

APPENDIX I

List of Submissions

Sub. no	Name	Affiliation
Written submissions following publication of the Resources Report		
1	RICHARDSON	
2	RICHARDS	BENALLA WATER BOARD
3/1	MIDDLETON	SHIRE OF BANNOCKBURN
4	MOORE	SHIRE OF NEWSTEAD
5	BANFIELD	LODDON-CAMPASPE REGIONAL PLANNING AUTHORITY
6	ENTWISLE	SCHOOL OF BOTANY - UNIVERSITY OF MELBOURNE
7	MARTIN	
8	SENIOR	RIVER BASIN MANAGEMENT SOCIETY INC
9	ANDERSON	ROCHESTER WATER BOARD
10	MCDONALD	SHIRE OF KERANG
11	TURNER	CASTLEMAINE HISTORICAL SOCIETY INC
12	JACKEL	SHIRE OF ROCHESTER
13	WALLIS	SHIRE OF WANNON
14	THOMPSON	LATROBE VALLEY FIELD NATURALISTS
15/1	WHITE	SNOWY RIVER IMPROVEMENT TRUST
16	REDWOOD	UPPER BRODRIBB PROTECTION COMMITTEE
17/1	OSBORN	MARYBOROUGH FIELD NATURALISTS CLUB
18/1	WHITE	LAND PROTECTION ADVISORY COMMITTEE - ORBOST REGION
19	RIMMER	THE VICTORIAN MOUNTAIN TRAMPING CLUB
20	WILSON	DEPARTMENT OF INDUSTRY, TECHNOLOGY AND RESOURCES
21	WALLIS	
22	WILLIAMSON	SCENIC SPECTRUMS PTY LTD
23	MCLAUGHLIN	
24	EDDY	
25	SEMPLE	VICTORIAN FIELD AND GAME ASSOCIATION
26	HORGAN	STATE ELECTRICITY COMMISSION OF VICT
27	MEAKIN	VICTORIAN PISCATORIAL COUNCIL
28	ODDIE	MT EMU CREEK CATCHMENT CO-ORDINATING GROUP
29	LEVY	ANIMAL LIBERATION
30/1	HOPGOOD	VICTORIAN RECREATIONAL FISHERMEN'S ADVISORY COUNCIL
31	FOSTER	DEPARTMENT OF CONSERVATION, FORESTS AND LANDS
32	BLIZZARD	MACEDON WATER BOARD
33/1	CROUCH	WYPERFELD NATIONAL PARK & LAKE ALBACUTYA ADVISORY COMMITTEE
34	JONES	VICTORIAN AMATEUR CANOE - ASSOCIATION INC – TOURING COMMITTEE
35	TREMAINE	WILDLIFE RESCUE CONSULTANCY
36	LARKIN	
37/12	WOODROFFE	ROYAL HISTORICAL SOCIETY OF VICTORIA
38/1	CURTIS	CONCERNED RESIDENTS OF EAST GIPPSLAND
39	BERICK	THE COUNCIL OF VICTORIAN FLY FISHING CLUBS INC
40/1	GARDINER	GELLIBRAND RIVER SYSTEM COMMITTEE
41/1	KUNERT	
42/1	FARIS	CONSERVATION COUNCIL OF VICTORIA
43/1	SENIOR	BOARD OF WORKS
44/1	BARNETT	VICTORIAN NATIONAL PARKS ASSOCIATION INC
45	DRUMMOND	IAN DRUMMOND AND ASSOCIATES PTY LTD
46/1	COLVIN	
47	EDDY	

Sub. no	Name	Affiliation
48	TANNER	MORNINGTON PENINSULA AND DISTRICT WATER BOARD
49/1	BURNS	FEDERATION OF VICTORIAN WALKING CLUBS INC
50	MOLONEY	SHIRE OF DIMBOOLA
51	QUINLAN	VICTORIAN NATIONAL PARKS ASSOCIATION INC - LINEAR PARKS COMMITTEE
52	BIRD	
53	FINLAYSON	CENTRE FOR ENVIRONMENTAL APPLIED HYDROLOGY – UNIVERSITY OF MELBOURNE
54	LEACH	INSTITUTE OF WATER ADMINISTRATION
55	BRIODY	LEXTON LANDCARE GROUP
56	WRIGHT	FRIENDS OF MALLACOOTA
57	HAYNES	SHIRE OF STAWELL
58	BALLARD	RURAL WATER COMMISSION OF VICTORIA
59	BALKIN	SHIRE OF DIAMOND VALLEY
60	HOGG	DEPARTMENT OF SPORT AND RECREATION
61	LAMBERT	ORBOST DISTRICT ENVIRONMENT GROUP
62	WILKINSON	COLAC DISTRICT WATER BOARD
63	VALE	BARMAH FOREST PRESERVATION LEAGUE
64	LAW	SHIRE OF NATHALIA
65	HUON	VICTORIAN ASSOCIATION OF FOREST INDUSTRIES
66	HASLER	VICTORIA ASSOCIATION OF FOUR WHEEL DRIVE CLUBS INC
67/2	FRASER	
68	TAYLOR	COLLINGWOOD HISTORICAL SOCIETY
69	COLES	ENVIRONMENT PROTECTION AUTHORITY
70	BRIGGS	
71	WHITEHEAD	VICTORIAN APIARISTS' ASSOCIATION INC
72	HALLS	MELBOURNE BUSHWALKERS
73	MARSHALL	AUSTRALIAN HERITAGE COMMISSION - HISTORIC ENVIRONMENT
74	TONTA	CITY OF MORDIALLOC HISTORICAL SOCIETY
75	COOKE	LAND PROTECTION ADVISORY COMMITTEE MILDURA REGION
Written submissions following publication of the Proposed Recommendations		
1	ROBINSON	
2	DONKIN	
3	WORLAND	HAMILTON WATER BOARD
4	JABOOR	BENALLA WATER BOARD
5	JOHNSTON	SHIRE OF EAST LODDON
6	STUBBS	
7	MOLL	
8	WALKER	
9	SIMMONS	VICTORIA ARCHAEOLOGICAL SURVEY ; DEPARTMENT OF CONSERVATION AND ENVIRONMENT
10/1	MATHIESON	ORBOST WATER BOARD
11	WARD	GIPPSLAND BRANCH - PROSPECTORS & MINERS ASSOCIATION VICTORIA INC
12/1	WILKINSON	COLAC DISTRICT WATER BOARD
13	HOBSON	TAMBO WATER BOARD
14	DYER	SHIRE OF KERANG
15	CAMBREY	
16	WRIGHT	UPPER YARRA VALLEY & DANDENONG RANGES AUTHORITY
17	COPLAND	LODDON-CAMPASPE REGIONAL PLANNING AUTHORITY
18/1	HOBSON	SHIRE OF TAMBO
19	CLINE	
20	JELINEK	
21	MILLER	
22	O'ROURKE	

Sub. no	Name	Affiliation
23	GILBERT	CITY OF SHEPPARTON
24/1	JAMES	SHIRE OF RODNEY
25	GILBERT	SHIRE OF GISBORNE
26	DAVIES	
27	KOEHN, DOEG, O'CONNOR & RAADIK	
28	BARFORD	COUNCIL OF VICTORIAN FLY FISHING CLUBS INC
29	HUON	VICTORIAN ASSOCIATION OF FOREST INDUSTRIES
30	MCSPADDEN	
31	OFFICER	
32	GLASSOCK	ALBERTON WATER BOARD
33	STEPHENS	SHIRE OF ALBERTON
34	GARDNER	
35	MORGAN	ENVIRONMENT PROTECTION AUTHORITY
36	MINCHIN	
37/1	MILLS	MACALISTER IRRIGATION DISTRICT ADVISORY COMMITTEE - RURAL WATER COMMISSION OF VICTORIA
38	COVENTRY	
39	GAZZARD (FAMILY)	
40	BERRY	MALLACOOTA WATER BOARD
41	SPITTY	SHIRE OF HEYTESBURY
42	STEVENSON	
43	ROBINSON	EAST GIPPSLAND RIVER MANAGEMENT BOARD
44	STEVENSON	VICTORIAN STATE EXECUTIVE -AUSTRALIAN DEER ASSOCIATION
45	LEHMANN	
46	BENTLEY	ALPINE RESORTS COMMISSION
47/1	SMITH	SHIRE OF MANSFIELD
48	THOMPSON	LATROBE VALLEY FIELD NATURALISTS CLUB INC
49	LANSBURY	
50	FOSTER	ROYAL HISTORICAL SOCIETY OF VICTORIA
51	LAW	SHIRE OF NATHALIA
52	MYNARD	VICTORIAN PISCATORIAL COUNCIL
53/1	ALLEN	SHIRE OF MINHAMITE
54	MARTIN	
55	ELLIOTT, C & D	
56	WILLIAMS	
57	MONTGOMERY	SHIRE OF OXLEY
58	JARMAN	
59	GRIMES	LATROBE REGIONAL COMMISSION
60/1	BALDWIN	SHIRE OF WIMMERA
61	LEWIS	
62/1	CULLEY	BOARD OF WORKS
63	MORGAN	
64	MCPAHON	
65	SLAGTER	
66	FARNES	PORTLAND FIELD NATURALISTS' CLUB INC
67	MARSHALL	VICTORIAN SEEKERS CLUB INC
68/1	KRUTOP	GIPPSLAND WATER UTILIZATION COMMITTEE
69	EADIE	
70	HINE	
71	TREASURE	
72	HEWITT	YARRIAMBIACK CREEK FLOW PROTECTION COMMITTEE
73	SUTTON	
74	OSBORN	MARYBOROUGH FIELD NATURALISTS' CLUB INC
75/1	KERR	LATROBE VALLEY WATER & SEWERAGE BOARD
76	HOBSON	TAMBO RIVER IMPROVEMENT TRUST

