



Glenelg River. Courtesy CGCMA

Glenelg Hopkins Region

Bound by the Great Dividing Range in the north and stunning coastline in the south, the Glenelg Hopkins region supports agriculture, supplies water to neighbouring regions and includes National Parks (Grampians, Lower Glenelg and Cobboboonee) and State Forest.

Three river basins form the region – Hopkins (basin 36), Portland (basin 37) and Glenelg (basin 38).

Much of the Hopkins and Portland basins have been cleared for agriculture, in particular sheep and cattle grazing for wool, meat and dairy.

The Glenelg basin is the most heavily forested of the three and includes national parks, pockets of forest and a number of water storages at the headwaters of the Glenelg and Wannon Rivers, notably Rocklands Reservoir. In the south of the basin, the Glenelg River winds through a spectacular gorge, where limestone cliffs and the river meet the sea.

Stream condition varied considerably between the three basins, with streams in the Glenelg basin being in best condition. Notably, the only rivers in the region in good condition (14% of reaches assessed) were found in the Glenelg basin. Both the Glenelg and Portland basins had the majority of their stream length in moderate condition (68% and 84% respectively). The majority of stream length in the Hopkins basin was in poor condition (38%) or very poor condition (56%).

Water Quality

Only 21 of the 122 reaches across the Glenelg Hopkins region were assessed for water quality, with results ranging from excellent to poor.

Fourteen reaches were assessed for water quality in the Glenelg basin, their locations representing a geographic spread across the basin. Results ranged from poor to good with the reaches in the best condition (reaches 2 and 28) located in forested parts of the basin on the lower Glenelg River and the upper Wannon River.

The poorest result in the Glenelg basin was at reach 27 on the Wannon River. Despite being located in the upper reaches of the Wannon, in a section that is largely surrounded by forest, reach 27 had highly elevated phosphorus, salinity and turbidity levels. This result can be attributed to the impact of the 2006 bushfires in the Grampians. Poor results were also recorded at reaches 33, 49 and 51 in the centre of the basin.

The two reaches tested in the Portland basin were found to be in moderate and excellent condition. Reach 16, at the bottom of the basin in a cleared tract of the Moyne River had extremely high levels of phosphorus and salinity. In contrast, reach 3 on the lower Surrey River, also located in relatively cleared land, returned an excellent result for all parameters. This is attributed to the fact that for most of its course, the Surrey River flows through forested land whereas the course of the Moyne River is entirely through land cleared for agriculture.

Within the Hopkins basin, the five reaches tested were found to be in poor condition with highly elevated results for phosphorus and salinity. All five reaches are located in the lower area of the basin where land is cleared of vegetation.

Hydrology

Flow stress scores varied significantly across the Glenelg Hopkins region with considerable differences between the three basins.

Rocklands Reservoir provided 3,562 ML of environmental water to the Glenelg basin in 2011-12. Six reaches (reaches 6-11) of the Glenelg River below Rocklands Reservoir had priority watering actions. Reaches 9-11 met 75% (three out of four) priority watering actions. Reaches 6-8 did not meet the single environmental watering action due to the variation in the duration and magnitude of the summer base flows.

The south-west of the State was the most severely affected by the drought with streams in the Portland and Glenelg basins some of the most climate-stressed in Victoria, with 16 reaches in the top fifty most drought affected reaches in the State. Drought affected reaches included the Shaw River (reach 14), Eumeralla River (reach 211), Fitzroy River (reach 207) in the Portland basin and the Glenelg River (reach 6), Wannon River (reaches 15, 16, and 24), Stokes River (reach 20), and Grange Burn Creek (reaches 38 and 39) in the Glenelg basin.

In the Glenelg basin, flow stress was highly variable. Reaches 27-28 of the Wannon River and reach 50 on Salt Creek, had the most altered flow regimes. In contrast, Dwyer Creek (reaches 40-41) had a near natural flow regime.

