.08		7.04
Turbidity	N.T.U.	20	12.40		3.21		7.04		6.82
Suspended Solids	mg/L	40	14	<	1		4		3
Conductivity @ 25 ^{o}C (lab)	µS/cm	38	137		62		89		85
pH - Lab		40	8.6		6		7.16		7.2
Ammonia -N	mg/L	41	0.12	<	0.005		0.012	<	0.005
Nitrite - N	mg/L	41	0.021	<	0.001	<	0.005	<	0.005
Nitrate - N	mg/L	41	0.33		0.002		0.161		0.15
Total Kjeldahl - N	mg/L	17	1.62		0.06		0.345		0.28
Total P	mg/L	41	0.063		0.006		0.017		0.015
Dissolved Reactive P	mg/L	41	0.013		0.002	<	0.005	<	0.005
#TN by Calc.	mg/L	17	1.792		0.172		0.646		0.487
Colour	Hazen Units	6	60		30		48.33		55
TDS	mg/L	6	88		52		71.67		73.5
Hardness	mg/L	6	44		21		31.67		29.5
Total Alkalinity	mg/L	6	20		9.8		15.63		17.5
Chloride	mg/L	6	11		6.2		9.02		9.25
Flouride	mg/L	6	0.1		0.1		0.10		0.1
Sulphate	mg/L	6	5.9		1.8		3.37		3.25
Iron - Total	mg/L	6	0.88		0.36		0.73		0.82
Manganese - Total	mg/L	6	0.04		0.01		0.02		0.02
Calcium	mg/L	6	8.9		3.8		6.08		5.5
Magnesium	mg/L	6	5.4		2.9		4.00		3.8
Potassium	mg/L	6	1.3		0.57		0.84		0.695
Sodium	mg/L	6	7.2		6.1		6.68		6.7
Silica (Molybdate Reactive)	mg/L	6	16		9.6		11.75		10.6

Quamby Brook at Birralee Rd Br						
	Units	Count	Maximum	Minimum	Mean	Median
PARAMETERS						
Flow Range (Modelled)	Cumecs	26	11.58	0.012	1.92	0.9415
Temperature	Celsius	20	21.8	3.6	12.5	13.25
Conductivity @ 25 °C (field)	µS/cm	15	332	98	188	173
Dissolved Oxygen	mg/L	18	11.4	0.7	5.45	4.15
Field pH		10	7.2	5.9	6.67	6.75
Turbidity	N.T.U.	17	48.40	8.11	15.94	12.90
Suspended Solids	mg/L	16	38	1	9	6
Conductivity @ 25 °C (lab)	µS/cm	15	300	92	171	155
pH - Lab		15	7.9	6.1	7.05	7
Ammonia -N	mg/L	18	1.6	< 0.005	0.218	0.041
Nitrite - N	mg/L	18	0.041	< 0.005	0.013	0.011
Nitrate - N	mg/L	18	1.1	0.018	0.26	0.225
Total Kjeldahl - N	mg/L	18	3	0.35	0.774	0.57
Total P	mg/L	18	1.1	0.023	0.198	0.15
Dissolved Reactive P	mg/L	18	0.34	0.01	0.08	0.054
#TN by Calc.	mg/L	18	3.23	0.40	1.05	0.75
Colour	Hazen Units	5	100	50	84.00	85
TDS	mg/L	5	145	86	128.20	140
Hardness	mg/L	5	65	42	56.80	60
Total Alkalinity	mg/L	5	38	17	27.80	27
Chloride	mg/L	5	38	16	22.60	19
Flouride	mg/L	5	0.1	0.1	0.10	0.1
Sulphate	mg/L	5	14	0.7	5.04	3.4
Iron - Total	mg/L	5	2.7	1.1	1.67	1.45
Manganese - Total	mg/L	5	2.1	0.04	0.70	0.08
Calcium	mg/L	5	12	7.1	9.98	10
Magnesium	mg/L	5	8.7	6	7.78	8.4
Potassium	mg/L	5	2.7	0.99	1.66	1.5
Sodium	mg/L	5	18	11	14.40	13
Silica (Molybdate Reactive)	mg/L	5	15	6.5	10.74	9.7

Western Ck at Montana Rd Bridge										
	Units	Count	Maximum		Minimum		Mean		Median	
PARAMETERS										
Flow Range	Cumecs	20	7.460		0.213		2.143		1.215	
Temperature	Celsius	18	20.9		4.1		9.4		7.7	
Conductivity @ 25 °C (field)	µS/cm	18	73.7		29.0		50.7		50.5	
Dissolved Oxygen	mg/L	10	12.1		6.6		10.4		11.2	
Field pH		19	7.9		6.4		7.2		7.3	
Turbidity	N.T.U.	20	26.4		6.6		14.0		12.0	
Suspended Solids	mg/L	18	14.0		2.0		7.5		7.0	
Conductivity @ 25 °C (lab)	µS/cm	17	79.0		29.0		53.6		55.0	
pH - Lab		18	7.9		5.8		7.2		7.3	
Ammonia -N	mg/L	19	0.240	<	0.005		0.042		0.016	
Nitrite - N	mg/L	19	0.013	<	0.005	<	0.005	<	0.005	
Nitrate - N	mg/L	19	1.200		0.034		0.341		0.120	
Total Kjeldahl - N	mg/L	16	0.740	<	0.005		0.331		0.315	
Total P	mg/L	19	0.059		0.012		0.027		0.025	
Dissolved Reactive P	mg/L	19	0.022		0.005		0.009		0.006	
#TN by Calc.	mg/L	16	1.745		0.103		0.691		0.469	
Colour	Hazen Units	6	70		30		53.33		60	
TDS	mg/L	6	69		25		43.17		42	
Hardness	mg/L	6	24		13		19.00		19.5	
Total Alkalinity	mg/L	6	38		5.4		13.73		9.1	
Chloride	mg/L	6	7.1		2.7		4.90		5.05	
Flouride	mg/L	6	0.1		0.1		0.10		0.1	
Suplhate	mg/L	6	4.1		0.8		2.15		2	
Iron - Total	mg/L	6	1.3		0.46		0.97		0.94	
Manganese - Total	mg/L	6	0.07		0.02		0.04		0.04	
Calcium	mg/L	6	4.8		2.6		3.93		4.15	
Magnesium	mg/L	6	2.8		1.6		2.20		2.2	
Potassium	mg/L	6	1.2		0.45		0.85		0.91	
Sodium	mg/L	6	3.9		2.8		3.43		3.45	
Silica (Molybdate Reactive)	mg/L	6	7.9		5.6		6.93		7.1	