Sub. no	Name	Affiliation
77	JONES	TOURING COMMITTEE -VICTORIAN AMATEUR CANOE ASSOCIATION
78	PRIOR	SUNRAYSIA-MALLEE BRANCH - AUSTRALIAN CONSERVATION FOUNDATION
79	WINTER	PROSPECTORS' AND MINERS' ASSOCIATION OF VICTORIA INC
80/1	NEWTON	SHIRE OF BAIRNSDALE
81	WHITE	
82/1	NEWTON	EAST GIPPSLAND MUNICIPALITIES STEERING COMMITTEE
83	BARLOW	SHIRE OF OMEO
84	THEGE	SHIRE OF NARRACAN
85	COX	
86	HODGE	
87/1	MAHOOD	WESTERN VICTORIA FIELD NATURALISTS CLUBS ASSOCIATION
89	RIMMER	THE VICTORIAN MOUNTAIN TRAMPING CLUB
90	FOSTER	SHIRE OF LOWAN
91	READ	
92	MAY	TULLAROOP CATCHMENT CO-ORDINATING GROUP INC
93	BLACK	WEST GIPPSLAND PEACE AND ENVIRONMENT GROUP INC
94/1	FRASER	
95	DALGARNO	DEPARTMENT OF MANUFACTURING & INDUSTRY DEVELOPMENT
96	DOERY	FRIENDS OF WYPERFELD NATIONAL PARK
97/1	HUMANN	VICTORIAN NATIONAL PARKS ASSOCIATION INC
97	QUINLAN	LINEAR PARKS -VICTORIAN NATIONAL PARKS ASSOCIATION INC
98	SHADE	SHIRE OF WARRACKNABEAL
99	REYNOLDS	VICTORIAN CHAMBER OF MINES INC
00/1	ADDINSALL	MT. BEAUTY TIMBER INDUSTRIES
101	GREIG	ALBURY WODONGA ENVIRONMENT CENTRE
102/1	GOUDIE	WIMMERA INDUSTRIAL MINERALS
103	MANN	AUSTRALIAN PAPER MANUFACTURERS
104	ROSE	BEMM RIVER PROGRESS & IMPROVEMENT ASSOCIATION
05/1	COLLINGS	SHIRE OF MAFFRA
106	MCEWAN	VICTORIAN ASSOCIATION OF FOUR WHEEL DRIVE CLUBS
107	TAYLOR	OVENS RIVER MANAGEMENT BOARD
108	MIDDLETON	SHIRE OF BANNOCKBURN
109	FOX	SHIRE OF UPPER YARRA
110	GLEESON	SHEPPARTON WATER BOARD
111	HOPKINS	
112	HOPKINS	HORSHAM HIGH SCHOOL
113	HOPKINS	WIMMERA ENVIRONMENT GROUP
114	TOYE	
115	JOHNSON	NELSON RESERVES COMMITTEE OF MANAGEMENT
116	LADSON	IAN DRUMMOND & ASSOCIATES PTY LTD ; MID GOULBURN RIVER MANAGEMENT BOARD
117	ROBINSON, THOMAS & ATKINSON	AUSTRALIAN ENVIRONMENTAL ASSESSMENT & SURVEYS PTY LTD
118/1	LAMBERT	ORBOST & DISTRICT ENVIRONMENT GROUP
119	BARTON & HINE	
120/1	WHITE	SNOWY RIVER IMPROVEMENT TRUST
121/1	MCLAUGHLIN, C & Y	
122	MALCOLM	
123	CLUGSTON	WIMMERA CATCHMENT CO-ORDINATING GROUP
124	ALEXANDER	SHIRE OF TRARALGON
125	BOTHE	
126	KRAEMERS	
127	DALZIEL	SEYMOUR ENVIRONMENT GROUP
128	MCLACHLAN	VICTORIAN FIELD & GAME ASSOCIATION

Sub. no	Name	Affiliation
129	EMONSON	SHIRE OF YARRAWONGA
130	WHEELER	THE BALD HILLS LANDCARE GROUP INC
131	STONE	
132	COLE	ROBERT M.H. COLE & CO
133	MUTTON	ALPINE FLY FISHERS
134	NEWMAN	MID-GOULBURN CATCHMENT CO-ORDINATING GROUP
135	BENBOW	SHIRE OF HEYWOOD
136	MOLONEY	SHIRE OF DIMBOOLA
137/1	SENIOR	RIVER BASIN MANAGEMENT SOCIETY
138	DAINTON	SALINITY PROGRAM ADVISORY COUNCIL - SHEPPARATON
139	PATTERSON	VIC ROADS
140	DAVIES	
141/1	REDDICK	CITY OF BAIRNSDALE
142	COLLINS	
143	LOMAX	SHIRE OF MCIVOR
144/1	KUNERT	
145/1	BARBER	CONSERVATION COUNCIL OF VICTORIA
146	LUMB	THE OFFICE OF THE ENVIRONMENT ; DEPARTMENT OF CONSERVATION & ENVIRONMENT
147	FLEISCHER	MITCHELL RIVER MANAGEMENT BOARD
148	APITZ	DEPT OF PLANNING - NSW GOVERNMENT
149	LANGFORD	RURAL WATER COMMISSION OF VICTORIA
150	POLLOCK	GARDENLAND FROZEN FOOD PTY LTD
151	WIDDICOMBE	SHIRE OF DUNMUNKLE
152/1	HORGAN	STATE ELECTRICITY COMMISSION
153	HOGG	DEPARTMENT OF SPORT AND RECREATION
154	KIBBLE	OMEQ & TAMBO VALLEY GROUP ; COUNTRY WOMEN'S ASSOCIATION OF VICTORIA
155	BALDWIN, R. & M.	
156	NATION	
157	GILCHRIST	
158	BLACKMORE	MURRAY-DARLING BASIN COMMISSION
159	HOPGOOD	VICTORIAN RECREATIONAL FISHERMEN'S ADVISORY COUNCIL - DCE
160	BRAYSHAW	SHIRE OF AVON
161	BROUGHTON	BRUTHEN & DISTRICT COMMUNITY FORUM
162	ROBERTS	MITCHELL WATER BOARD
163	BARTON	
164	O'BRIEN	MACALISTER THOMSON IRRIGATION DISTRICT COUNCIL - VICTORIAN FARMERS FEDERATION
165	ARBUTHNOT	VICTORIAN FARMERS FEDERATION
166	HERMANS, J.& R.	
167	WOOD	BAIRNSDALE CHAMBER OF COMMERCE
168	SIMPSON	
169	MITCHELL	TRARALGON WATER BOARD
170	NICHOL	EAST GIPPSLAND REGIONAL DEVELOPMENT BOARD - ; VICTORIAN EASTERN DEVELOPMENT ASSOCIATION
171	GRAHAM	
172	WEATHERALL	SHIRE OF ORBOST
173	HOBSON	EAST GIPPSLAND MUNICIPALITIES CORPORATION STEERING COMMITTEE
174	GALE	COASTAL OPERATIONS - PORT OF MELBOURNE AUTHORITY
175	HERBERT	ENVIRONMENT & NATURAL RESOURCES SUB-COMMITTEE - VICTORIAN EASTERN DEVELOPMENT ASSOCIATION
176	DOBBY	
177	MUNRO	LAND PROTECTION COUNCIL -DEPARTMENT OF CONSERVATION & ENVIRONMENT

Note: ‘*/1*’ = indicates an addendum received; more than one in some cases

APPENDIX II

Social and Economic Appraisal of Draft Proposed Recommendations

The following is an edited version of the Summary and Conclusions extracted from the report prepared by Read Sturges and Associates in association with Midas Consulting and members of the Resource and Environmental Economics Group, LaTrobe University, titled: Social and Economic Appraisal of the draft Proposed Recommendations for the Rivers and Streams Special Investigation (August 1990). The complete report can be inspected at the Council's offices. It may also be borrowed as an inter-library loan from the Department of Planning and Housing library.

Further information on values, resources, and potential impacts provided in submissions on the Proposed Recommendations has been considered by Council. Where relevant, details have been discussed in the Introduction and Chapters A to F.

The purpose of the study was to provide a social and economic appraisal of the draft Proposed Recommendations of the Rivers and Streams Special Investigation. These draft proposals aim at protecting the nature conservation, cultural heritage, recreation and scenic values of particular rivers and their corridors in Victoria, and include protection of 46 small essentially natural catchments.

The nature of protection is proposed to vary according to the values being protected. In river corridors with sensitive values, a high degree of protection is proposed, similar to that in the most important conservation reserves. This could lead to the restriction of some resource uses. Many potential land uses would modify the essentially natural catchments, so where the catchments are to be protected, these uses would need to be excluded.

Existing public land tenure of the areas potentially affected includes State and national parks, reference areas, wilderness areas, natural feature and scenic reserves, State forests, and public land water frontage reserves. Freehold land was excluded from the study.

The draft recommendations may have implications for: water resource use; timber production; mineral and stone exploration and production; hydro-electricity generation; livestock production; tourism; nature conservation, cultural heritage, recreation and scenic values; and industry.

The study brief did not call for a complete social benefit-cost analysis of the draft proposals. It also recognised the difficulties involved in evaluating some social costs and benefits associated with the protection of streams and catchments, in particular because of the widespread nature of the draft proposals, both geographically and in content.

Methods and Results

The core methodology of the study is standard benefit-cost analysis. As required by the brief, the consultants have employed social benefit-cost analysis, not financial analysis.

Consistent with widely accepted practice in benefit cost analysis, we have not considered multiplier effects for any of the activities compared. Any industry output or employment leads to 'flow-on' or 'multiplier' effects and estimates of such effects generally serve only to mislead or confuse.

The study considers in some detail the evaluation of 'non-market' or 'unpriced' social benefits and costs. The dollar value of non-market benefits and costs is intrinsically difficult to estimate as they involve goods and services that are not traded in markets in the usual way. These 'hard to value' items include recreation, cultural heritage, scenic values, and species preservation.

Despite the general availability of techniques for valuing 'hard to measure' items, their application is expensive, requiring substantial surveys and effort to collect the necessary data. Such surveys were beyond the scope of this study given the range of environmental values to be covered and the time and funds available. Instead, the consultants collated environmental economics research estimates from Australia, USA and New Zealand.

Environment

In evaluating the environmental and recreational benefits, what we would ideally like to measure in dollar terms is the net addition to the welfare of Victorians that is expected to be brought about by the recommendations. Many of the forms of recreation that may occur in areas being considered in the Council's draft proposals are readily available elsewhere in the State, or would not be significantly affected on the candidate rivers even if the recommendations were not adopted. To simplify the analysis and reduce the risk of over-stating environmental and recreational values, the consultants have attempted to exclude recreational activities whose resource requirements are readily met, such as bushwalking, camping, wildlife hunting and most forms of flat water boating. That is, we have assumed that the Council's draft proposals will generate no net benefits in these areas.

Instead, we have focussed on valuing the special environmental and recreational characteristics that were used by the Council as selection criteria for the candidate heritage rivers. We have assumed that the Council has accurately identified the set of river segments having the highest standards for these characteristics in the State, that the segments are individually unique, and that there are no 'next best' alternatives for providing the values identified on the segments.

The assumption that the segments are unique and that there are no next best alternatives to providing the values to be found on them leads to over-stating of the environmental benefits. However, the use of 'willingness to pay' rather than 'willingness to accept' measures of dollar value leads to under-estimation of the values. The latter criterion commonly gives dollar values that are three to five times those obtained by the former criterion.