Flow stress scores in the Portland basin indicated moderate variations to natural flow regimes for all streams. In contrast, natural flow regimes in the Hopkins basin were highly altered, demonstrating extended periods of low flow, zero flow and summer stress. Two-thirds of reaches in the Hopkins basin had extremely modified flow regimes. Streams with the most significantly altered flow regimes included Mt. Emu Creek (reaches 18 and 22), Greys Creek (reach 34), and the lower reaches of the Merri River (reaches 38 and 39). Furthermore, the lower reaches of the Hopkins River, Merri River and Mt. Emu Creek, recorded extended periods of low flow.



Glenelg River. Courtesy Alison Pouliot

Vegetation

Almost a quarter of reaches assessed for streamside vegetation in the Glenelg Hopkins region were in good condition (16%) or excellent condition (8%). Almost half (47%) of the reaches were in poor condition and 29% were in moderate condition.

Condition of streamside vegetation varied markedly between the individual basins within the region. In the east, reaches in the Hopkins basin were in either poor or moderate condition (70% and 30% respectively). In the Portland basin, the majority of reaches were in poor or moderate condition (50% and 42% respectively), with just one reach rated as good (reach 8 on the Fitzroy River) and one in near reference condition (reach 5 near the headwaters of the Surrey River).

In both the Hopkins and Portland basins, the poor condition of streamside vegetation was reflected in low scores for vegetation width, continuity, diversity and overhang as well as a lack of large trees along most reaches. Invasive willows were not a significant problem with the exception of reaches 38 and 39 on the Merri River in the Hopkins basin and reach 9 on Darlot Creek in the Portland basin where a number of willows were recorded.

In contrast to the Hopkins and Portland basins, the condition of streamside vegetation in the Glenelg basin was good. Of the 51 reaches assessed, many (18 reaches representing 35%) were in good condition. Of the remainder, 13 reaches (25%) were in poor condition, 11 (22%) in moderate condition and nine (18%) in excellent condition.

Two reaches were in reference condition - Moleside Creek (reach 14) and Stokes River (reach 20). Both are located in areas retaining extensive natural vegetation. Seven reaches were in near reference condition (reaches 2, 4, 5, 12, 15, 28 and 202), all of which are located in the vegetated south-west and north-east corners of the basin.

Physical Form

The physical condition of reaches across the Glenelg Hopkins region ranged from excellent to poor and included some significant differences in condition between individual basins. Overall, a third of the region's 122 reaches were in excellent condition (33% or 40 reaches), almost half were in good condition (42% or 52 reaches) and of the remainder, 29 reaches (24%) were in moderate condition and one reach (1%) was in poor condition.

The Hopkins basin had the greatest variance in physical condition, with the highest proportion of reaches in excellent condition (52% or 24 reaches of the 46 reaches assessed), and all were clustered in the south of the basin. The Hopkins basin also contained the poorest reach recorded for the entire Glenelg Hopkins region - reach 28 on Fiery Creek, which scored poorly for fish passage and very poorly for bank stability. Instream woody habitat was not assessed for the south-west floodplain bioregion as a suitable reference could not be found as all streams were considered to be too greatly modified compared with their original condition.

Glenelg River. Courtesy Adam Bester



Physical condition of reaches in the Portland basin was predominantly either excellent (46% or 11 of the 24 reaches assessed) or good (also 46% or 11 reaches). Two reaches (8%) scored moderately, these being Eumeralla River (reach 11) and Back Creek (reach 18). Both scored poorly for levels of instream woody habitat, however reach 11 also had poor bank stability and reach 18 also had major downstream fish barriers.

Of the reaches that were in excellent condition, nine were in reference condition, notably reaches 3 and 5, and reach 16 on the Surrey and Moyne Rivers respectively and reaches 203, 206, 207, 209, 211 and 216, all located in estuary zones.

Physical condition in the Glenelg basin was predominantly either moderate (42% or 22 of the 52 reaches assessed) or good (46% or 24 reaches). Only six reaches in the Glenelg basin were in excellent condition and of those, three were in reference condition (reaches 14, 201 and 202).