Jackeys Ck d/s Jackeys Marsh						
	Units	Count	Maximum	Minimum	Mean	Median
PARAMETERS						
Flow Range	Cumecs	19	3.795	0.062	0.85	0.53
Temperature	Celsius	19	12.8	3.4	7.4	7.85
Conductivity @ 25 ^{o}C (field)	µS/cm	18	59	37	46.6	44.5
Dissolved Oxygen	mg/L	2	11.4	11.35	11.4	11.4
Field pH		19	7.7	5.3	6.9	7.03
Turbidity	N.T.U.	5	24.5	2.68	7.99	3.14
Suspended Solids	mg/L	19	34	< 1	3.7	2
Conductivity @ 25 ^{o}C (lab)	µS/cm	18	74	35	46	44
pH - Lab		18	7.8	5.9	6.8	6.9
Ammonia -N	mg/L	19	0.014	< 0.005	0.006	< 0.005
Nitrite - N	mg/L	19	0.005	< 0.001	<0.005	< 0.001
Nitrate - N	mg/L	19	0.35	0.07	0.196	0.16
Total Kjeldahl - N	mg/L	5	0.81	0.12	0.292	0.18
Total P	mg/L	19	0.072	0.005	0.014	0.01
Dissolved Reactive P	mg/L	19	0.01	< 0.001	<0.005	0.002
#TN by Calc.	mg/L	5	1.153	0.333	0.543	0.423
Colour	Hazen Units	3	85	30	51.67	40
TDS	mg/L	3	565	89	354.67	410
Hardness	mg/L	3	240	23	132.67	135
Total Alkalinity	mg/L	3	135	8	82.67	105
Chloride	mg/L	3	200	28	121.00	135
Flouride	mg/L	3	< 0.1	< 0.1	< 0.1	< 0.1
Sulphate	mg/L	3	16	3.2	6.30	< 0.5
Iron - Total	mg/L	3	0.3	0.26	0.62	0.72
Manganese - Total	mg/L	3	0.05	0.02	0.03	0.02
Calcium	mg/L	3	36	3.3	22.77	29
Magnesium	mg/L	3	36	3.6	18.20	15
Potassium	mg/L	3	1.9	1.6	1.73	1.7
Sodium	mg/L	3	91	18	57.00	62
Silica (Molybdate Reactive)	mg/L	3	14	2.4	8.80	10

Macquarie Catchment Site Monitoring Data

Macquarie at Ross									
	Units	Count		Maximum		Minimum		Mean	Median
PARAMETERS									
River Level	Gauge Ht.	21		0.53		0.105		0.355	0.38
Temperature	Celsius	25		22.8		5		12.74	10.7
Conductivity @ 25 °C (field)	µS/cm	26		364		138		221.5	216.5
Dissolved Oxygen	mg/L	10		11.4		6.1		9.5	9.815
Field pH		24		7.5		5.9		6.67	6.7
Turbidity	N.T.U.	16		10.3		1.54		4.21	4.03
Suspended Solids	mg/L	26		6	<	< 1		2.38	2
Conductivity @ 25 °C (Lab)	µS/cm	25		315		150		224.7	225
pH - Lab		26		8.6		6		7.25	7.2
Ammonia -N	mg/L	26		1.2	<	0.005		0.051	0.005
Nitrite - N	mg/L	26		0.006	<	0.005	<	0.005	< 0.005
Nitrate - N	mg/L	26		0.03	<	0.005		0.006	< 0.005
Total Kjeldahl - N	mg/L	12		0.56		0.17		0.37	0.36
Total P	mg/L	26		0.025		0.009		0.015	0.014
Dissolved Reactive P	mg/L	26		0.011	<	0.001		0.004	0.004
#TN by Calc.	mg/L	12		0.565		0.178		0.381	0.379
Colour	Hazen Units	5		125		20		57	50
TDS	mg/L	5		185		115		162	170
Hardness	mg/L	5		94		53		77.2	75
Total Alkalinity	mg/L	5		48		19		28.4	25
Chloride	mg/L	5		55		26		44	42
Flouride	mg/L	5	<	0.1	<	0.1	<	0.1	< 0.1
Sulphate	mg/L	5		3.1		1.6		2.32	2.6
Iron - Total	mg/L	5		2.2		0.43		0.892	0.53
Manganese - Total	mg/L	5		0.02	<	0.01		0.014	< 0.01
Calcium	mg/L	5		16		9.4		13.08	13
Magnesium	mg/L	5		13		7.1		10.82	11
Potassium	mg/L	5		0.71		0.55		0.644	0.65
Sodium	mg/L	5		28		17		23	25
Silica (Molybdate Reactive)	mg/L	5		14		6.4		10.94	12

Macquarie at Morningside (d/s Elizabeth)										
	Units	Count		Maximum		Minimum		Mean		Median
PARAMETERS										
Flow Range	Cumecs	42		43.14		0.165		2.757		0.519
Temperature	Celsius	42		23.3		4.8		12.8		11.4
Conductivity @ 25 °C (field)	µS/cm	39		294		110		197.8205		198.1
Dissolved Oxygen	mg/L	16		13.5		8.3		10.66625		10.65
Field pH		39		7.8		5.6		6.8		6.8
Turbidity	N.T.U.	22		32.9		1.02		9.90		6.03
Suspended Solids	mg/L	43		6	<	1		2.2		2.0
Conductivity @ 25 °C (Lab)	µS/cm	39		295		115		196		195
pH - Lab		41		8.2		6.0		7.3		7.3
Ammonia -N	mg/L	42		0.012	<	0.005		0.006	<	0.005
Nitrite - N	mg/L	42		0.01	<	0.001		0.004	<	0.005
Nitrate - N	mg/L	42		0.19	<	0.001		0.027		0.01
Total Kjeldahl - N	mg/L	17		0.72		0.23		0.46		0.42
Total P	mg/L	42		0.060		0.007		0.022		0.021
Dissolved Reactive P	mg/L	42		0.02	<	0.001		0.007		0.006
#TN by Calc.	mg/L	17		0.909		0.235		0.479		0.445
Colour	Hazen Units	6		150		20		66		55
TDS	mg/L	6		195		62		142		152
Hardness	mg/L	6		86		33		59		62
Total Alkalinity	mg/L	6		44		13		24.8		20.5
Chloride	mg/L	6		56		15		37		39
Flouride	mg/L	6	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	6		3.2		0.8		2.05		2.25
Iron - Total	mg/L	6		2.4		0.32		1.03		0.88
Manganese - Total	mg/L	6		0.02		0.01		0.01		0.01
Calcium	mg/L	6		14		6		9.9		10.2
Magnesium	mg/L	6		12		4.4		8.2		8.7
Potassium	mg/L	6		0.8		0.34		0.57		0.52
Sodium	mg/L	6		26		11		19.3		19.5
Silica (Molybdate Reactive)	mg/L	6		11		3.5		6.52		5.55