It is also assumed that the environmental characteristics identified by the Council will be under immediate threat if the draft proposals are not followed. In most instances in practice, the values would only be threatened over a period of time, therefore this is another source of over-estimation. Off-setting this effect is the fact that we were also not

able to estimate the likely effect of income and population changes on the demand for environmental attributes over time. These effects are normally assumed to be the same across all components of a social benefit-cost analysis. However, we would expect future demand for the on-site use values and off-site preservation values of the candidate river corridors and catchments to increasingly dominate their use for mineral extraction, timber harvesting, and water diversion as the Australian population grows. These effects are therefore a source of under-estimation of environmental dollar values.

We have used regional visitor data to national and State parks as a measure of current demand and the extent to which the candidate heritage rivers and essentially natural catchments will be valued in dollar terms, either through use or preservation values.

We have attempted to offset 'additivity' as a potential source of serious over-estimation of environmental values by: collating the values for categories rather than individual components; taking estimates from studies which, for example, gave dollar values for wildlife preservation generally rather than for individual species; and by the way in which the valuations are weighted across the State from regional visitor data. A check on the dollar values estimated for the State revealed a total for all candidate river corridors of about \$50-54 per household per annum (assuming 1 M households). For the proposed essentially natural catchments the total was \$1.60-3.20 per household per annum. We do not believe that these totals are unrealistically high for the environmental attributes considered. The 'public good' nature of environmental goods helps explain why they appear to attract so much value in proportion to essentially 'private' goods such as timber, water or minerals.

The methodology of contingent valuation relied upon by the consultants was described in detail as the methods and concepts underlying the estimates used in this study are not widely known or understood. The development of contingent valuation techniques has enabled the measurement of non-market values such as option and existence values. The addition of these values to the cost-benefit analysis of social programs involving aspects of environmental protection and conservation, will improve the allocation of society's resources as well as accommodate the interests of a broader spectrum of individuals in the community.

Although a number of methodological issues remain to be resolved, contingent valuation is capable of providing policy relevant information in many environmental and conservation circumstances, where only guesses were previously available. Further research and application of the technique is necessary to refine the approach and extend its use to other areas.

Contingent valuation procedures are now used extensively in the United States to value environmental goods, both in the area of government regulations of land use and in the litigation of compensation for environmental damage. The Australian Resource Assessment Commission intends applying contingent valuation procedures to measure the difference in the monetary valuation Australians may place on the Kakadu Conservation Zone if the Conservation Zone is mined compared to their valuation if the Conservation Zone is not further mined. Society can expect to see the approach applied more extensively in the future as land use conflicts become more widespread.

In the 'first-best' world of some economists, it is sometimes argued that where there are no markets there are no prices, and that rather than use techniques such as contingent valuation to estimate dollar values of non-market items, we should focus on establishing the institutional arrangements and systems of property rights which permit markets to operate. The consultants do not believe that this 'first-best' situation will ever be achieved for some areas of the economy, and that it is therefore impractical for policy makers to wait until the markets are in place.

In the particular case of the Council's draft proposals, it is difficult to imagine conditions under which any market arrangements would offer a similar package of protected rivers and catchments to the public. In addition, because the proposals are confined to public land and also involve the assessment of timber, water and mineral resources (which are under public management to varying degrees), the draft proposals are ideally suited to the application of contingent valuation procedures within a social benefit-cost framework.

Water Resources

Proposed water resource developments and alternative water resource options were determined by reviewing submissions from the major water authorities and by interviewing their staff. With some important exceptions, there were few developments identified which would be likely to be affected by the draft proposals.

Water for irrigation was valued at \$60 per ML and urban water supplies at \$750 per ML for those opportunities to use streamflows which might be foregone due to the impact of the draft proposed recommendations. If it is felt that environmental flows are necessary to achieve and maintain environmental attributes, they should be regarded as additional, and possibly substantial, costs which we have not included in our comparisons.

Of the 23 candidate rivers, the draft proposals would have a definite impact (associated with regulation or diversion of streamflows) only for the Big River. However, there is the possibility of impacts for the Goulburn, Howqua, Wimmera, Snowy, Tyers, Bunyip and Glenelg Rivers.¹

The impact of the Council's draft proposals for the Big River would be considerable as it would mean that the flows would be retained in-stream (for downstream irrigation purposes) rather than being diverted in the headwaters by the Board of Works at some point next century to augment the urban requirements of Melbourne. The Board of Works would have to substitute flows from alternative sources and we have estimated that this would represent differences in real present costs of \$2–4m per year.

Timber Resources

The consultants reviewed a number of methods for valuing the timber that may be foregone in river corridors and essentially natural catchments as a consequence of the draft proposals. The methods included use of the impacts on regional sustainable yield figures, and the standing timber volumes provided by the Department of Conservation and Environment. It was considered that the former figures may understate the impacts on localised areas, while the latter figures imply immediate harvesting and would not be

consistent with approved forest management practices.

The Timber Resource Implications project (Sheahan 1990) identified the volumes and quality of timber potentially affected. Further information, provided by regional staff of the Department of Conservation and Environment, indicated the likely timber harvesting schedules that would be followed in the affected areas should the draft proposals not materialise. These data were assessed over 40 years in each case - or approximately half a timber rotation.

Discounted values beyond this time period would not affect comparisons. The assessments were only done for areas where significant timber volumes are involved. For other areas it may be assumed that the economic consequences of not being able to harvest the timber are insignificant, even on a local scale.²

The implications of the draft proposals for employment in the timber industry were also assessed but the consultants provide several arguments for not placing emphasis on these implications when comparing the benefits and costs of timber production with those for protecting environmental attributes.

The net returns from timber production may be over-estimated in this study due to under-estimation of thinning, harvesting and other costs. On the other hand, where the Department of Conservation and Environment cannot meet contractual agreements due to the withdrawal of timber from logging there would probably be cases presented for compensation and the sums involved could be substantial. However, we believe that these sums should be regarded as transfer payments which do not affect the outcome of social benefit-cost analysis.

Mineral Resources

There appears to be no 'proven' mineral resources affected by the draft proposals, apart from gravels and sands. In the time available it was not possible to compile a detailed inventory of the latter. Estimates of the value of gravels and sand operations within river corridors were provided by the Department of Industry (DOI). There are no data for the local, regional or State importance of gravel and sands within the corridors in comparison with other sources. However, in most cases there will be close substitutes - largely constrained only by transport costs due to the bulk nature of the products.

Staff within the Department of Industry provided estimates of the mineral potential of the areas covered by the draft proposals. The consultants have analysed these estimates to provide rankings of river corridors in terms of their potential mineral importance. The dollar values obtained may be in error by several orders of magnitude and are not comparable with other values in this study. In the face of this uncertainty, it is rational to allow 'benign' exploration to continue within the areas covered by the draft proposals. Subsequent proposed mining operations should be subject to environmental and economic assessment.

There are no sound economic arguments for blanket bans on benign exploration. A ban carries the implication that there is no point in allowing exploration as environmental values will always exceed mineral values. We can only be sure that this will be the case if we assume that environmental values are extremely high, approaching infinity. This may be a reasonable assumption in situations where the environmental values being protected are unique or irreplaceable, and therefore have *no* substitutes, but it is not likely to be the case in all national parks or in all the river corridors and catchments covered by the draft proposals.

Agricultural Production

The draft proposals do not have direct implications for the grazing of water frontage reserves on public land, or for the use of freehold land. Currently, there is no grazing in any of the essentially natural catchments. However, the information compiled for agriculture will be useful background to any future investigations into grazing of public land water frontages.

The areas covered by grazing licences were assessed from information provided by the Land Information Management System Group - Department of Conservation and Environment - and by staff in the Land Conservation Council. The income effects were based on data from other projects being run by the consultants.

Grazing on public land water frontages is often important at the local level but is of negligible importance at the level of the regional or State economy.

The costs of fencing the public land water frontages were estimated for each candidate river. The costs of providing watering points were also examined. However, other costs of restricting the licensed use of these areas may include fire hazard control, vermin and noxious weed control, revegetation and reclamation. The benefits after fencing in comparison with pre-fencing benefits would depend on the management system employed.

These costs and benefits are highly location-specific and it was not possible to compile a detailed account of them for all the proposed river corridors.

While there will be no costs to adjacent landholders as a consequence of the draft proposals, the heritage status of the rivers *may* lead to increases in market value of adjacent freehold in the medium to long run.

If licensed uses are restricted at some future date, the final effect on market values would depend on perceptions of the effects of restriction on private benefits and costs.

Industrial Activities

From discussions with staff from DOI and other departments the consultants determined that there were few potential industrial developments which would be significantly affected by the draft proposals. However, there are some notable exceptions, including water for mineral sands operations near the Wimmera River, the East Gippsland pulp mill proposals on the Snowy River near Orbost, and the direct and indirect effects on the demand for water if the Very Fast Train proposal is implemented for the Gippsland route. Because

most of these are large projects which are still being evaluated it was not possible for the consultants to fully evaluate the implications of the draft proposals. However, it should be noted that the draft proposals do not prohibit the diversion of water for industrial purposes unless environmental values are likely to be impaired. In many cases, the quantities of water required to be diverted for industrial purposes would be small relative to river flows or relative to the quantities used for irrigation.

Another large-scale issue that was referred to several times in the course of consultations was the implications of the Greenhouse effect - for energy production in particular. The view was often put that this global issue must be addressed by Australia and that greater use of hydro-electric power would be a responsible policy response which may have implications for the draft proposals. The consultants do not accept this view and point out that energy pricing policies are likely to be far more cost-effective in reducing greenhouse gas emissions than policies which emphasise the subsidisation of hydro-electric generation.

A Summary of the Social and Economic Evaluation for Candidate River Corridors

Detailed individual summary tables for the candidate rivers are attached. These tables condense the results for the draft proposals under three categories: those which are expected to lead to net social benefits; those which *may* lead to net social benefits; and those which are expected to lead to net social costs.

The rivers for which there are no apparent conflicts between environmental values, and water, timber and mineral values are also identified in the tables.

The overall impression to be gained is that the draft proposals for protecting the rivers and streams are likely to lead to net increases in the welfare of Victorians. The Big River and Decimal Creek catchment are the only two cases where the recommendations are likely to lead to decreases in net welfare.