Moderate scores were attributed to a combination of low levels of instream woody habitat and bank instability. Eighteen reaches were affected by downstream barriers to fish migration. The most significant barrier was Rocklands Reservoir.

Aquatic Life

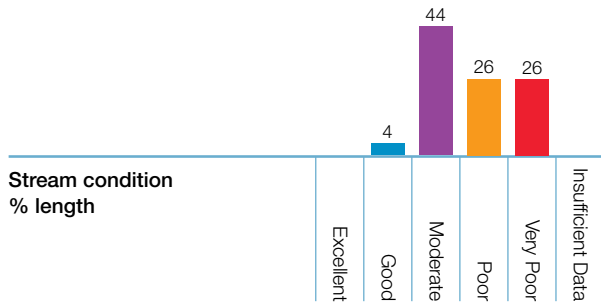
Almost 90% of reaches in the Glenelg Hopkins region were assessed for aquatic life. Results ranged predominantly from good to poor. Of the reaches tested, 20% were found to be in poor condition, 40% in moderate and 31% in good condition. Of the remainder, two reaches (of the 109 assessed) were classed as very poor and seven were found to be in excellent or near reference condition.

Results for the three individual basins reflect the extent of land cleared for agriculture and urban development. The Glenelg basin had 55% of reaches in good or excellent condition compared to 24% and 23% in the Hopkins and Portland basins respectively. Reaches found to be in near reference condition were all located in the Glenelg basin, along the forested sections of the Glenelg and Crawford Rivers. In contrast, one of the two reaches in the region classed as very poor, was also located in the Glenelg basin on Salt Creek - this is attributed to its saline waters, as its name suggests.

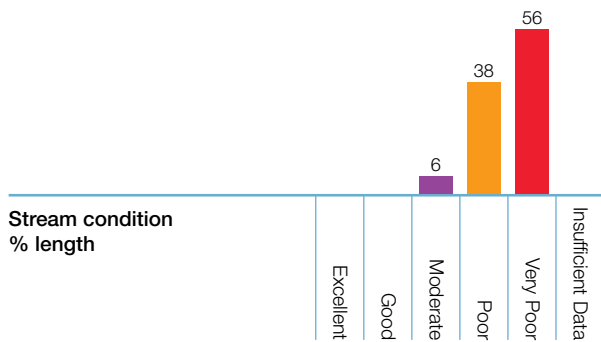


Wannon River (Nigretta Falls) Courtesy Adam Bester

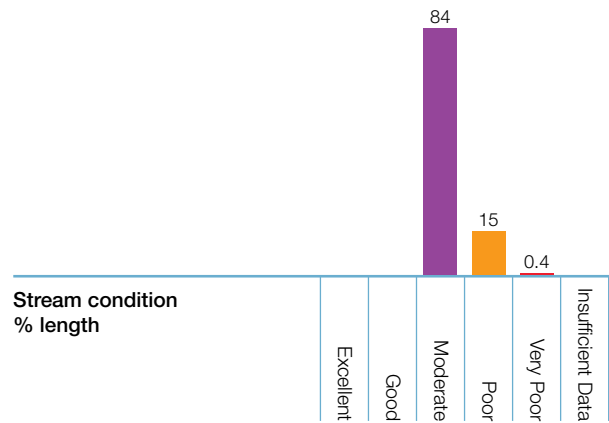
/ Glenelg Hopkins Region



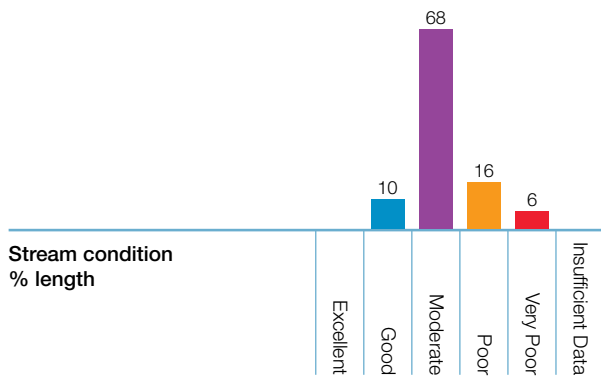
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/ Portland