Elizabeth u/s Macquarie										
	Units	Count		Maximum		Minimum		Mean		Median
PARAMETERS										
Flow Range	Cumecs	41		8.5		0.155		1.04		0.434
Temperature	Celsius	41		22.7		4.9		11.90		10.8
Conductivity @ 25 °C (field)	µS/cm	38		198		78		137.76		144
Dissolved Oxygen	mg/L	15		12.9		7		10.15		10.4
Field pH		39		7.65		5		6.75		6.65
Turbidity	N.T.U.	21		43.1		1.72		15.87		10.7
Suspended Solids	mg/L	42		12	<	1		2.74		2
Conductivity @ 25 °C (Lab)	µS/cm	38		220		81		136.45		137.5
pH - Lab		41		8.1		5.8		7.08		7
Ammonia -N	mg/L	42		0.089	<	0.005		0.011	<	0.005
Nitrite - N	mg/L	41		0.013	<	0.001	<	0.005	<	0.005
Nitrate - N	mg/L	41		0.19	<	0.005		0.038		0.022
Total Kjeldahl - N	mg/L	17		0.81		0.27		0.531		0.57
Total P	mg/L	42		0.13		0.016		0.046		0.041
Dissolved Reactive P	mg/L	42		0.12	<	0.005		0.024		0.0165
#TN by Calc.	mg/L	17		0.99		0.283		0.572		0.6
Colour	Hazen Units	5		150		30		97		125
TDS	mg/L	5		175		51		120		130
Hardness	mg/L	5		50		24		37.4		38
Total Alkalinity	mg/L	5		39		9.4		20.48		12
Chloride	mg/L	5		35		9		22.8		23
Flouride	mg/L	5	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	5		3		0.5		1.56		1.5
Iron - Total	mg/L	5		3.2		0.48		1.9		2.1
Manganese - Total	mg/L	5		0.05	<	0.01		0.024		0.02
Calcium	mg/L	5		8.8		4.5		6.72		6.8
Magnesium	mg/L	5		6.9		3		5		5.1
Potassium	mg/L	5		0.62		0.29		0.436		0.41
Sodium	mg/L	5		16		7.6		11.92		13
Silica (Molybdate Reactive)	mg/L	5		11		5.2		7.48		6.4

Macquarie at Coburg										
	Units	Count		Maximum		Minimum		Mean		Median
PARAMETERS										
River Level	Gauge Ht.	31		2.19		0.695		1.21		1.11
Temperature	Celsius	30		22.5		6		12.9		11.2
Conductivity @ 25 °C (field)	µS/cm	29		296		162		226		226
Dissolved Oxygen	mg/L	15		11.8		6.4		9.08		9.4
Field pH		29		7.3		6.2		6.7		6.6
Turbidity	N.T.U.	21		25.9		1.24		6.38		3.33
Suspended Solids	mg/L	31		8	<	1		2.4		2
Conductivity @ 25 °C (Lab)	µS/cm	30		280		155		228		233
pH - Lab		30		8		6.2		7.2		7.3
Ammonia -N	mg/L	31		1.3	<	0.005		0.05	<	0.005
Nitrite - N	mg/L	31		0.008	<	0.001	<	0.005	<	0.005
Nitrate - N	mg/L	31		0.043	<	0.005		0.017		0.016
Total Kjeldahl - N	mg/L	17		0.75		0.15		0.43		0.4
Total P	mg/L	31		0.031	<	0.005		0.017		0.015
Dissolved Reactive P	mg/L	31		0.022	<	0.005	<	0.005	<	0.005
#TN by Calc.	mg/L	17		0.78		0.16		0.45		0.41
Colour	Hazen Units	6		125		15		60		50
TDS	mg/L	6		165		125		153		160
Hardness	mg/L	6		80		52		67		67
Total Alkalinity	mg/L	6		40		18		22.5		19
Chloride	mg/L	6		57		26		42.6		43.5
Flouride	mg/L	6	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	6		4.1		1.8		3.1		3.2
Iron - Total	mg/L	6		2.3		0.18		0.95		0.81
Manganese - Total	mg/L	6		0.03	<	0.01		0.016	<	0.01
Calcium	mg/L	6		14		9.5		11.25		11
Magnesium	mg/L	6		11		6.9		9.35		9.65
Potassium	mg/L	6		1.1		0.57		0.77		0.77
Sodium	mg/L	6		28		16		21.8		22.5
Silica (Molybdate Reactive)	mg/L	6		13		3.9		8.27		8.05

Lake River u/s Cressy Rd									
	Units	Count	Maximum		Minimum		Mean		Median
PARAMETERS									
Flow Range	Cumecs	37	24.49		0.544		3.71		1.59
Temperature	Celsius	36	19.8		4.6		11		9.75
Conductivity @ 25 °C (field)	µS/cm	36	222		51		84.6		78.5
Dissolved Oxygen	mg/L	10	12.4		8.4		10.5		10.7
Field pH		35	7.8		5.9		6.5		6.4
Turbidity	N.T.U.	16	27.5		3.67		15.22		13.5
Suspended Solids	mg/L	37	8	<	1		2.3		2
Conductivity @ 25 °C (Lab)	µS/cm	37	100		54		79.1		79
pH - Lab		37	8.4		6.8		7.4		7.4
Ammonia -N	mg/L	37	0.03	<	0.005		0.007	<	0.005
Nitrite - N	mg/L	37	0.007	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	37	0.1	<	0.005		0.022		0.017
Total Kjeldahl - N	mg/L	12	0.43	<	0.05		0.263		0.295
Total P	mg/L	37	0.05		0.004		0.015		0.012
Dissolved Reactive P	mg/L	37	0.02	<	0.005		0.005	<	0.005
#TN by Calc.	mg/L	12	0.471		0.065		0.278		0.315
Colour	Hazen Units	4	125		30		79		80
TDS	mg/L	4	93		56		75		75.5
Hardness	mg/L	4	33		28		31.3		32
Total Alkalinity	mg/L	4	22		11		14.5		12.5
Chloride	mg/L	4	8.2		6.5		7.3		7.2
Flouride	mg/L	4	0.1		0.1		0.1		0.1
Sulphate	mg/L	4	1.8		0.5		1.2		1.3
Iron - Total	mg/L	4	2.6		0.73		1.52		1.37
Manganese - Total	mg/L	4	0.04	<	0.01		0.02		0.015
Calcium	mg/L	4	7.3		5.5		6.5		6.55
Magnesium	mg/L	4	3.8		3.4		3.68		3.75
Potassium	mg/L	4	0.67		0.24		0.46		0.46
Sodium	mg/L	4	6		4.3		5.3		5.3
Silica (Molybdate Reactive)	mg/L	4	12.2		7.8		10.1		10.1