The methods employed in this study involved rapid appraisal over wide areas and the results are not amenable to detailed examination of individual cases. For example, we were not able to study in detail the environmental values of particular species at specific locations, the net returns from timber production for particular catchments, the benefits and costs of specific alternative sites for proposed water diversions, or the benefits and costs of providing environmental flows in selected rivers. Partly for these reasons, it is difficult to arrive at firm conclusions on the comparisons for the Goulburn, Wimmera or Thomson Rivers, or for Front Creek or South Buller Creek catchments. In these areas, the values for environmental attributes are close to those for the resource uses with which they are in conflict, or there is too much uncertainty surrounding the estimates.

We have often provided range information for the results of analyses, however, the time available to the project did not permit exhaustive sensitivity analysis of all the assumptions that we have specified. In any case, past experience leads us to believe that analyses of this type can often be difficult to interpret. Instead, we have assumed that some of the sources of over- and under-estimation of values offset each other.

It is the consultants' view that for the rivers and catchments for which we have indicated

net social benefits arising from adoption of the Council's draft proposals, there would need to be substantial changes in the values estimated before our conclusions would be altered. In other words, for the large majority of candidate rivers and catchments, the draft proposals should lead to increases in the net welfare (or to the avoidance of decreases in the net welfare) of Victorians, if not other Australians.

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1. The possible impacts for the Goulburn, Wimmera, Snowy, and Glenelg Rivers would arise only if Council were to recommend the provision of environmental flows. This is not the case.
 2. A summary of the timber resources for the essentially natural catchments has been provided in Table 1 - Chapter B.

ENVIRONMENTAL AND RESOURCE VALUATIONS AND IMPLICATIONS OF DRAFT PROPOSED RECOMMENDATIONS

(Summary extracted from Consultants' Report)

Note: Further information on values, resources and potential impacts provided in submissions on the Proposed Recommendations was also considered by Council. Where relevant details have been discussed for each Victorian heritage river - see Chapter A.

Environmental values ¹	Water sector	Timber resources	Minerals and stone ^{2,3}	Industry	Economic assessment
A1 - Mitta Mitta River					
Economic valuation \$0.3-1.5*/m/yr	RWC - No implications; possible hydro-electric development	Very small State forest area; little resource likely to be present	Alluvial and vein gold, tin, lead, copper, silver, antimony	Possible hydro-electric development but not likely to proceed	The environmental values are likely to exceed resource value`
	<\$.01m/yr	<\$.01m/yr	\$0.13m/yr; Rank 4	Recommendations have negligible impact	
A2 - Ovens River					
Economic valuation \$0.7-6.3*/m/yr	No specific proposals	No impact of recommendations on operations in riverine forest, beyond Code of Forest Practices buffer	May have alluvial gold, and coal	Re-activation of gold dredging considered unlikely	The environmental values are likely to exceed resource values
	<\$.01m/yr	<\$.01m/yr	<\$.01m/yr	Recommendations have negligible impact	
A3 - Howqua River					
Economic valuation \$1.1*-8.1m/yr	RWC - No implications	Flows through State forest; some resource affected 5800 m ³ C+ sawlogs	Alluvial and vein gold, some copper		The environmental values are likely to exceed resource values
	<\$.01m/yr	\$6520-7940/yr; direct employ- ment 1.5 persons/yr for 5 yrs	<\$.01m/yr	Recommendations have no impact	
A4 – Big River					
Economic valuation \$0.9*-8.3m/yr	RWC - no implications Board of Works - important water source for the future; would hope to obtain approval for small diver- sion without affecting values	Flows through State forest; some resource affected 2280 m ³ C+ sawlogs	Vein gold, antimony		Cost of next best option for augmenting Melbourne water supply is likely to exceed environmental values
	\$2-4 m/yr ⁴	Value <\$6500/yr; direct employment effects negligible	\$0.06m/yr; Rank 5	Recommendations have negligible impact within corridor - but implica- tions for Melbourne- based industry through Board of Works proposal	Diversion ~50% of flow
A5 – Goulburn River					
Economic valuation \$0.6-3.6 */m/yr	RWC - No current proposals; would prevent a future dam at Trawool	No impact on operations in riverine forest below Goulburn Weir, beyond Code of Forest Practices buffer	Gravel and sand, alluvial and vein gold	Hydro scheme at Goulburn Weir not assessed - not likely to impair values Possible future tourist resorts likely to be based on lakes rather than river segments. Other developments such as canneries, food processing are not likely to impair values	The environmental values are likely to exceed resource values
	Trawool development not a current proposal				
	<\$.01m/yr	<\$.01m/yr	\$0.56m/yr; Rank 2	Recommendations have insignificant impact	

Environmental values ¹	Water sector	Timber resources	Minerals and stone ^{2,3}	Industry	Economic assessment
A6 – Wimmera River					
Economic valuation \$2.9*-16.1 m/yr	RWC - No current proposals	May have implications for operations in Wail Forest (very small area)	Heavy mineral sand potential; vein gold, base metals, sand and gypsum extraction	Mineral sands operations may require significant diversions of water	Mining potentially competitive with environmental values in economic terms. But, due to widespread Availability of mineral sands deposits, likelihood that next best option to mining in corridor will be no more costly for next several decades, even if present technical obstacles to commercial mining are overcome
	<\$.01m/yr Note: Mineral sands operations may be paying capital costs of \$470/ML and operating costs of \$217/ML for water	<\$.01m/yr	\$2.8m/yr; Rank 1		
A7 - Bemm, Goolengook, Arte, and Errinundra Rivers					
Economic valuation \$0.8-2.3*m/yr	RWC - No implications	Flows through State forest; follows Natural Features Zone	Alluvial and vein gold, lead, zinc, silver	Low-key tourist potential - caravan parks and camping	The environmental values are likely to exceed resource values
	<\$.01m/yr	<\$.01m/yr	<\$.01m/yr	Recommendations have negligible impact	
A8 - Snowy River					
Economic valuation \$0.4-2.6*m/yr (State basis) \$1.9-13.1*m/yr (national basis)	Possible use of high flows for pulpmill proposal	Above Buchan River confluence - no implications (in national park); between Buchan River confluence and Bete Bolong -no impact as there is an existing Natural Features Zone; operations allowed outside this	Potentially prospective - minor occurrences of zinc, copper, silver, lead, barium in upper and mid reaches; in national park	Possibility of Pulp Mill at Orbost - with implications for water flows in Snowy River and tributaries, and prices for residual roundwood Possible intersection with VFT route ⁵	The environmental values are likely to exceed resource values Implications of East Gippsland Pulp Mill proposal not evaluated due to lack of economic data
	<\$.01m/yr	<\$.01m/yr	<\$.01m/yr		
A9 - Suggan Buggan and Lower Berrima Rivers					
Economic valuation \$0.2*-0.7m/yr	RWC - No implications	No timber resource implications - in national park or water frontage	Mineral potential; in national park		The environmental values are likely to exceed resource values Grazing arrangements not evaluated
	<\$.01m/yr	<\$.01m/yr	<\$.01m/yr	Recommendations have no impact	
A10 - Upper Buchan River					
Economic valuation \$0.3*-0.9m/yr	RWC - No implications	No timber resource implications - in national park	Limestone, marble, minor base metal potential in headwaters; in national park		The environmental values are likely to exceed resource values
	<\$.01m/yr	<\$.01m/yr	<\$.01m/yr	Recommendations have no impact	
A11 - Mitchell and Wonnangatta Rivers					
Economic valuation \$1.5-8.1*m/yr (State basis) \$7.5-40.5*m/yr (national basis)	RWC - Mitchell River Dam recently under active community consideration but not an economic proposition and not a current proposal for RWC	Small areas of State forest along the Wonnangatta River	Minor alluvial gold downstream of Dargo River; gravel in lower reaches	Hydro 55 megawatt development not an economic proposition Possible intersection with VFT route ⁵	The environmental values are likely to exceed resource values
	<\$.01m/yr	<\$.01m/yr	\$0.01m/yr; Rank 7	Recommendations have insignificant impact	

Environmental values ¹	Water sector	Timber resources	Minerals and stone ^{2,3}	Industry	Economic assessment
A12 - Thomson River					
Economic valuation \$1.2*-10.5m/yr	RWC - No implications; possible storage site above Cowwarr	Some timber resources affected	Copper, gold, platinum group minerals at Coopers Creek		The environmental values are likely to exceed resource values
	<\$.01m/yr	<\$.01m/yr	<\$.01m/yr	Recommendations have negligible impact	
A13 - Yarra River					
Economic valuation \$5.2*-31.7m/yr	RWC, Board of Works - no implications	No State forest areas affected	Minor alluvial gold		The environmental values are likely to exceed resource values
	<\$.01m/yr	<\$.01m/yr	<\$.01m/yr	Recommendations have negligible impact	
A14 - Lerderderg River					
Economic valuation \$0.7-2.0*m/yr	RWC - no implications	Some timber resource affected, around Blackwood and above 18 975 m ³ C+ sawlogs	Alluvial and vein gold		The environmental values are likely to exceed resource values
	<\$.01m/yr	\$7370–7670/yr; direct employment 0.2 persons/ yr long- term	<\$.01m/yr	Recommendations have insignificant impact	
A15 - Glenelg River					
Economic valuation \$1.0-5.8*m/yr (State basis) \$5.0-29*m/yr (national basis)	RWC - No ability to provide environmental flows to both the Glenelg and Wimmera Rivers - will be a trade-off	No timber resource implications - in national park and water frontage	Limestone		The environmental values are likely to exceed resource values
	<\$.01m/yr	<\$.01m/yr	<\$.01m/yr	Recommendations have negligible impact	

Notes:

- * - indicates the consultants' view of the likely dollar value of environmental features
- Dollar values for minerals taken as 10% of estimated values
- Rank given for minerals only, from highest importance (1) to lowest importance (7)
- Assumes no diversion permitted, so is no longer relevant.
- Gippsland route rejected, so is no longer relevant.

COMMENTS ON THE CONSULTANTS' SOCIAL AND ECONOMIC APPRAISAL

In submissions and briefings, interest was expressed in the contingent valuation method and the assumption used by the Consultants to calculate the \$ value of environmental attributes for this Investigation. The consultants' report discusses in detail the various assumptions made. Their report refers to the literature that has researched each assumption, and expresses the outcome of that research. Their conclusions are that contingent valuation methods produce values that are replicable, consistent with demand theory and consistent with results from other methods such as 'travel cost' and 'hedonic pricing'. These methods give results with an accuracy of plus or minus 50%, similar to the accuracy of some estimates of value derived through market prices.

The dollar values determined by the consultants are based on the results of 76 existing studies in the field of economic research in the United States of America, New Zealand and Australia. Each \$ estimate chosen was the modal (most common) \$ value found from numerous studies relevant to particular environmental characteristics. The relative visitor 'popularity' of different rivers was recognised directly (in the use valuations), and by use of the weighting factor (for the existence valuations). Accordingly, for this Investigation, it is unlikely that new specific purpose surveys could have improved the relevance of the results.