/ Glenelg



Environmental Condition

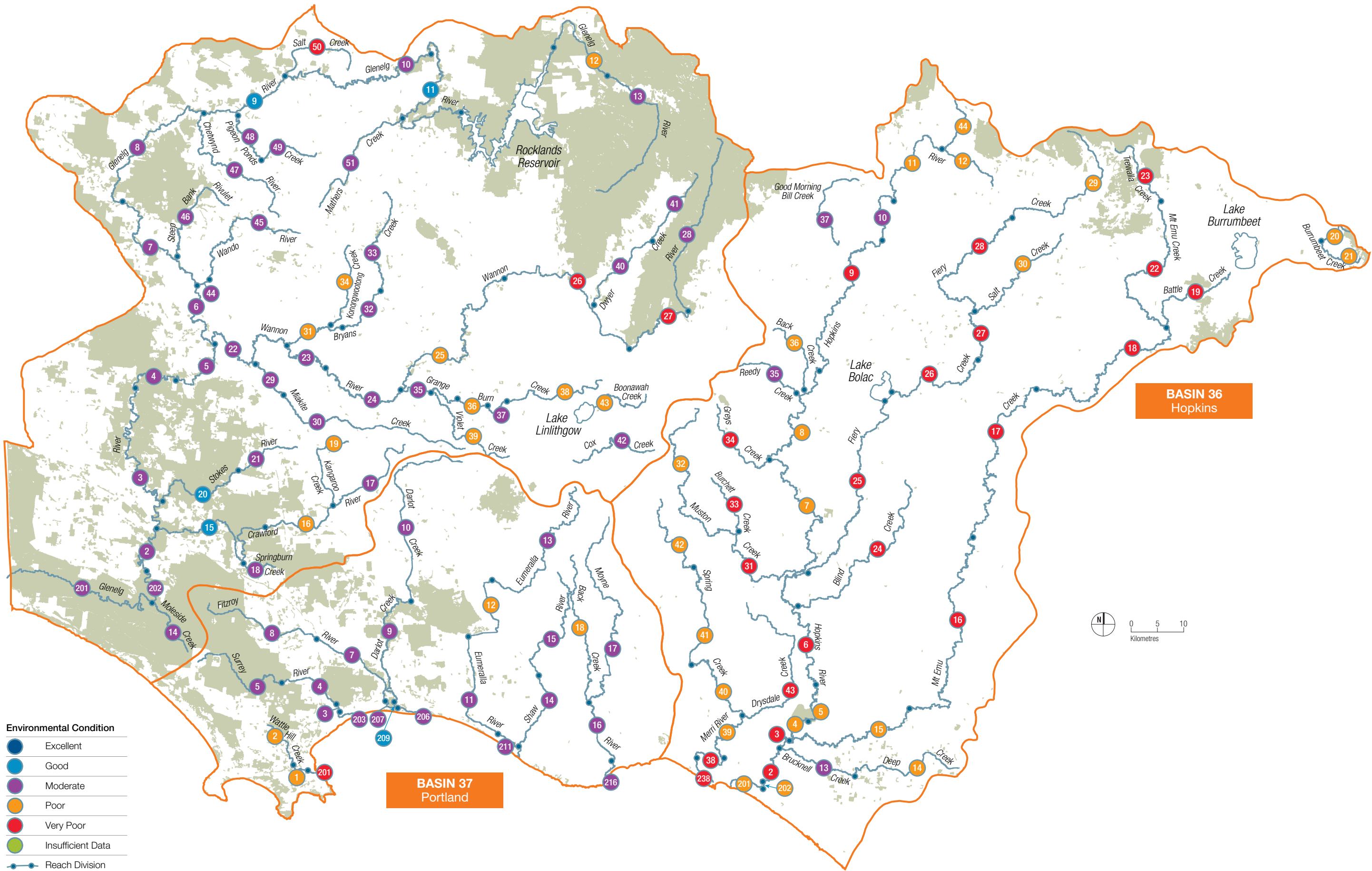




Glenelg Hopkins

- / Hopkins – basin 36
- / Portland – basin 37
- / Glenelg – basin 38

BASIN 38
Glenelg



BASIN 36
Hopkins

BASIN 37
Portland

- Environmental Condition**
- Excellent
 - Good
 - Moderate
 - Poor
 - Very Poor
 - Insufficient Data
 - Reach Division
 - Forest (uncleared)
 - 10 Reach number



Index of Stream Condition

/ Hopkins Basin

Basin	Reach	Reach Length (Km)	River	Hydrology	Physical Form	Streamside Zone	Water Quality	Aquatic Life	ISC Score	Condition
36	2	15.3	Hopkins River ^{3,4}	2	10	4	3		18	VPoor
36	3	5.8	Hopkins River ⁴	2	9	3	4	4	17	VPoor
36	4	10	Hopkins River ⁴	2	10	5		5	22	Poor
36	5	16	Hopkins River ⁴	2	9	5		6	23	Poor
36	6	48.8	Hopkins River ^{3,4}	2	8	4	3	7	19	VPoor
36	7	51.4	Hopkins River ⁴	3	7	4		6	22	Poor
36	8	44	Hopkins River ⁴	4	7	4		3	20	Poor
36	9	54.2	Hopkins River ⁴	3	9	3		4	19	VPoor
36	10	15.2	Hopkins River ⁴	3	9	5		6	25	Moderate