Macquarie at Stewarton Bridge										
PARAMETER	Units	Count		Maximum		Minimum		Mean		Median
River Height	Gauge Ht.	14		1.35		0.12		0.99		1.11
Temperature	Celsius	14		19.7		5.3		12.7		11.9
Conductivity @ 25 °C (field)	µS/cm	14		431		169		230.7		216.5
Dissolved Oxygen	mg/L	0		0		0		0		0
Field pH		12		7.3		6.4		6.75		6.75
Turbidity	N.T.U.	2		1.43		1.37		1.4		1.4
Suspended Solids	mg/L	14		5	<	1		2.14		2
Conductivity @ 25 °C (Lab)	µS/cm	14		265		180		219.6		220
pH - Lab		14		7.6		6.9		7.31		7.35
Ammonia -N	mg/L	14	<	0.005	<	0.005	<	0.005	<	0.005
Nitrite - N	mg/L	14		0.005	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	14		0.01	<	0.001	<	0.005	<	0.005
Total Kjeldahl - N	mg/L	0		0		0		0		0
Total P	mg/L	14		0.037		0.004		0.016		0.010
Dissolved Reactive P	mg/L	14		0.018	<	0.001		0.005		0.003
#TN by Calc.	mg/L									
Colour	Hazen Units	4		125		20		56.25		40
TDS	mg/L	4		145		47		97.75		99.5
Hardness	mg/L	4		61		22		36.25		31
Total Alkalinity	mg/L	4		18		8		12.5		12
Chloride	mg/L	4		42		8.5		21.375		17.5
Flouride	mg/L	4	<	0.1	<	0.1	<	0.1	<	0.1
Sulphate	mg/L	4		1.9		0.5		1.075		0.95
Iron - Total	mg/L	4		2.3		0.48		1.13		0.87
Manganese - Total	mg/L	4		0.03	<	0.01	<	0.01	<	0.01
Calcium	mg/L	4		10		4.1		6.4		5.75
Magnesium	mg/L	4		8.7		2.6		4.875		4.1
Potassium	mg/L	4		0.53		0.24		0.415		0.445
Sodium	mg/L	4		18		6.6		10.8		9.3
Silica (Molybdate Reactive)	mg/L	4		6.8		5.4		6.175		6.25

Macquarie d/s Ross

PARAMETER	Units	Count	Maximum		Minimum		Mean		Median
Temperature	Celsius	15	19.1		5.1		11.6		10.3
Conductivity @ 25 °C (field)	µS/cm	15	287		141		209		214
Field pH		12	7.5		6.2		6.7		6.6
Suspended Solids	mg/L	15	4	<	1		2		2
Conductivity @ 25 °C (Lab)	µS/cm	15	325		155		221		230
pH - Lab		15	7.7		6.9		7.3		7.3
Ammonia -N	mg/L	15	0.005	<	0.005	<	0.005	<	0.005
Nitrite - N	mg/L	15	0.013	<	0.001		0.002	<	0.001
Nitrate - N	mg/L	15	0.02	<	0.005		0.008		0.006
Total P	mg/L	15	0.036		0.01		0.02		0.021
Dissolved Reactive P	mg/L	15	0.015		0.002		0.007		0.007
#TN by Calc.									

Brumbys Creek

PARAMETERS	Units	Count	Maximum		Minimum		Mean		Median
Temperature	Celsius	17	17.6		4.6		11.2		10.8
Conductivity @ 25 °C (field)	µS/cm	17	134		19		61		75
Field pH		16	7.8		5.6		6.63		6.75
Suspended Solids	mg/L	15	7		1		2		2
Conductivity @ 25 °C (Lab)	µS/cm	15	95		19		45		25
pH - Lab		15	7.4		6.4		6.9		6.7
Ammonia -N	mg/L	16	0.009	<	0.005		0.006	<	0.005
Nitrite - N	mg/L	16	0.005	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	16	0.44	<	0.005		0.057		0.0115
Total P	mg/L	16	0.033	<	0.005		0.012		0.009
Dissolved Reactive P	mg/L	16	0.01	<	0.005	<	0.005	<	0.005

Tooms Lake Outflow

PARAMETERS	Units	Count	Maximum		Minimum		Mean		Median
Flow	Cumecs	15	2.09		0.008		0.484		0.353
Temperature	Celsius	15	18.2		4.6		10.78		10.5
Conductivity @ 25 °C (field)	µS/cm	15	88		69		76		74
Field pH		15	7.7		5.3		6.7		6.8
Suspended Solids	mg/L	15	2	<	1	<	1	<	1
Conductivity @ 25 °C (Lab)	µS/cm	15	86		68		74		73
pH - Lab		15	7.3		6.4		6.88		6.9
Ammonia -N	mg/L	15	0.012	<	0.005		0.006	<	0.005
Nitrite - N	mg/L	15	0.005	<	0.005		0.002		0.001
Nitrate - N	mg/L	15	0.2		0.003		0.04		0.03
Total P	mg/L	15	0.04		0.01		0.017		0.015
Dissolved Reactive P	mg/L	15	0.008		0.003		0.0054		0.006

Macquarie at Mt Morriston

PARAMETER	Units	Count	Maximum		Minimum		Mean		Median
Flow	Cumecs	15	8.122		0.224		1.72		0.713
Temperature	Celsius	16	19.1		4.2		11.4		10.6
Conductivity @ 25 °C (field)	µS/cm	16	474		93		169		142
Field pH		16	7.5		5.6		6.7		6.9
Suspended Solids	mg/L	15	< 1	<	1	<	1	<	1
Conductivity @ 25 °C (Lab)	µS/cm	15	225		71		135		130
pH - Lab		15	7.7		6.8		7.3		7.2
Ammonia -N	mg/L	15	0.008	<	0.005	<	0.005	<	0.005
Nitrite - N	mg/L	15	< 0.005	<	0.005	<	0.005	<	0.005
Nitrate - N	mg/L	14	0.05	<	0.001		0.017		0.012
Total P	mg/L	15	0.021		0.009		0.014		0.013
Dissolved Reactive P	mg/L	15	0.009	<	0.001		0.0044		0.003

Lake Leake Outflow								
PARAMETER	Units	Count	Maximum		Minimum	Mean		Median
Flow	Cumecs	15	4.121		0.088	0.822		0.42
Temperature	Celsius	15	18.4		4.4	10.7		10.5
Conductivity @ 25 °C (field)	µS/cm	15	66		53	58		56
Field pH		15	7.8		5	6.7		6.8
Suspended Solids	mg/L	15	2	<	1	1.4	<	1
Conductivity @ 25 °C (Lab)	µS/cm	15	61		51	56		58
pH - Lab		15	7.2		6.6	6.99		7.1
Ammonia -N	mg/L	15	0.021	<	0.005	0.008	<	0.005
Nitrite - N	mg/L	15	0.021	<	0.001	0.003	<	0.001
Nitrate - N	mg/L	15	0.14		0.003	0.025		0.013
Total P	mg/L	15	0.021		0.009	0.014		0.014
Dissolved Reactive P	mg/L	15	0.003	<	0.001	0.0015	<	0.001

