

Appendix M: Long-Term Average Zone Budget Results from The Status Quo and Valetta & Ashburton River Transient Scenarios Utilising Calibration Parameters

Status Quo Scenario

Valetta Zone

Inflows (m³/s)

Aquifer	LSR	Rivers & streams	From coast	From aquifer above	From aquifer below	From aquifer to the north	From aquifer to the south	Total (m ³ /s)	Total (MCM/year)
1	7.3	3.2	0	-	7	3.5	6.3	27.3	860
2	-	-	-	9.2	4.4	2.3	1.6	17.5	550
3-5	-	-	-	5.3	-	1.7	1.8	8.8	280
Total								53.6	1,690

Outflows (m³/s)

Aquifer	Abstraction	Rivers & streams	To coast	To aquifer above	To aquifer below	To aquifer to the north	To aquifer to the south	Total (m ³ /s)	Total (MCM/year)
1	0.6	4.5	7.3	-	9.2	5.5	1.8	28.9	910
2	1.4	-	-	7	5.3	2.8	0.7	17.2	540
3-5	0.8	-	-	4.4	-	2.9	0.8	8.9	280
Total								55	1,730

Difference between inflows and outflows = 1.4 m³/s (2.6%)

Ashburton River Zone

Inflows (m³/s)

Aquifer	LSR	Rivers & streams	From coast	From aquifer above	From aquifer below	From aquifer to the north	From aquifer to the south	Total (m ³ /s)	Total (MCM/year)
1	5.5	15.4	0	-	5.8	2.2	5.6	34.5	1,090
2	-	-	-	8	3.9	1.8	2.8	16.5	520
3-5	-	-	-	5	-	1.3	2.9	9.2	290
Total								60.2	1,900

Outflows (m³/s)

Aquifer	Abstraction	Rivers & streams	To coast	To aquifer above	To aquifer below	To aquifer to the north	To aquifer to the south	Total (m ³ /s)	Total (MCM/year)
1	0.4	12.4	5.9	-	8	2.7	5.4	34.8	1,100
2	0.9	-	-	5.8	5	1.9	2.4	16	500
3-5	0.6	-	-	3.9	-	3.3	1.8	9.6	300
Total								60.4	1,900

Difference between inflows and outflows = -0.2 m³/s (-0.3%)

Valetta & Ashburton River Consents Scenario

Valetta Zone

Inflows (m³/s)

Aquifer	LSR	Rivers & streams	From coast	From aquifer above	From aquifer below	From aquifer to the north	From aquifer to the south	Total (m ³ /s)	Total (MCM/year)
1	7.9	3.2	0	-	6.8	3.5	6.3	27.7	870
2	-	-	-	9.6	4.4	2.3	1.6	17.9	560
3-5	-	-	-	5.5	-	1.7	1.9	9.1	290
Total								54.7	1,730

Outflows (m³/s)

Aquifer	Abstraction	Rivers & streams	To coast	To aquifer above	To aquifer below	To aquifer to the north	To aquifer to the south	Total (m ³ /s)	Total (MCM/year)
1	0.7	4.4	7.3	-	9.6	5.4	1.8	29.2	920
2	1.9	-	-	6.8	5.5	2.7	0.6	17.5	550
3-5	1.1	-	-	4.4	-	2.8	0.8	9.1	290
Total								55.8	1,760

Difference between inflows and outflows = -1.1 m³/s (-2%)

Ashburton River Zone

Inflows (m³/s)

Aquifer	LSR	Rivers & streams	From coast	From aquifer above	From aquifer below	From aquifer to the north	From aquifer to the south	Total (m ³ /s)	Total (MCM/year)
1	5.8	15.4	0	-	5.7	2.2	5.5	34.6	1,090
2	-	-	-	8.1	3.9	1.8	2.7	16.5	520
3-5	-	-	-	5	-	1.3	2.8	9.1	290
Total								60.2	1,900

Outflows (m³/s)

Aquifer	Abstraction	Rivers & streams	To coast	To aquifer above	To aquifer below	To aquifer to the north	To aquifer to the south	Total (m ³ /s)	Total (MCM/year)
1	0.4	12.3	5.8	-	8.1	2.7	5.4	34.7	1,090
2	1.1	-	-	5.7	5	1.9	2.4	16.1	510
3-5	0.8	-	-	3.9	-	3.3	1.8	9.8	310
Total								60.6	1,910

Difference between inflows and outflows = -0.4 m³/s (-0.7%)