36	11	25.9	Hopkins River ⁴	3	8	6		3	21	Poor
36	12	17	Hopkins River ⁴	3	8	4			21	Poor
36	13	23.2	Brucknell Creek ⁴	2	10	6		8	27	Moderate
36	14	33.4	Deep Creek ⁴	2	10	5		4	20	Poor
36	15	52.4	Mt Emu Creek ⁴	2	9	5	4	6	21	Poor
36	16	78.6	Mt Emu Creek ⁴	2	6	3		6	17	VPoor
36	17	60.3	Mt Emu Creek ^{3,4}	2	6	3	3	5	16	VPoor
36	18	62.7	Mt Emu Creek ⁴	1	7	4		7	19	VPoor
36	19	29	Battle Creek	1	7	3		8	18	VPoor
36	20	8.9	Burrumbeet Creek ¹	3	7	6			23	Poor
36	21	13	Burrumbeet Creek ¹	3	7	4		4	20	Poor
36	22	57.9	Mt Emu Creek	1	7	4		6	18	VPoor
36	23	21.9	Trewalla Creek	1	6	4		3	14	VPoor
36	24	55.5	Blind Creek ⁴	4	10	3		2	18	VPoor
36	25	60.8	Fiery Creek ⁴	2	9	3		4	18	VPoor
36	26	32.5	Fiery Creek ⁴	2	6	3		5	17	VPoor
36	27	19.4	Fiery Creek ⁴	2	6	5		3	17	VPoor
36	28	54.9	Fiery Creek ⁴	2	4	5		6	18	VPoor
36	29	40.1	Fiery Creek	2	7	5		6	21	Poor

¹ Used hydrology result from 2004 ISC ³ Only 1 year water quality data available ⁴ No instream woody habitat score available