APPENDIX B (i)

COMMISSIONAL WATER RIGHT ALLOCATIONS: MEANDER RIVER & TRIBUTARIES

MEANDER RIVER	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
To Deloraine	26	4.67	462.6	150.0	**612.6**
Tributaries	15	0.42	43.95	1031.0	**1074.95**
Deloraine to Exton	8	1.98	218.25	0	**218.25**
Tributaries	17	1.43	486.5	1371.0	**1857.5**
Exton to Westbury	6	1.78	191.0	0	**191.0**
Tributaries	1	0	0	22.5	**22.5**
Westbury onwards	27	5.83	593.20	233.0	**826.2**
Tributaries	23	0.23	22.5	5016.5	**5039.0**
TOTAL - MEANDER	**67**	**14.25**	**1465.05**	**383.0**	**1848.05**
TOTAL - TRIBUTARIES	**56**	**2.08**	**552.95**	**7441.0**	**7993.95**
GRAND TOTAL	**123**	**16.33**	**2018.00**	**7824.00**	**9842.00**

LIFFEY RIVER	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
Main stream	17	2.85	323.60	63.75	**387.35**
Tributaries	7	0	0	101.1	**101.10**
TOTAL	**24**	**2.85**	**323.60**	**164.85**	**488.45**

QUAMBY BROOK	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
Main stream	5	0.80	66.30	45.00	**111.30**
Tributaries	20	0	0	1452.10	**1452.10**
TOTAL	**25**	**0.80**	**66.30**	**1497.10**	**1563.40**

WESTERN CREEK	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
Main stream	2	0.42	42.00	0	**42.00**
Tributaries	3	0.23	7.00	603.45	**610.45**
TOTAL	**5**	**0.65**	**49.00**	**603.45**	**652.45**

CWR & PRESCRIPTIVE RIGHT ALLOCATIONS
ELIZABETH - MACQUARIE RIVERS

ELIZABETH RIVER	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
Main stream	5	4.42	245.00	0	**245.00**
Tributaries	0	0	0	0	**0**
TOTAL	**5**	**4.42**	**245.00**		**245.00**

MACQUARIE RIVER **	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
Main stream	36	38.62	2114.26	365.00	**2479.26**
Tributaries	38	0.80	60.50	11212.0	**11272.50**
TOTAL	**74**	**39.42**	**2174.76**	**11577.0**	**13751.76**

PRESCRIPTIVE RIGHTS

STREAM	NO	ALLOCATION
Mill Brook	1	1.148 ML/day
Lymestone Creek	1	0.90 ML/day

** Irrigators below the Lake River junction are covered by the "Loan Act" and do not require CWR's to take water.

BRUMBYS CREEK	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
Main stream	12	10.80	1037.60	0	**1037.60**
Tributaries	9	0.09	6.75	775.85	**782.60**
TOTAL	**21**	**10.89**	**1044.35**	**775.85**	**1820.20**

PRESCRIPTIVE RIGHTS

STREAM	NO	ALLOCATION
Palmers Rivulet	2	1/2 the natural flow of the stream each

C W R & PRESCRIPTIVE RIGHT ALLOCATIONS:
SOUTH ESK RIVER & TRIBUTARIES

SOUTH ESK RIVER	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
Above Fingal	3	2.58	258.0	0	**258.00**
Tributaries	8	3.59	359.0	560.5	**919.50**
Between Fingal and Avoca	6	6.75	686.25	0	**686.25**
Tributaries	5	1.13	112.5	242.0	**354.50**
Below Avoca	55	51.53	5056.2	249.5	**5305.70**
Tributaries	23	0.45	45.0	5400.4	**5445.40**
TOTAL - SOUTH ESK	**64**	**60.86**	**6000.45**	**249.5**	**6249.95**
TOTAL - TRIBUTARIES	**36**	**5.17**	**516.5**	**6202.9**	**6719.40**
GRAND TOTAL	**123**	**66.03**	**6516.95**	**6452.4**	**12969.35**

PRESCRIPTIVE RIGHT

STREAM	NO	ALLOCATION
Nile River	1	1/4 of the flow not exceeding 3000 gallons/minute

ST PAULS RIVER	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
Main stream	3	2.42	175.25	0	**175.25**
Tributaries	5	0.45	45.00	356.00	**401.00**
TOTAL	**8**	**2.87**	**220.25**	**356.00**	**576.25**

BREAK O DAY RIVER	No	DIRECT DAILY ML	DIRECT ANNUAL ML	STORAGE ANNUAL ML	TOTAL ANNUAL ML
Main stream	0	0	0	0	**0**
Tributaries	4	0	0	1010.00	**1010.00**
TOTAL	**4**			**1010.00**	**1010.00**

APPENDIX B (ii) **FARM DAMS**

MEANDER CATCHMENT TRIBUTARIES

MEANDER RIVER TRIBUTARIES

TOTAL NO OF REGISTERED DAMS	161
TOTAL ESTIMATED CAPACITY	8569.8 ML
LARGEST CAPACITY	3400.0 ML
AVERAGE CAPACITY	53.2 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1985	2	37.0
1986	3	923.0
1988	3	33.0
1990	5	148.5
1991	4	27.0
1992	8	3568.0 *
1993	8	341.0
1994	5	241.0
1995	14	995.0
1996	5	313.0
TOTAL	**57**	**6626.5**

* One dam of 3400.0 ML capacity

LIFFEY RIVER TRIBUTARIES

TOTAL NO OF REGISTERED DAMS	23
TOTAL ESTIMATED CAPACITY	342.8 ML
LARGEST CAPACITY	31.5 ML
AVERAGE CAPACITY	14.9 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1986	1	13.5
1991	1	2.0
1996	1	15.0
TOTAL	**3**	**30.5**

QUAMBY BROOK TRIBUTARIES

TOTAL NO OF REGISTERED DAMS	47
TOTAL ESTIMATED CAPACITY	1788.8 ML
LARGEST CAPACITY	160.0 ML
AVERAGE CAPACITY	38.0 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1985	1	45.0
1986	1	10.0
1988	5	191.6
1989	1	3.0
1991	1	36.0
1992	2	4.0
1993	3	42.0
1995	3	122.0
TOTAL	**17**	**453.6**

WESTERN CREEK TRIBUTARIES

TOTAL NO OF REGISTERED DAMS	22
TOTAL ESTIMATED CAPACITY	666.5 ML
LARGEST CAPACITY	112.0 ML
AVERAGE CAPACITY	30.30 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1988	2	139.0
1989	1	45.0
1991	2	80.0
TOTAL	**5**	**264.0**