Appendix N: Changes in Simulated Stream flow Statistics

Stream name	Monitoring site	Change between the Status Quo and Valetta-Ashburton River scenarios (ℓ/s) (first 17 years)		
		Average stream flow	50%-ile stream flow	7-Day MALF
Hinds River	Boundary Road	Negligible	Negligible	-0.3
Ashburton River	South branch, Valetta	Negligible	Positive	Positive
	SH1	Negligible	Negligible	-60
	Mouth	Negligible	Negligible	-90
Wakanui Creek	Elgin / Innes Rd	-1	-1	-0.4
	Christys Rd	-7	-8	-5
	Chertsey Rd	-10	-10	-9
	Mouth	-13	-13	-13
Hinds drains groups	Coldstream drains	-8	-8	-9
	Lowcliffe drains	-7	-8	-8
	Isleworth drains	-49	-48	-51
	Lynford-Longbeach drains	-42	-26	-48
	Winslow-Longbeach drains	Positive	Dry under status quo	Dry under status quo
	Dawsons Drain	Positive	Dry under status quo	Dry under status quo
	Winslow-Flemington drains	Positive	Positive	-7
	Tinwald-Ashton drains	Positive	Negligible	-5
	Westerfield Drain	-1	Negligible	-2

Stream name	Monitoring site	Change between the Status Quo Kz x 100 and Valetta-Ashburton River Kz x 100 scenarios (ℓ/s) (first 17 years)		
		Average stream flow	50%-ile stream flow	7-Day MALF
Hinds River	Boundary Road	Negligible	Negligible	-0.3
Ashburton River	South branch, Valetta	Negligible	Dry under status quo	Dry under status quo
	SH1	Negligible	Negligible	-121
	Mouth	-140	-161	-257
Wakanui Creek	Elgin / Innes Rd	Dry under status quo	Dry under status quo	Dry under status quo
	Christys Rd	Negligible	Negligible	Negligible
	Chertsey Rd	Negligible	Negligible	Negligible
	Mouth	Negligible	Negligible	Negligible
Hinds drains groups	Coldstream drains	Negligible	Negligible	Negligible
	Lowcliffe drains	Negligible	Negligible	Negligible
	Isleworth drains	-15	-13	-22
	Lynford-Longbeach drains	-80	-68	-158
	Winslow-Longbeach drains	Negligible	Dry under status quo	Dry under status quo
	Dawsons Drain	Positive	Dry under status quo	Dry under status quo
	Winslow-Flemington drains	Positive	Dry under status quo	Dry under status quo
	Tinwald-Ashton drains	-9	Negligible	-32
	Westerfield Drain	-3	-3	-5

Stream name	Monitoring site	Change between the Status Quo Kz x 10,000 and Valetta-Ashburton River Kz x 10,000 scenarios (ℓ/s) (first 17 years)		
		Average stream flow	50%-ile stream flow	7-Day MALF
Hinds River	Boundary Road	Negligible	Negligible	Positive
Ashburton River	South branch, Valetta	Negligible	Dry under status quo	Dry under status quo
	SH1	Negligible	-120	Positive
	Mouth	- 153	-231	- 231
Wakanui Creek	Elgin / Innes Rd	Dry under status quo	Dry under status quo	Dry under status quo
	Christys Rd	Negligible	Negligible	Negligible
	Chertsey Rd	Negligible	Negligible	-85
	Mouth	Negligible	Negligible	-115
Hinds drains groups	Coldstream drains	Negligible	Negligible	Negligible
	Lowcliffe drains	Negligible	Negligible	Negligible
	Isleworth drains	Negligible	-12	-12
	Lynford-Longbeach drains	-73	-131	-131
	Winslow-Longbeach drains	-11	-4	-4
	Dawsons Drain	Negligible	Dry under status quo	Dry under status quo
	Winslow-Flemington drains	Positive	Dry under status quo	Dry under status quo
	Tinwald-Ashton drains	-8	-25	-25
	Westerfield Drain	-3	-5	-5

Stream name	Monitoring site	Change between the Status Quo Sy = 0.1 and Valetta-Ashburton River Sy = 0.1 scenarios (ℓ/s) (first 17 years)		
		Average stream flow	50%-ile stream flow	7-Day MALF
Hinds River	Boundary Road	Negligible	-0.3	-0.5
Ashburton River	South branch, Valetta	Negligible	Positive	Positive
	SH1	Negligible	Negligible	-127
	Mouth	Negligible	Negligible	-162
Wakanui Creek	Elgin / Innes Rd	-1	-2	-1
	Christys Rd	-8	-9	-7
	Chertsey Rd	-11	-11	-11
	Mouth	-14	-14	-13
Hinds drains groups	Coldstream drains	-9	-9	-10
	Lowcliffe drains	-8	-9	-9
	Isleworth drains	-60	-65	-65
	Lynford-Longbeach drains	-48	-49	-64
	Winslow-Longbeach drains	Positive	Dry under status quo	Dry under status quo
	Dawsons Drain	Positive	Dry under status quo	Dry under status quo
	Winslow-Flemington drains	Positive	Positive	-8
	Tinwald-Ashton drains	Positive	Negligible	-4
	Westerfield Drain	-1	-1	-2