In calculating the existence (preservation) values, the consultants were cautious, and used a weighting factor when applying the 'preservation values' (in \$ per household-year) to all households in the State. The factor is based on the relative popularity of regions across the State as reflected in park visitor numbers, multiplied by 10% (or 30%) to reflect the proportion of those who visit the river corridors. The factor varies from 0.0014 (Suggan Buggan) to 0.018 (Yarra) for the rivers, and from 0.0007 to 0.0042 for the essentially natural catchments. The valuations were multiplied by these weighting factors, then by the number of Victorian households (1 000 000).

Further, rather than simply present a single \$ value for the environmental attributes of each river, the consultants calculated four valuations: total visitor-year (ie recreational user) values, using both 10% and 30% of regional visitor numbers; and total existence value household-year values, also using the 10% and 30% levels. Extreme values were excluded, and the lower and higher estimates were listed for each river. The consultants marked (*) that figure they concluded to be most likely, after reference to actual visitor numbers for particular rivers.

However, even if the lowest estimates are used, in virtually all cases the \$ valuation of environmental attributes greatly exceeds the foregone resource \$ value.

APPENDIX III

Essentially Natural Catchments

Rec no	Catchment name	Grid reference of lowest point	Tributary of	Area (ha)	Basin	Public land tenure
B1	Shipwreck Creek	8822-382296	Tasman Sea	2990	21	National Park
	Benedore River	8822-310242	Tasman Sea	3360	21	National Park
	Red River	8822-256215	Tasman Sea	3870	21	National Park
	Easby Creek"	8822-220199	Tasman Sea	1810	21	National Park
B2	Rodger River headwaters	8623-393724	Snowy River	2730	22	National Park
	Cattle Creek	8623-340718	Rodger River	1400	22	National Park
	Wrong Creek	8623-337713	Rodger River	1330	22	National Park
	unnamed tributary1	8523-239637	Rodger River	2050	22	National Park
	unnamed tributary2	8523-299710	Rodger River	1090	22	National Park
	Mountain Creek headwaters	8523-273789	Snowy River	12810	22	National Park
	New Country Creek	8523-273789	Mountain Creek	4750	22	National Park
B3	Avon River headwaters	8222-887460	Avon River	1340	25	Wilderness
	unnamed tributary	8222-901370	Avon River	2200	25	Wilderness
	Turton River	8222-907276	Avon River	6450	25	Wilderness
	Ben Cruachan Creek	8222-751312	Avon River	3900	25	Wilderness
	Mount Hump Creek	8222-835341	Avon River	1130	25	Wilderness
	McColl Creek	8222-879260	Avon River	970	25	Wilderness
	Little River headwaters	8222-814272	Ben Cruachan Creek	1920	25	Wilderness
	Dolodrook River headwaters	8222-787406	Dolodrook River	2700	25	Wilderness
	Thiele Creek	8222-758420	Dolodrook River	1770	25	National Park
B4	O'Shannassy River headwaters	8022-976368	O'Shannassy River	7210	29	Public Land vested in the Board of Works
	Smiths Ck	8022-946294	O'Shannassy River	2750	29	
B5	Log Bridge Creek- East Branch	8425-640782	Cudgewa Creek	2590	1	State Forest
B6	Mount Tabor Creek	8424-457569	Mitta Mitta River	900	1	State Forest
B7	Banimboola Creek	8424-456594	Mitta Mitta River	2290	1	State Forest
B8	Devils Creek - Middle Branch	8224-899284	Buckland River	2710	3	State Forest
B9	Yarrarabula Creek	8224-772205	Buffalo River	3770	3	State Forest
B10	*Long Jack Creek	8224-639112	Dandongadale River	2480	3	State Forest
B11	Williams Creek	8123-270658	Goulburn River	1010	5	State Forest
B12	Double Creek	8822-366419	Mallacoota Inlet	1590	21	National Park
B13	unnamed tributary	8723-146624	Genoa River	1120	21	National Park
B14	Winnot Creek	8723-001745	Cann River-East Branch	1280	21	National Park
B15	Errinundra River - East Branch	8623-694661	Bemm River	2480	21	National Park
B16	Gattamurh Creek	8524-305120	Snowy River	990	22	National Park
B17	Wallaby Creek	8624-392040	Tingaringy Creek	2660	22	National Park
B18	*Mount Gelantipy Creek headwaters	8523-196826	Snowy River	1900	22	National Park
B19	Musk Creek	8523-195573	Rodger River	770	22	National Park
B20	Brodribb River headwaters	8623-519661	Brodribb River	7610	22	National Park
B21	*Stony Creek	8423-670914	Tambo River	1110	23	State Forest
B22	Wongungarra River headwaters	8323-053980	Wongungarra River	1710	24	State Forest/ National Park
B23	Blue Rag Creek	8323-055911	Wongungarra River	1290	24	National Park
B24	Pinnacle Creek- East Branch	832-084582	Wonnangatta River	1520	24	National Park
B25	Punchen Creek	8322-316476	Swamp Creek	1050	24	State Forest
B26	*Mount Vereker Creek	8120-510853	Bass Strait	2560	27	National Park

- Informal place name

Sources:

Identification of catchments - various reports: see Macmillan (1990); Macmillan and Kunert (1990) Biosis (1988); Biosis (1989); and Biosis and Scenic Spectrums (1989). Additional information - held at LCC offices

APPENDIX IV

Representative Rivers

Geomorphic/Hydrological River-Catchment Types

The river candidates column lists a number of gauged catchments which have been identified as belonging to each of the river-catchment types. Not all rivers are listed for each type. One river has been recommended as the ‘representative river’ for each type (except type 15), and this is marked with an asterisk (*).

Type	Geomorphic unit	Hydrological region	River candidates	Basin/flow gauge ²	Status ³	Land tenure, comments
1	East Victorian dissected uplands	5 ¹	* Upper Big River (above Glen Valley)	1/412	C	Mainly Alpine National Park, historic area
		5 ¹	Kiewa River (at Coral Bank)	2/203		Park, hydro, State forest, freehold–
2	East Victorian dissected uplands	4	Big River (above Anglers Rest)	1/216	H, C	Some freehold, State forest, Alpine National Park; sudden change from region 5
		4	Kiewa River (at Kiewa)	2/200		Freehold, State forest
		4	Big River (above Lake Eildon)	5/227	H, C	State forest
		4	Nariel Creek	1/212	C	State forest; isolated in region 3 area
		4	* Snowy Creek (Granite Flat)	1/210	C	State forest
		4	Acheron River	5/209		Freehold, State forest, State park, pines
		4	Upper Goulburn River(above Jamieson)	5/219	C	State forest; region3 in upper reaches
		4	Buckland River (Buckland)	3/206	C	State forest, Alpine National Park_
		4	King River (Powers)	3/227	C	Alpine National Park, State forest
3	East Victorian dissected uplands	3	Timbarra River	23/207	C	State forest; too much high plain - not typical; isolated wetter area
		3	* Dargo River (Dargo)	24/205	C	Alpine National Park, State forest; adjacent to rain-shadow area
		3	Wongungarra River	24/207	C	State forest; drier (region2) tributary upstream (Crooked River)
		3	Tanjil River	26/216	C	State forest, freehold; sudden change from region 4
		3	Mitta Mitta River(Hinnomunjie)	1/203	H, C	Freehold, Alpine National Park, State forest
		3 ¹	Gibbo River	1/217	C	Alpine National Park, State forest
		3	Cudgewa Creek	1/208	C	Pines, freehold, State forest, national park; unusual shape
		3	Ovens River (Bright)	3/205	C	State forest, freehold, pines, Alpine National Park
		3	Yea River	5/217		Freehold, State forest, pines; western limit of region
		3	Latrobe River (Willow Grove)	26/204		State forest, freehold, etc.
		3	Latrobe River (Noojee)	26/205		State forest, freehold, pines
		3	Tyers River	26/007	C	State forest, freehold, Baw Baw National Park; region changes too quickly
		3	Woori Yallock Creek	29/215		Freehold, some public land
4	East Victorian uplands dissected, plateau	3	Buffalo River (Abbeyard)	3/222	C	State forest, some freehold; too little plateau
		3	Rose River	3/217	C	Freehold, State forest, Wabonga State Park
		3	Wonnangatta River (at Waterford)	24/201	H, C	Alpine National Park, State forest, freehold; contains region 2 tributary
		3	Wonnangatta River (at Crooked River)	24/206	H, C	Alpine National Park, some State forest
		3	Delatite River	5/214	C	Freehold, State forest, alpine resort
		3	Barkly River	25/217	C	State forest, some freehold
		3	Macalister River (Licola)	25/209	C	Alpine National Park, State forest, freehold
		3	* Macalister River (Glencairn)	25/219	C	Alpine National Park, State forest; good representation of plateau