MACQUARIE CATCHMENT TRIBUTARIES

MACQUARIE RIVER TRIBUTARIES

TOTAL NO OF REGISTERED DAMS	83
TOTAL ESTIMATED CAPACITY	14,535.6 ML
LARGEST CAPACITY	4,500.0 ML
AVERAGE CAPACITY	175.1 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1985	3	1600.0
1986	1	4500.0
1987	6	151.0
1988	5	240.0
1990	4	375.1
1991	7	368.0
1992	1	873.0
1993	1	60.0
1994	8	198.5
1995	9	525.5
TOTAL	**45**	**8891.1**

BRUMBYS CREEK TRIBUTARIES

TOTAL NO OF REGISTERED DAMS	13
TOTAL ESTIMATED CAPACITY	818.3 ML
LARGEST CAPACITY	330.0 ML
AVERAGE CAPACITY	62.9 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1989	2	262.0
1994	1	20.0
1995	1	40.0
1996	1	330.0
TOTAL	**5**	**652.0**

SOUTH ESK RIVER TRIBUTARIES

SOUTH ESK RIVER TRIBUTARIES (ABOVE FINGAL)

TOTAL NO OF REGISTERED DAMS	6
TOTAL ESTIMATED CAPACITY	564.5 ML
LARGEST CAPACITY	480.0 ML
AVERAGE CAPACITY	94.1 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1991	1	15.0
1992	1	45.0
1993	2	500.0
1994	1	4.0
TOTAL	**5**	**564.0**

SOUTH ESK RIVER TRIBUTARIES (BETWEEN FINGAL & AVOCA)

TOTAL NO OF REGISTERED DAMS	4
TOTAL ESTIMATED CAPACITY	242.0 ML
LARGEST CAPACITY	110.0 ML
AVERAGE CAPACITY	60.5 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1987	2	110.0
1996	1	22.0
TOTAL	**3**	**132.0**

SOUTH ESK RIVER TRIBUTARIES (BELOW AVOCA)

TOTAL NO OF REGISTERED DAMS	64
TOTAL ESTIMATED CAPACITY	6,932.6 ML
LARGEST CAPACITY	2,140.0 ML
AVERAGE CAPACITY	109.3 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1985	2	50.0
1988	1	3.0
1989	1	12.0
1990	5	357.5
1991	5	1,056.8
1992	2	2,000.0
1993	2	150.0
1994	1	50.0
1995	5	2495.5
TOTAL	**24**	**6,174.8**

ST PAULS RIVER TRIBUTARIES

TOTAL NO OF REGISTERED DAMS	9
TOTAL ESTIMATED CAPACITY	362.0 ML
LARGEST CAPACITY	100.0 ML
AVERAGE CAPACITY	40.2 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1991	2	36.0
1994	2	130.0
1995	3	170.0
TOTAL	**7**	**336.0**

BREAK O'DAY RIVER TRIBUTARIES

TOTAL NO OF REGISTERED DAMS	6
TOTAL ESTIMATED CAPACITY	1,010.0 ML
LARGEST CAPACITY	413.0 ML
AVERAGE CAPACITY	168.3 ML

DAM PERMITS APPROVED SINCE 1985

YEAR	NUMBER	TOTAL CAP ML
1992	1	80.0
1993	4	905.0
TOTAL	**5**	**985.0**

APPENDIX C(i)

Monitoring Sites in the South Esk Basin - Water Quantity

				Period of Record		
Site Name	**Hydrol No.**	**Easting**	**Northing**	**Start**	**End**	**Data Type**
SOUTH ESK AT MATHINNA	18506	574100	5409150	15/05/1991	31/05/1995	Ght Only
BREAK O'DAY AT CULLENSWOOD	730	594500	5395300	05/05/1982	13/03/1984	1
BREAK O'DAY AT KILLYMOON		588000	5394500	04/11/1983	26/06/1995	1
SOUTH ESK AT FINGAL	33	580200	5389550	15/03/1921	01/06/1990	Ght Only
ABERFOYLE US STOREYS CK	18472	566280	5380680	22/02/1991	29/09/1993	1
STORYS DS ABERFOYLE	18463	566220	5380320	22/02/1991	12/07/1992	1
SOUTH ESK AT PERTH	181	516900	5394750	19/12/1956	13/07/1995	1
SOUTH ESK AT AVOCA	107	559750	5374300	11/02/1991	30/06/1993	Ght Only
St. PAULS US SOUTH ESK	18311	560400	5373500	04/05/1988	20/06/1995	1
St.PAULS DS BRUSHY H	840	566800	5370200	07/12/1984	03/05/1988	1
BUFFALO BROOK DS BLACK ROCK	839	552010	5378200	06/12/1984	09/08/1990	1
SOUTH ESK AT LLEWELLYN	150	546850	5370340	01/01/1953	20/06/1995	1
NILE AT DEDDINGTON	25	538200	5397199	03/06/1982	01/08/1995	1
SOUTH ESK AT SYMMONS PLAINS	90	522100	5390500	25/05/1937	31/01/1994	Very Low Flows + Ght
SOUTH ESK AT LONGFORD	89	510300	5395850	30/09/1957	31/03/1995	Ght
SOUTH ESK AT LAUNCESTON	72	509200	5410150	01/02/1901	08/05/1955	DR Flows
LAKE TREVALLYN	158	507099.9	5411400	07/05/1955	29/06/1995	Lake Level
MACQUARIE DS LONGMARSH DAM	18210	568800	5333800	22/05/1975	05/10/1990	1
TOOMS LAKE	687	564449.6	5326099	09/07/1938	28/11/1991	Lake Level
TOOMS DS TOOMS LAKE						1
MACQUARIE AT TREFUSIS	18217	549900	5329900	11/07/1979	21/06/1995	1
MACQUARIE AT MT MORRISTON	259	547500	5331802	09/08/1991	28/05/1995	Ght Only
MACQUARIE AT ROSS	20	540500	5346400	02/10/1990	31/05/1995	Ght only
LAKE LEAKE AT DAM	210	565949	5348951	01/04/1928	31/05/1995	Lake Level
ELIZABETH DS LAKE LEAKE	9	565899.3	5349050	01/01/1922	20/06/1995	DR in early part of record
ELIZABETH AT CAMPBELLTOWN	8	540749.6	5357450	01/01/1922	30/09/1930	Ght only
ELIZABETH US MACQUARIE	18310	535500	5358800	01/01/1988	16/09/1993	1
MACQUARIE DS ELIZABETH	18312	532400	5359800	24/01/1989	14/07/1995	1
ISIS RIVER AT BARTON	91	520150	5365600	26/05/1937	31/01/1947	Ght Only
POATINA AT No.15 DROP	502	500850	5375500	01/02/1964	21/02/1994	Tailrace
POATINA AT No.1 DROP	490	497250	5374350	05/02/1964	10/07/1995	Tailrace
MACQUARIE DS BRUMBY	188	511000	5386250	14/08/1957	17/07/1990	1
MACQUARIE AT WESTMOOR	768	511450	5380800	01/05/1965	28/02/1994	20
WOODS LAKE	462	502100.1	5341581	01/01/1968	31/03/1995	Lake Level
LAKE AT WOODS DEN	71	504400	5351850	25/04/1922	01/12/1950	Ght Only
LAKE US MACQUARIE	175	506050	5367150	25/02/1956	01/01/1981	Poor Record
MACQUARIE DS LAKE	160	511320	5381550	11/07/1955	23/01/1973	1
MACQUARIE AT CRESSY	733	507714.7	5385386	16/05/1985	05/05/1995	1
MACQUARIE AT PANSHANGER	504	508140	5385219	08/09/1964	30/04/1985	1
MACQUARIE AT WOOLMERS	500	511450	5381080	10/04/1965	22/05/1978	
JACKEYS DS JACKEYS MARSH	18221	471300	5386200	01/04/1982	10/05/1995	1
WARNERS NEAR ADAMS PEAK	267	472000	5377879	31/05/1988	28/11/1991	1
MEANDER US MOTHER CUMMINGS RVT	18230	463900	5382300	23/01/1989	18/09/1990	1
MEANDER AB WARNERS CK	588	467700	5383950	09/05/1968	22/02/1985	Low flow only
MEANDER DS WARNERS CK	18224	468300	5383900	28/07/1982	18/10/1991	1
WESTERN DS DALE BROOK	18213	465600	5398400	15/02/1975	14/09/1994	1
MEANDER AT MEANDER	18907	467899.7	5388899	17/07/1990	30/05/1995	Ght Only
MEANDER AT MEANDER	23	467899.7	5388899	15/12/1920	30/11/1937	DR Only
MEANDER AT RAILWAY BRIDGE	162	471450	5402850	01/09/1954	15/02/1995	1
MEANDER DS DELORAINE	541	472400	5404150	30/09/1968	11/07/1995	1
QUAMBY DS EDEN RVT	18226	476500	5397600	20/12/1984	12/07/1995	1
MEANDER AT WESTWOOD	163	497500	5405400	26/05/1955	01/01/1989	DR Only
MEANDER AT STRATH BRIDGE	852	492625	5406875	28/08/1985	10/07/1995	1
LIFFEY AT LAKE HWY	178	475950	5379800	10/07/1956	24/01/1964	1
LIFFEY AT UPPER LIFFEY	16			01/03/1921	30/09/1930	Ght only ?
LIFFEY US WEST CHANNEL	18209	495800	5390800	12/02/1975	12/11/1991	1
WEST CHANNEL	1595	496900	5390800	01/01/1979	18/05/1993	1
LIFFEY AT CARRICK	164	500100	5401900	01/01/1922	31/05/1995	DR in early record, then 1
MAIN CHANNEL- CRESSY	18300			31/12/1978	15/07/1993	1
TOD'S CORNER CANAL	528	487400	5351500			1
TOD'S CORNER CANAL	528	487400	5351500	01/05/1966	31/03/1995	20
Data type codes:	1	River Level				
	DR	Daily Read				
	Ght	Gauge Height				
	Tailrace	Power station tailrace discharge				