Basin	Reach	Reach Length (Km)	River	Hydrology	Physical Form	Streamside Zone	Water Quality	Aquatic Life	ISC Score	Condition
36	30	34.5	Salt Creek ⁴	2	9	4		6	21	Poor
36	31	31	Muston Creek ⁴	2	10	3		5	19	VPoor
36	32	58.2	Muston Creek ⁴	2	8	3		8	20	Poor
36	33	17	Burchett Creek ⁴	3	8	3		4	19	VPoor
36	34	25	Grays Creek ⁴	1	9	4		5	18	VPoor
36	35	20.4	Reedy Creek ⁴	4	7	6		5	26	Moderate
36	36	19.6	Back Creek ⁴	3	8	3			20	Poor
36	37	26.2	Good Morning Bill Creek ^{1,4}	4	9	4			25	Moderate
36	38	9.5	Merri River ⁴	1	10	3		3	15	VPoor
36	39	18.5	Merri River ⁴	1	10	4		7	21	Poor
36	40	25.8	Spring Creek ⁴	3	9	3		8	23	Poor
36	41	26.7	Spring Creek ⁴	3	8	3		8	23	Poor
36	42	26.2	Spring Creek ⁴	3	10	3		7	23	Poor
36	43	50	Drysdale Creek ⁴	2	10	4		4	19	VPoor
36	44	15.7	Hopkins River	3	7	6			23	Poor
36	201	9.5	Hopkins River ⁴	2	9	4			20	Poor
36	202	0.4	Hopkins River ⁴	2	10	5			23	Poor
36	238	6.4	Merri River ⁴	1	10	3		3	15	VPoor

¹ Used hydrology result from 2004 ISC ⁴ No instream woody habitat score available

/ Portland Basin

Basin	Reach	Reach Length (Km)	River	Hydrology	Physical Form	Streamside Zone	Water Quality	Aquatic Life	ISC Score	Condition
37	1	4.2	Wattle Hill Creek	3	8	6		3	21	Poor
37	2	13.1	Wattle Hill Creek	3	7	6		4	22	Poor
37	3	0.8	Surry River	5	10	6	9	5	30	Moderate
37	4	16	Surry River	5	8	6		7	31	Moderate
37	5	29	Surry River	5	10	9		3	28	Moderate
37	7	22.8	Fitzroy River	5	8	5		6	28	Moderate
37	8	27.8	Fitzroy River	5	8	7		6	31	Moderate
37	9	40.7	Darlot Creek	6	8	5		8	31	Moderate
37	10	43.5	Darlot Creek	5	7	4		5	24	Moderate
37	11	25.8	Eumeralla River	5	6	5		6	27	Moderate
37	12	18.6	Eumeralla River	5	7	3		6	23	Poor
37	13	45.6	Eumeralla River	5	7	4		5	24	Moderate
37	14	20.4	Shaw River ⁴	7	9	5		6	31	Moderate
37	15	35.5	Shaw River	7	7	4		4	25	Moderate
37	16	17.1	Moynes River ⁴	5	10	4	6	7	27	Moderate
37	17	61.5	Moynes River ⁴	5	9	3		7	25	Moderate
37	18	40.7	Back Creek	7	6	3		5	23	Poor
37	201	2	Wattle Hill Creek ⁴	3	7	4		3	18	VPoor
37	203	7.2	Surry River ⁴	5	10	3		5	24	Moderate
37	206	6.9	Fitzroy River ^{1,4}	7	10	3			29	Moderate
37	207	2.8	Fitzroy River ⁴	5	10	6		6	30	Moderate
37	209	0.4	Darlot Creek ^{1,4}	7	10	6		8	36	Good
37	211	8.4	Eumeralla River ⁴	5	10	3		6	25	Moderate
37	216	6.4	Moynes River ^{1,4}	6	10	3		7	28	Moderate

¹ Used hydrology result from 2004 ISC ⁴ No instream woody habitat score available