Type	Geomorphic unit	Hydrological region	River candidates	Basin/flow gauge ²	Status ³	Land tenure, comments
5	East Victorian dissected uplands	2	* Buchan River (above Mellick Munjie Creek)	22/403	H, C	Alpine National Park, State forest, freehold
		2	Suggan Buggan River	22/213	H	Alpine National Park, freehold; part catchment in New South Wales
		2	Tallangatta Creek	1/218	C	Freehold, State forest
		2	Yackandandah Creek	2/204		Pines, freehold, State forest
		2	Hurdle Creek	3/224	C	Freehold, pines, State forest; isolated region 2 catchment
		2	Seven Creeks (Euroa)	5/237		Freehold, some State forest, flora reserve, pines; fringe of region
		2	Cann River (West Branch)	21/201	C	State forest
		2	Brodrigg River	22/202	C	State forest, some Errinundra Park; unusual shape
		2	Aberfeldy River	25/213		State forest; rain-shadow between regions 4 and 3
		2 ¹	Rodger, Yalmy Rivers	22/217	H	State forest, Snowy River National Park
		2 ¹	Combienbar River	21/211	C	State forest, freehold
		2 ¹	Murrindal River	22/216		State forest, freehold
		2	Bunyip River (Tonimbuk)	28/212	H	State park, State forest; small
		2	Dandenong Creek	28/204		Freehold; semi-urbanised
		2	Fifteen Mile Creek	3/213	C	State forest, pines, freehold
		2	Holland Creek	4/207		Freehold, State forest, pines
		2	Avon River (above Valencia Creek)	25/211	H	Wilderness, State forest, natural features reserve
		2 ¹	Freestone Creek	25/218		State forest
6	East Victorian dissected uplands, riverine plains	2	* Thurra River (Pt. Hicks)	21/204		State forest, Croajingolong National Park; could extend to estuary
		2	Genoa River	21/210		Coopracambra National Park; 60% in New South Wales
		2 ¹	Bemm River (lower)	21/205	H	State forest, some parks, freehold
		2 ¹	Cann River (lower)	21/214	C	State forest, Coopracambra National Park, freehold
7	East Victorian dissected uplands	1	Morass Creek	1/215	C	Freehold, State forest
		1	Tambo River (Swifts Ck)	23/202	C	State forest, freehold
		1	* Nicholson River (Deptford)	23/204	C	State forest
		1 ¹	Livingstone Creek	1/209	C	State forest, freehold, historic area
		1 ¹	Wentworth River	24/214	C	State forest
		1 ¹	Deddick River	22/210		Freehold, Snowy, Tingaringy National Parks; 20% in New South Wales
8	East Victorian dissected uplands, riverine plains	1	Pranjip Creek	5/226		Freehold
		1	* Cornella Creek (Colbinabbin)	5/230		State forest, freehold
		1 ¹	Castle Creek	5/226		Freehold
		1 ¹	Major Creek	5/248		Freehold, some State forest
9	West Victorian dissected uplands	1	Axe Creek	6/214		Freehold, State forest etc.
		1	Avoca River (Amphitheatre)	8/202		Freehold, some State forest; very small
		1 ¹	* Avoca River (Avoca)	—		Freehold, State forest
		1	Wimmera River (Elmhurst)	15/207	C	Freehold, State forest
		1	Dwyer Creek	38/221		Grampians National Park, freehold; not typical
		1	Wando River	38/223		Freehold; not typical
10	West Victorian dissected uplands, volcanic plains	2	Jim Crow Creek	7/221	C	Freehold, pines, Hepburn Regional Park
		2	* Lerderderg River (O'Briens Crossing)	31/213	H, C	State forest, Lerderderg State Park, some freehold
		2 ¹	Upper Loddon River (Vaughan)	7/217	C	State forest, freehold, others
		2 ¹	Birch Creek (Smeaton)	7/227	C	Freehold, State forest
		2 ¹	Creswick Creek	7/214	C	Freehold, State forest, park; very small

Type	Geomorphic unit	Hydrological region	River candidates	Basin/flow gauge ²	Status ³	Land tenure, comments
11	West Victorian dissected uplands, volcanic plains	1	Bet Bet Creek	7/220	C	Freehold, State forest
		1	Loddon River (Newstead)	7/215	C	Freehold, State forest etc.
		1	* McCallum Creek (Carisbrook)	7/213	C	Freehold, State forest etc.
		1	Leigh River	33/215		Freehold, few small State forest areas, reserves
		1	Woody Yaloak River	34/201		Freehold, few small public land areas, pines etc.
12	Otway Ranges, dissected plain	3	* Gellibrand River (Carlisle River)	35/208	C	Freehold, State forest, Carlisle State park; mixture of rock types
13	Sth Gippsland Ranges, riverine plains	2	Morwell River (Morwell)	26/408		Freehold, some public land
		2	* Tarra River (Yarram)	27/200		Freehold, some public land
		2	Tarwin River (Tarwin)	27/202		Freehold, some public land
		2 ¹	Traralgon Creek (Traralgon)	26/023		Freehold, some public land
14	Dissected coastal pines, bushland plains, volcanic plain	2	Fitzroy River	37/202		Freehold, State forest, some pines
		2	* Kennedy Creek (Kennedy Creek)	35/211		Heytesbury settlement, freehold, State forest, reserve; best shows incision through Tertiary material
		2	Curdies River	35/203		Freehold
		2 ¹	Surrey River	37/207		State forest, freehold, flora reserve
15	Volcanic plains, coastal plains	1	Darlot Creek (Homerton Br.)	37/205		Freehold, Mt Eccles National Park, some State forest
		1	Eumeralla River	37/206		Freehold, some Mt Eccles National Park
		1	Moyne River	37/200		Freehold
16	Volcanic plains, West Victorian dissected uplands	1	Creswick Creek	7/214	C	Freehold, pines, State forest
		1	Tullaroop Creek	7/222	C	Freehold, small public land areas
		1	Maribyrnong River (Keilor)	30/200		Freehold, less than 2% public land
		1	Maribyrnong River (Bulla)	30/205		Freehold, less than 2% public land
		1	Little River	32/200		Freehold, Brisbane Ranges National Park
		1	* Moorabool River (Morrison's)	32/204	C	Freehold, State forest, water production
		1	Moorabool River (Batesford)	32/202		Freehold, State forest, Brisbane Ranges National Park, water production
		1	Mt Emu Creek	36/203		Freehold, small public land areas
		1 ¹	Merri River	36/205		Freehold; no west Victorian uplands

Notes:

1. Hydrologic region calculated from catchment yield data
2. Rural Water Commission flow gauge code number
3. H - proposed heritage river; C - proclaimed catchment

APPENDIX V

River and Stream Values

This table lists Victorian rivers and streams for which natural, recreational, cultural heritage, and scenic values have been identified. Values used in identifying Victorian heritage rivers, and those referred to in recommendation D1, are included. Aboriginal archaeological sites are not listed. The Victoria Archaeological Survey, Department of Conservation and Environment, maintains a register of known sites. Essentially natural mainstream segments are not listed; sites of faunal significance are not listed for streams in basins 15,21-28, and 30-36.

The table has been compiled from published reports, consultants' studies and information in submissions. It does not identify where on a stream a particular value exists. Users are advised to consult the source documents which provide information on the nature of each value and its location. The codes for entries in each column, and the source documents, are listed at the end of the table. The grid number refers to the point at which the stream meets the named mainstream. The grids and their numbers are shown on Map 1 in the Resources Report.

In some instances, it was necessary to use multiple line entries to record data for one river. Where this occurs the river name is listed in the first line, and 'continued' entered in the following line(s) listing data for that river.

[illegible]

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
LIVINGSTONE CK	O07	MITTA MITTA R	X									1,X,1		LIVINGSTONE CK
** (continued)			X									1,S,16		(continued)
LUCYVALE CK	O06	CUDGEWA CK	X	X			1,S,21							LUCYVALE CK
MIDDLE CK	N07	BIG R	X				1,S,21							MIDDLE CK
MITTA MITTA R	N06	MURRAY R	P,X	P,X	4,S,20	P	1,R,21	1,N,21		D,29	C,29	1,R,16	EH/N,25	MITTA MITTA R
(continued)					1,R,20		3,S,21	1,R,21					EH/A,25	(continued)
(continued)													EH/S,25	(continued)
(continued)													EH/F,25	(continued)
MORASS CK	O07	DARTMOUTH DAM	X	X			1,S,21							MORASS CK
MURRAY R	N05	LAKE HUME	X	X			3,S,21					1,S,16	FH/A,22	MURRAY R
(continued)							1,R,21					1,R,16	EH/A,22	(continued)
NARIEL CK	O06	CORRYONG CK	X	X							C,29		EH/A,22	NARIEL CK
REIDS CK	O06	BOUNDARY CK										1,S,16		REIDS CK
SANDY CK	N06	LAKE HUME					1,S,21							SANDY CK
SCRUBBY CK	N07	MITTA MITTA R												SCRUBBY CK
SNOWY CK	N07	MITTA MITTA R	X	X	2,S,20	P								SNOWY CK
(continued)					2,R,20									LITTLE SNOWY CK
VICTORIA R	N08	COBUNGRA R	X				1,S,21					1,X,1		VICTORIA R
WATCHINGORRA CK	N07	MITTA MITTA R		P										WATCHINGORRA CK
WISES CK	N06	LAKE HUME					1,S,21							WISES CK
BASIN 2														BASIN 2
BOGONG CK	M07	KIEWA R					1,S,16	1,R,21						BOGONG CK
COMMISSIONERS CK	M06	YACKANDANDAH CK										1,S,16		COMMISSIONERS CK
KIEWA R	M06	MURRAY R	P,X	P,X	3,R,20	P	1,S,21	1,N,21			C,29 ¹	1,S,16	EH/T,22	KIEWA R
(continued)								1,S,21						(continued)
KIEWA R, EAST BR	N07	KIEWA R	X				1,S,21						EH/S,22	KIEWA R, EAST BR
KIEWA R, WEST BR	N07	KIEWA R	X										EH/S,22	KIEWA R, WEST BR
MOUNTAIN CK	N07	KIEWA R	X			P								MOUNTAIN CK
MURRAY R	N06	MURRAY R	X	X	1,S,20								MBP/A,22	MURRAY R
PRETTY VALLEY CK	N07	KIEWA R	X					1,S,21						PRETTY VALLEY CK
ROCKY VALLEY CK	N07	KIEWA R	X				1,S,21							ROCKY VALLEY CK
YACKANDANDAH CK	M06	KIEWA R	X								C,29	1,S,16		YACKANDANDAH CK
BASIN 3														BASIN 3
BARAMBOGIE CK	M06	BLACK DOG CK		X								1,R,16		BARAMBOGIE CK
BARWIDGEE CK	M07	OVENS R	X	X	1,R,20									BARWIDGEE CK
BLACK DOG CK	L06	OVENS R	X	X								4,S,16		BLACK DOG CK
BOGGY CK	L07	KING R	X									2,R,1		BOGGY CK
BUCKLAND R	M07	OVENS R	P,X	X	1,R,20	P					C,29	1,S,16		BUCKLAND R
(continued)	M07	OVENS R										1,X,5		(continued)
BUFFALO CK	M07	OVENS R	P,X	X				1,S,21						BUFFALO CK
BUFFALO R	M07	OVENS R	X	X	2,S,20						C,29		EH/A,22	BUFFALO R
(continued)					3,R,20									(continued)
DANDONGADALE R	M07	ROSE R	X	X							C,29			DANDONGADALE R