APPENDIX C(ii)

Monitoring Sites in the South Esk Basin - Water Quality

			Water Quality		
Station Name	**Easting**	**Northing**	**Nutrients**	**Ions**	**Bacteria and Metals**
Tooms River d/s Tooms Lk	**564500**	**5326200**	**Y**		**Y**
Macquarie @ Mt Morriston	**547900**	**5533170**	**Y**		**Y**
Macquarie @ Ross weir	**540600**	**5347100**	**Y**		**Y**
Macquarie @ Midlands Hwy	**539600**	**5347800**	**Y**		**Y**
Elizabeth d/s Lake Leake	**565600**	**5349400**	**Y**		**Y**
Elizabeth u/s Macquarie	**535500**	**5358800**	**Y**	**Y**	**Y**
Macquarie d/s Elizabeth	**532350**	**5360250**	**Y**	**Y**	**Y**
Macquarie @ Stewarton Br	**521500**	**5369400**	**Y**		**Y**
Macquarie @ Coburg	**515300**	**5377200**	**Y**	**Y**	**Y**
Lake River u/s Macquarie	**506100**	**5367200**	**Y**	**Y**	**Y**
Brumbys Ck u/s Macquarie	**507800**	**5382250**	**Y**		**Y**
South Esk @ Mathinna	**574100**	**5409150**	**Y**		**Y**
South Esk @ Fingal	**579750**	**5390500**	**Y**	**Y**	**Y**
Break O'Day @ Killymoon Br	**588000**	**5394600**	**Y**	**Y**	**Y**
South Esk @ Avoca	**559750**	**5374300**	**Y**	**Y**	**Y**
St Pauls u/s South Esk	**560400**	**5373500**	**Y**	**Y**	**Y**
South Esk @ Llewellyn	**546850**	**5370350**	**Y**	**Y**	**Y**
South Esk @ Perth	**510300**	**5395900**	**Y**	**Y**	**Y**
South Esk @ Longford	**510300**	**5395850**	**Y**	**Y**	**Y**
Back Ck @ Bass Hwy	**508800**	**5396900**	**Y**	**Y**	**Y**
South Esk @ Hadspen	**505650**	**5405750**	**Y**	**Y**	**Y**
Lake Trevallyn	**507100**	**5411400**	**Y**		**Y**
Meander @ Meander	**467850**	**5389900**	**Y**	**Y**	**Y**
Jackeys Ck d/s Jackeys Marsh	**471300**	**5386200**	**Y**	**Y**	**Y**
Meander @ Deloraine	**471450**	**5402850**	**Y**	**Y**	**Y**
Western Ck @ Montana Rd Br	**465600**	**5398400**	**Y**	**Y**	**Y**
Quamby Brook d/s Eden Rvt.	**476500**	**5397600**	**Y**	**Y**	**Y**
Quamby Brook @ Birralee Rd	**485950**	**5403450**	**Y**	**Y**	**Y**
Liffey @ Carrick	**500200**	**5401800**	**Y**	**Y**	**Y**
Meander @ Strath Br	**492650**	**5406900**	**Y**	**Y**	**Y**