/ Glenelg Basin

Basin	Reach	Reach Length (Km)	River	Hydrology	Physical Form	Streamside Zone	Water Quality	Aquatic Life	ISC Score	Condition
38	2	17.9	Glenelg River	3	8	9	8	8	32	Moderate
38	3	60	Glenelg River	2	5	8		9	24	Moderate
38	4	16.7	Glenelg River	2	5	9		8	24	Moderate
38	5	20.5	Glenelg River	2	5	9	6	8	24	Moderate
38	6	22.1	Glenelg River ²	4	5	7	7	9	28	Moderate
38	7	33.9	Glenelg River ²	4	5	7		9	27	Moderate
38	8	36.8	Glenelg River ²	4	7	7		9	31	Moderate
38	9	22	Glenelg River ²	8	8	7		9	39	Good
38	10	57.8	Glenelg River ²	8	8	7		6	34	Moderate
38	11	52.8	Glenelg River ²	8	8	8	6	8	37	Good
38	12	22	Glenelg River	3	5	9		3	20	Poor
38	13	44.4	Glenelg River	3	5	8	7	6	25	Moderate
38	14	18.5	Moleside Creek	3	10	10		6	30	Moderate
38	15	46.1	Crawford River	5	9	9		9	37	Good
38	16	19.4	Crawford River	5	6	3		5	22	Poor
38	17	25.5	Crawford River	5	6	4		6	24	Moderate
38	18	8.6	Springburn Creek	6	7	7			33	Moderate
38	19	20.6	Kangaroo Creek	6	7	5		3	23	Poor
38	20	28	Stokes River	5	9	10		8	36	Good
38	21	17.4	Stokes River	5	7	6		8	31	Moderate
38	22	37.9	Wannon River	2	6	6	6	8	24	Moderate
38	23	25.1	Wannon River	2	8	6		8	25	Moderate
38	24	31	Wannon River	2	7	6		8	25	Moderate
38	25	59.2	Wannon River ³	2	7	7	4	8	23	Poor
38	26	41.3	Wannon River	2	5	4		5	18	VPoor
38	27	22.3	Wannon River	1	6	7	3	4	16	VPoor
38	28	46.7	Wannon River	1	7	9	8	7	26	Moderate
38	29	15.5	Miakite Creek	6	5	6		6	28	Moderate
38	30	51.4	Miakite Creek	6	5	4		8	26	Moderate

² Hydrology score based on 2011 environmental watering objectives ³ Only 1 year water quality data available

/ Glenelg Basin

Basin	Reach	Reach Length (Km)	River	Hydrology	Physical Form	Streamside Zone	Water Quality	Aquatic Life	ISC Score	Condition
38	31	17.8	Bryans Creek ³	4	6	4	4	6	22	Poor
38	32	13.8	Bryans Creek	4	6	5		6	24	Moderate
38	33	28.7	Bryans Creek ³	6	7	7	3	6	26	Moderate
38	34	23.6	Konong Wootong Creek	2	6	4		6	20	Poor
38	35	20.1	Grange Burn Creek	4	9	4		7	26	Moderate
38	36	8	Grange Burn Creek	4	6	3		7	22	Poor
38	37	6.4	Grange Burn Creek	4	6	5		7	26	Moderate
38	38	28	Grange Burn Creek	4	6	3		5	21	Poor
38	39	29.2	Violet Creek	4	7	4			23	Poor
38	40	22.5	Dwyer Creek	8	5	6		7	31	Moderate
38	41	20.8	Dwyer Creek	8	7	7		3	27	Moderate
38	42	26.3	Cox Creek		7	3		7	26	Moderate
38	43	18.9	Boonawah Creek		7	3		5	22	Poor
38	44	3.5	Wando River	4	7	4		9	26	Moderate
38	45	41.4	Wando River	4	7	6	6	7	28	Moderate
38	46	31.4	Steep Bank Rivulet	6	7	8			34	Moderate
38	47	42.4	Chetwynd River	4	7	6		6	27	Moderate
38	48	16	Pigeon Ponds Creek	6	8	7		7	34	Moderate
38	49	16.8	Pigeon Ponds Creek ³	6	6	7	3	5	24	Moderate
38	50	24.4	Salt Creek	1	7	6		1	13	VPoor
38	51	32.6	Mathers Creek ³	7	7	8	3	6	27	Moderate
38	201	47.2	Glenelg River ⁴	3	10	8			30	Moderate
38	202	10.5	Glenelg River ⁴	3	10	9		8	33	Moderate

³ Only 1 year water quality data available ⁴ No instream woody habitat score available