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
FIFTEEN MILE CK	L06	OVENS R	X									3,R,1		FIFTEEN MILE CK
HAPPY VALLEY CK	M07	OVENS R	X	X								1,R,16		HAPPY VALLEY CK
HURDLE CK	L06	KING R	X											HURDLE CK
KING R	L06	OVENS R	P,X	P,X	2,X,20	P	1,S,21	1,S,21		D,29	C,291	1,X,5	EH/S,22	KING R
(continued)					1,R,20							21,R,1		(continued)
MEADOW CK	L07	KING R								D,29	C,29			MEADOW CK
MIDDLE CK	L07	FIFTEEN MILE CK	X											MIDDLE CK
MULWALA L	M06	MURRAY R								D,29	C,29			MULWALA L
MURRAY R	M06	MURRAY R	X			P						1,R,16	MBP/F,22	MURRAY R
(continued)													MBP/A,22	(continued)
(continued)													MBP/T,22	(continued)
NINE MILE CK	M06	YACKANDANDAH CK										2,S,16		NINE MILE CK
OVENS R	L06	MURRAY R	P,X	P,X	1,R,20		2,S,21	1,S,21		D,29	C,29	4,S,16	MBP/F,22	OVENS R
(continued)												17,R,1	EH/A,22	(continued)
(continued)													EH/T,22	(continued)
REEDY CK	L06	OVENS R	X	X	1,R,20	P						4,R,16		REEDY CK
(continued)												2,S,16		(continued)
ROSE R	M07	BUFFALO R	P,X	X		P								ROSE R
(continued)	M07				4,R,20									(continued)
SPRING CK	M06	REEDY C										1,S,16		SPRING CK
TEA GARDEN CK	L06	OVENS R	X									1,R,1		TEA GARDEN CK
BASIN 4														BASIN 4
BROKEN CK	I05	MURRAY R	X				3,S,21			D,29	C,29			BROKEN CK
BROKEN R	J06	GOULBURN R	X	X	1,R,20		1,S,21			D,29	C,29	2,S,16		BROKEN R
HOLLAND CK										D,29				HOLLAND CK
MURRAY R	L06	MURRAY R			2,R,20	P							MBP/S,22	MURRAY R
MURRAY R (BARMAH)	J05	MURRAY R		X			5,N,21	2,S,21					MBP/T,22	(continued)
(continued)							1,R,21	1,R,21						(continued)
(continued)							5,S,21							(continued)
RYAN CK	K07	HOLLAND CK	X	X								1,R,16		RYAN CK
SAMARIA CK	L07	BROKEN R	X			P								SAMARIA CK
SPRING CK	L06	BROKEN R										1,R,16		SPRING CK
BASIN 5														BASIN 5
ACHERON R	K08	GOULBURN R	P,X	X	2,R,20		6,S,21							ACHERON R
(continued)					2,R,20		1,R,21	2,N,21						(continued)
BIG R	L08	LAKE EILDON	P,X		2,S,20	P		3,S,21			C,29		EH/N,25	BIG R
(continued)					3,R,20								EH/S,25	(continued)
BRANKEET CK	K08	LAKE EILDON										1,R,16		BRANKEET CK
CORNELLA CK	I07	LAKE COOPER						1,L,21						CORNELLA CK
DELATTE R	L08	LAKE EILDON	X	X	2,S,20						C,29			DELATTE R
(continued)					1,R,20									(continued)
FRENCHMAN CK	L09	BIG R					1,S,21	2,R,21						FRENCHMAN CK
GAFFNEYS CK	L08	U.GOULBURN R										1,S,16		GAFFNEYS CK

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
GOBARUP CK	I07	WANALTA CK						1,S,21						GOBARUP CK
GOULBURN R	I06	MURRAY R	P,X	P,X	1,N,20	P	4,S,21	3,S,21		D,29	C,29	1,X,1	MBP/A,22	GOULBURN R
(continued)					8,S,20							1,N,16	FA/A,22	(continued)
(continued)					1,R,20							3,S,16	EH/S,22	(continued)
(continued)												1,R,16	EH/F,22	(continued)
(continued)	L08	LAKE EILDON	X	X	18,R,20							1,S,16	EG/F,25	(continued)
HAMILTON CK	J08	KURKUVA CK							1,S,8					HAMILTON CK
HANDFORD CK	L08	JAMIESON R										1,S,16		ANDFORD CK
HOWQUA R	L08	LAKE EILDON	P,X		1,N,20			2,S,21	1,N,26		C,29	1,S,16		HOWQUA R
(continued)					1,S,20									(continued)
HUGHES CK	J07	GOULBURN R	X	X							C,29	2,S,16		HUGHES CK
JAMIESON R	L08	GOULBURN R	X	X	1,S,20			2,S,21			C,29		EH/S,22	JAMIESON R
KILMORE CK	I08	KURKURAC CK										3,R,16		KILMORE CK
KING PARROT CK	J08	GOULBURN R	X	X	1,R,20		3,N,21				C,29			KING PARROT CK
LITTE R	K08	ACHERON R	X			P								LITTE R
MOLLISON CK	J08	KURKURUC CK										1,S,16		MOLLISON CK
MOUNTAIN HUT CK	K07	SEVEN CKS										1,X,1		MOUNTAIN HUT CK
MURRAY R	I05	MURRAY R	X										MBP/S,22	MURRAY R
MURRINDINDI R	J08	YEA R	X	P,X										MURRINDINDI R
OAKS CK	L09	BIG R					1,S,21							OAKS CK
PRANJIP CK	J07	GOULBURN R										1,S,16		PRANJIP CK
SPRING CK	K07	SEVEN CKS						2,R,21						SPRING CK
STEAVENSONS R	K08	ACHERON R	X											STEAVENSONS R
SUNDAY CK	J08	GOULBURN R	X									1,R,16		SUNDAY CK
TAGGERTY R	K08	STEAVENSONS R	X				1,R,21				C,29			TAGGERTY R
(continued)							1,S,21							TAGGERTY R
TAPONGA R	L08	BIG R	X		1,R,20									TAPONGA R
TORBRECK R	L09	BIG R					1,S,21							TORBRECK R
WAKITI CK	J06	GOULBURN R	P,X	X						D,29	C,29			WAKITI CK
WANALTA CK	I07	GOULBURN R						2,S,21						WANALTA CK
YEA R	J08	GOULBURN R	X	X									FH/A,22	YEA R
(continued)													FH/T,22	(continued)
BASIN 6														BASIN 6
BACK CK	I08	PLOWMAN CK										1,S,16		BACK CK
CAMPASPE R	I06	MURRAY R	X	X			2,S,21			D,29	C,29	7,S,16	FH/A,22	CAMPASPE R
(continued)												3,R,16	WCH/A,22	(continued)
COLIBAN R	H07	LAKE EPPALOCK	X	X							C,29	1,S,16		COLIBAN R
(continued)												3,R,16		(continued)
CURLY DOG CK	I07	MCIVOR CK										1,R,16		CURLY DOG CK
FIVE MILE CK	H08	CAMPASPE R										2,S,16		FIVE MILE CK
MURRAY R	I06	MURRAY R		X	1,R,20	P						8,R,16	MBP/T,22	MURRAY R
(continued)												4,S,16		(continued)
BASIN 7														BASIN 7

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
BACK CK	G08	TULLAROOP CK	X									1,S,16		BACK CK
(continued)												3,R,16		(continued)
BARKERS CK	H08	LODDON R	X									2,S,16		BARKERS CK
(continued)												2,R,16		(continued)
BENDIGO CK	H06	PICANINNY CK										1,S,16		BENDIGO CK
(continued)												1,R,16		(continued)
BET BET CK	G07	LODDON R	X								C,29	1,S,16		BET BET CK
(continued)												2,R,16		(continued)
BIRCH CK	G08	TULLAROOP CK	P,X	X								2,S,16		BIRCH CK
(continued)												4,S,16		(continued)
BUCKEYE CK	H08	BULLOCK CK										1,S,16		BUCKEYE CK
BULLOCK CK	H05	PYRAMID CK					2,S,21						WCH/A,22	BULLOCK CK
COGHILL CK	G08	CRESWICK CK	X									2,R,16		COGHILL CK
CRESWICK CK	G08	TULLAROOP CK	X				1,S,21					3,S,16	WCH/T,22	CRESWICK CK
(continued)												3,R,16		(continued)
DAISY HILL CK	G08	MIA MIA CK										1,S,16		DAISY HILL CK
FIVE MILE CK	H07	BENDIGO CK					1,S,21							FIVE MILE CK
FOREST CK	H08	CAMPBELLS CK										1,R,16		FOREST CK
GUNBOWER CK	H05	MURRAY R		X			1,S,21			D,29	C,29	1,S,16		GUNBOWER CK
JIM CROW CK	H08	LODDON R	P,X	X										JIM CROW CK
KOW SWAMP	H05	KOW SWAMP								D,29	C,29			KOW S
LANGDONS CK	G08	LODDON R										1,S,16		LANGDONS CK
LITTLE MURRAY R	G04	MURRAY R		X						D,29	C,29			LITTLE MURRAY R
LODDON R	G04	MURRAY R	P,X	P,X	2,R,20		1,R,21			D,29	C,29	4,X,1	MBP/A,22	LODDON R
(continued)							1,S,21					1,S,16	MBP/T,22	(continued)
(continued)												5,R,16	WCH/A,22	(continued)
MCCALLUM CK	G08	TULLAROOP CK	X									2,R,16		MCCALLUM CK
MT HOPE CK	H05	KOW SWAMP					1,S,21							MT HOPE CK
MURRABIT CK	G05	LODDON R									C,29			MURRABIT CK
MURRAY R	I06	MURRAY R	X	X		P	3,S,21					1,S,16	MBP/S,22	MURRAY R
(continued)												1,R,16	MBP/A,22	(continued)
MURRAY R (GUNBOWER)	H05	MURRAY R					2,S,21	3,S,21						MURRAY R (GUNBOWER)
PYRAMID CK	G05	LODDON R						1,S,21			C,29			PYRAMID CK
SAILORS CK	H08	SPRING CK										1,R,16		SAILORS CK
SERPENTINE CK	G06	LODDON R								D,29	C,29			SERPENTINE CK
STONY CK	G08	TALBOT RES	X									1,R,16		STONY CK
TULLAROOP CK	G07	LODDON R	X	X								1,S,16	WCH/A,22	TULLAROOP CK
(continued)												1,R,16		(continued)
BASIN 8														BASIN 8
AVOCA R	G05	KERANG LAKES	X	X				2,S,21		D,29	C,29	1,S,16	WCH/A,22	AVOCA R
(continued)												1,R,16		(continued)
LAKE MARMAL CK	G06	LAKE MARMAL						1,R,21						LAKE MARMAL CK
LALBERT CK	F04	LAKE TIMBORAM						1,R,21						LALBERT CK

[illegible]