			Water Quality		
Station Name	**Easting**	**Northing**	**Nutrients**	**Ions**	**Bacteria and Metals**
Sites of Infrequent Sampling					
Quamby Brook @ Roxford	**487400**	**5404550**	**Y**		**Y**
Back Ck u/s Longford STP	**509150**	**5395400**	**Y**		**Y**
Leiths Ck u/s Western Ck	**465550**	**5398000**	**Y**		**Y**
Dale Brook u/s Western Ck	**465200**	**5398250**	**Y**		**Y**
Western Ck u/s Dale Brook	**465200**	**5398200**	**Y**		**Y**
Leiths Ck @ Brocks Rd	**463900**	**5394350**	**Y**		**Y**
Leiths Ck @ Cheshunt Rd	**465100**	**5391850**	**Y**		**Y**
Leiths Ck @ Reiffers Rd	**466450**	**5388850**	**Y**		**Y**
Western Ck @ Bankton Rd	**461300**	**5395550**	**Y**		**Y**
Dale Brook @ Bankton Rd	**461250**	**5395700**	**Y**		**Y**
Dale Brook @ Dairy Plains Rd	**459600**	**5395600**	**Y**		**Y**
Western Ck @ Cheshunt Rd	**458850**	**5390750**	**Y**		**Y**
Dale Brook @ Western Ck Rd	**456800**	**5390650**	**Y**		**Y**
Liffey @ Moreton Cottage	**499800**	**5397150**	**Y**		**Y**
Liffey @ Pitts Lane	**496000**	**5391250**	**Y**		**Y**
Liffey @ Bracknell Rd	**490150**	**5386850**	**Y**		**Y**
Liffey @ Bracknell Picnic Gnd	**495750**	**5388900**	**Y**		**Y**
Liffey @ Liffey	**486850**	**5385300**	**Y**		**Y**
Meander @ Knights Br	**494900**	**5405550**	**Y**		**Y**
Meander @ Westwood Br	**502700**	**5403200**	**Y**		**Y**
Meander 100m d/s Deloraine STP	**472150**	**5403800**	**Y**		**Y**
Meander @ Wadleys Rd	**474800**	**5404500**	**Y**		**Y**
Meander @ Porters Br	**478000**	**5405050**	**Y**		**Y**
Meander @ Egmont Br	**484600**	**5406100**	**Y**		**Y**
Meander @ Cheshunt Br	**467750**	**5391600**	**Y**		**Y**
Meander @ Barrett's Br	**469300**	**5397200**	**Y**		**Y**
Meander @ Calstock	**469550**	**5400650**	**Y**		**Y**
Quamby @ Golden Valley Rd	**476600**	**5391700**	**Y**		**Y**
Quamby @ Quamby Brook	**475850**	**539500**	**Y**		**Y**
Quamby @ Leith	**484350**	**5400850**	**Y**		**Y**
Quamby @ Bass Hwy	**485500**	**5402650**	**Y**		**Y**
St Pauls @ Royal George	**574000**	**5369600**	**Y**		**Y**
Break O'Day u/s Cullenswood	**594500**	**5395300**	**Y**		**Y**
Nile @ Nile	**527300**	**5389300**	**Y**		**Y**
South Esk @ Bonneys Plains	**551100**	**5371400**	**Y**		**Y**
South Esk @ Glen Esk Br	**539550**	**5375450**	**Y**		**Y**
South Esk @ Clarendon	**523450**	**5390750**	**Y**		**Y**
South Esk @ Evandale Reserve	**519850**	**5397450**	**Y**		**Y**
South Esk @ Perth WS	**515150**	**5398350**	**Y**		**Y**
South Esk @ Pateena Br	**509450**	**5397450**	**Y**		**Y**
South Esk @ Hadspen Picnic Gnd	**504800**	**5404500**	**Y**		**Y**
South Esk @ Tasrail Depot	**579350**	**5389100**	**Y**		**Y**
South Esk @ Vinegar Hill	**576350**	**5387750**	**Y**		**Y**

			Water Quality		
Station Name	**Easting**	**Northing**	**Nutrients**	**Ions**	**Bacteria and Metals**
Sites of Infrequent Sampling					
South Esk @ Heffords Br	**572450**	**5385850**	**Y**		**Y**
South Esk u/s Storys Ck	**567050**	**5379000**	**Y**		**Y**
South Esk @ Leona Br	**563800**	**5378000**	**Y**		**Y**
South Esk @ Evercreech	**580200**	**5407300**	**Y**		**Y**
South Esk @ Giles Marsh	**582250**	**5396450**	**Y**		**Y**
South Esk @ Malahide Br	**579750**	**5390550**	**Y**		**Y**
South Esk @ Upper Esk	**560000**	**5414250**	**Y**		**Y**
South Esk @ Sandhurst Br	**566700**	**5409400**	**Y**		**Y**
Macquarie u/s Trefusis	**549900**	**5239900**	**Y**		**Y**
Macquarie @ Mona Vale	**541800**	**5340050**	**Y**		**Y**
Macquarie @ Hoggs Ford	**536350**	**355050**	**Y**		**Y**
Macquarie @ Cressy WS	**507650**	**5385350**	**Y**		**Y**
Blackman @ Mona Vale	**541350**	**5339950**	**Y**		**Y**
Isis @ Barton	**520150**	**5365600**	**Y**		**Y**
Lake @ Little Forest	**508000**	**5374150**	**Y**		**Y**
Brumbys @ Lees Br	**506700**	**5382000**	**Y**		**Y**
Elizabeth u/s Boomer Gully	**550950**	**5361350**	**Y**		**Y**
Elizabeth @ Campbelltown WS	**540750**	**537450**	**Y**		**Y**

APPENDIX C(iii)

Monitoring System in the South Esk Basin - Ecology

Station Name	Easting	Northing
Meander @ Calstock	469550	5400650
Meander @ Barrett's Bridge	469300	5397200
Meander @ Meander	467850	5389900
Meander @ Falls Rd	463900	5382300
Brushy Rivulet @ Birralee Rd	486200	5408000
Quamby Brook @ Golden Valley	476600	5391700
Liffey u/s Liffey	481700	5385300
Eden Rivulet d/s Eden Rd	479400	5393500
Jackeys Ck d/s Jackeys Marsh	471300	5386200
South Esk @ Cokers Rd	560000	5414300
South Esk @ Griffin Picnic Gnds.	569700	5408900
South Esk @ Beauty Flat Rd	582300	5403200
South Esk u/s Storys Ck	567050	5379000
Tower Rivulet @ Pepper Hill Rd	572300	5392100
St Pauls u/s Royal George	580900	5369000
Nile @ Lilyburn Br	538200	5397200
Western Ck @ Cheshunt Rd	458850	5390750
Western Ck @ Montana Rd Br	465600	5398400
Quamby Brook @ Birralee Rd	485950	5403450
Meander @ Strath Br	492600	5406850
South Esk @ Evandale	519850	5397450
South Esk @ Perth	510300	5395900
South Esk @ Avoca	559750	5374300

Collections at all sites included data on macroinvertebrates, riparian vegetation, algae and benthic substrate.