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
COMBIENBAR R	Q08	BEMM R	X	X			1,O,13				C,29			COMBIENBAR
RDINNER CK	S08	GENOA R					1,O,13							DINNER CK
DOWELL CK	S08	MALLACOOTA INLET					1,H,13							DOWELL CK
EASBY CK	S09	TASMAN SEA								D,29				EASBY CK
EUCHRE CK	Q09	BEMM R					1,O,13							EUCHRE CK
GENOA R	S08	MALLACOOTA INLET					1,O,13		1,I,6		C,29	1,R,16	FH/N,22	GENOA R
(continued)									1,N,6				FH/S,22	(continued)
(continued)													FH/F,22	(continued)
(continued)													SL/S,22	(continued)
(continued)													SL/A,22	(continued)
HARRISON CK	S08	MALLACOOTA INLET					1,O,13							HARRISON CK
HENSLEIGH CK	R08	COMBIENBAR R					1,O,13							HENSLEIGH CK
JIM WALKER CK	R08	CANN R					1,O,13							WALKER CK
JONES CK	R08	GENOA R					1,O,13							JONES CK
LITTLE R	S08	MALLACOOTA INLET		P,X							C,29			LITTLE R
LOCK UP CK	R08	CANN R					1,O,13							LOCK UP CK
MARAMINGO CK	S08	GENOA R					1,H,13							MARAMINGO CK
MUELLER R	R09	BASS STRAIT		P,X						D,29				MUELLER R
RED CK	S09	TASMAN SEA								D,29	C,29			RED CK
THURRA R	R09	BASS STRAIT		X						D,29	C,29		C/S,22	THURRA R
THURRA R, WEST BR	R08	THURRA R							1,S,6					THURRA R WEST BR
TONGHI CK	R09	CANN R					1,O,13							TONGHI CK
WALLAGARAUGH R	S08	MALLACOOTA INLET		P,X		P				D,29	C,29			WALLAGARAUGH R
WINGAN INLET	S09	BASS STRAIT		P,X							D,29			WINGAN INLET
WINGAN R	R09	WINGAN INLET		X		P				D,29	C,29		FH/S,22	WINGAN R
(continued)													SL/S,22	(continued)
YEERUNG R	Q09	BASS STRAIT		P,X						D,29				YEERUNG R
BASIN 22														BASIN 22
BACK CK	R08	QUEENSBOROUGH R										1,R,16		BACK CK
BERRIMA R	P07	SUGGAN BUGGAN					1,O,13							BERRIMA R
BRODRIBB R	R09	SNOWY R								D,29	C,29			BRODRIBB R
BRODRIBB R,	Q08	BRODRIBB R	P							D,29	C,29			BRODRIBB R.
NORTH BR														NORTH BR
BUCHAN R	P09	SNOWY R	X	X	1,R,20		1,O,13		1,S,6	D,29	C,29		EH/N,25	BUCHAN R
(continued)													EH/A,25	(continued)
(continued)													EH/F,25	(continued)
BUTCHERS CK	P08	MURRINDAL R	X	X			1,H,13							BUTCHERS CK
CABBAGE TREE CK	Q09	LAKE CURLIP					1,O,13							CABBAGE TREE CK
DEDDICK R	P08	SNOWY R	X	X			1,O,13							DEDDICK R
(continued)					1,R,20							1,S,16		(continued)
INGEEGOODBEE R	P07	SUGGAN BUGGAN R	X				1,O,13							INGEEGOODBEE R
LILLY PILLY CK	Q09	BRODRIBB R				P								LILLY PILLY CK
LITTLE R	P08	SNOWY R	X	X		P	1,O,13							LITTLE R

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
(continued)									1,N,6					(continued)
MURRINDAL R	P09	BUCHAN R	X	X			1,H,13				C,29	1,R,16		MURRINDAL R
NELSON CK	Q08	DELEGATE R EAST BR					1,H,13							NELSON CK
QUEENSBOROUGH R	R08	DELEGATE R	X	P,X								1,R,16		QUEENSBOROUGH R
RAYMOND CK	P08	SNOWY R					1,O,13							RAYMOND CK
REEDY CK	P08	BUCHAN R					1,O,13							REEDY CK
RODGER R	P08	SNOWY R	X	X			1,O,13						EH/N,22	RODGER R
SARDINE CK	Q09	BRODRIBB R	X	X								1,R,16		SARDINE CK
SHAW CK	P08	BUCHAN R					1,H,13							SHAW CK
SNOWY R	Q09	BASS STRAIT	X	P,X	3,N,20	P	1,O,13		3,N,6	D,29	C,29	3,R,16	EH/N,22	SNOWY R
(continued)							2,H,13		1,S,6				EH/F,22	(continued)
(continued)													FH/N,22	(continued)
(continued)												2,S,16		(continued)
SUGGAN BUGGAN R	P08	SNOWY R	X	X			1,S,13			D,29	C,29		EH/N,26	SUGGAN BUGGAN R
YALMY R	P08	RODGER R					1,O,13							YALMY R
YOUNG CK	P09	A219										1,R,16		YOUNG CK
BASIN 23														BASIN 23
BOXES CK	O09	GIPPSLAND LAKES								D,29				BOXES CK
BUTCHERS CK	O09	SLAUGHTERHOUSE CK										1,S,16		BUTCHERS CK
CHINAMANS CK	O09	GIPPSLAND LAKES								D,29		1,R,16		CHINAMANS CK
DEEP CK	O09	TAMBO R					1,H,13							DEEP CK
HAUNTED STREAM	O08	TAMBO R				P				D,29	C,29	3,X,1		HAUNTED STRE
MARINGA CK	O09	REEVE CH										1,R,16		MARINGA CK
NICHOLSON R	O09	LAKE KING		P,X		P				D,29	C,29		FH/S,22	NICHOLSON R
NICHOLSON R	O09	LAKE KING											FH/F,22	NICHOLSON R
NICHOLSON R, EAST BR	O08	NICHOLSON R										1,S,16		NICHOLSON R
PERCH CK	O09	LAKE KING								D,29				PERCH CK
SALT CK	O09	SLAUGHTERHOUSE CK	P,X											SALT CK
SHADY CK	O09	TAMBO R										1,S,16		SHADY CK
STONECK	O09	LAKE TYERS									C,29	1,S,16		STONECK
SWIFTS CK	O08	TAMBO R										4,X,1		SWIFTS CK
TAMBO R	O08	TAMBO R	P,X	P,X	3,R,20	P		1,X,1		D,29	C,29	2,X,1		TAMBO R
(continued)												1,S,16		(continued)
(continued)												1,R,16		(continued)
TIMBARRA R	O09	TAMBO R	X			P				D,29	C,29			TIMBARRA R
BASIN 24														BASIN 24
BOGGY CK	O09	MITCHELL R										1,R,16		BOGGY CK
CLIFTON CK	O09	MITCHELL R		P,X							C,29			CLIFTON CK
CONGLOMERATE CK	M08	WONNANGATTA R					1,O,13							CONGLOMERATE CK
CROOKED R	N08	WONGUNGARRA R	X			P				D,29	C,29			CROOKED R
DARGO R	N09	MITCHELL R	X	X	2,R,20	P				D,29	C,29		EH/N,25	DARGO R
(continued)													EH/F,25	(continued)

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
RINTOUL CK	M10	LATROBE R	X						1,S,7					RINTOUL CK
SERPENTINE CK	L10	TANJIL R	X				1,S,14							SERPENTINE CK
TANJIL R	L09	TANJIL R	X	X	1,R,20								FH/S,22	TANJIL R
TOORONGO R	L09	LATROBE R	X	X		P								TOORONGO R
TRARALGON CK	L10	LATROBE R	X	X					1,S,7	D,29	C,29			TRARALGON CK
TYERS CK	L10	LA TROBE R	X	X								1,R,16		TYERS CK
TYERS R	L10	LA TROBE R	X	X		P	1,S,14		2,S,7	D,29			FH/S,22	TYERS R
TYERS R, EAST BR	L09	TYERS R	X	X			1,S,14							TYERS R, EAST BR
TYERS R, WEST BR	L09	TYERS R	X	X	1,S,14									TYERS R, WEST BR
BASIN 27														BASIN 27
AGNES R	L11	CORNER INLET	X						1,S,8	D,29	C,29			AGNES R
ALBERT R	M11	BASS STRAIT	X	P,X		P				D,29	C,29	1,S,16		ALBERT R
BASS R	K10	WESTERN PORT							1,N,8	D,29	C,29			BASS R
BERRYS CK	L10	TARWIN R	X	P,X										BERRYS CK
BODMAN CK	M11	TARRA R		X					1,S,8					BODMAN CK
BRUTHEN CK	M11	BASS STRAIT	X	P,X						D,29	C,29		SL/F,22	BRUTHEN CK
CHINAMANS CK	L11	CORNER INLET								D,29	C,29			CHINAMANS CK
DARBY R	L11	BASS STRAIT								D,29	C,29			DARBY R
DINGO CK	L11	AGNES R	X				1,S,14							DINGO CK
FRANKLIN R	L11	CORNER INLET	X				1,S,14			D,29	C,29		SU/F,22	FRANKLIN R
(continued)													SU/A,22	(continued)
FRESHWATER CK	L12	BASS STRAIT								D,29	C,29			FRESHWATER CK
JACK R	M11	ALBERT R		X		P								JACK R
LILLYPILLY GY	L11	TIDAL R								D,29	C,29			LILLYPILLY GY
LITTLE ALBERT R	M11	ALBERT R		X								1,S,16		LITTLE ALBERT R
MACKS CK	M11	TARRA R		X						D,29	C,29			MACKS CK
MERRIMAN CK	N10	BASS STRAIT	X	P,X			1,N,14			D,29	C,29		SF/F,22	MERRIMAN CK
(continued)									1,S,8				SL/F,22	(continued)
POWLETT R	K11	BASS STRAIT		P,X										POWLETT R
ROARING MEG CK	L12	BASS STRAIT		X							C,29			ROARING MEG CK
TARRA R	M11	BASS STRAIT	X	X		P	1,I,14			D,29	C,29		C/A,22	TARRA R
TARWIN R	K11	ANDERSON INLET	X	P,X	1,R,20	P				D,29	C,29			TARWIN R
TARWIN R, EAST BR	K11	TARWIN R	X			P								TARWIN R EAST BR
TIDAL R	L12	BASS STRAIT								D,29	C,29			TIDAL R
TIN MINE CK	K09	BLACKWOOD CK										1,S,16		TIN MINE CK
WARRAGUL CK	N10	BASS STRAIT										1,S,16		WARRAGUL CK
BASIN 28														BASIN 28
BACK CK	K09	BUNYIP R		X			1,S,15							BACK CK
BALCOMBE CK	I10	PORT PHILLIP BAY								D,29	C,29			BALCOMBE CK
BUNYIP R	K10	WESTERN PORT		P,X			1,N,15			D,29	C,29			BUNYIP R
(continued)							1,S,15		1,S,8					(continued)
CARDINIA CK	J10	WESTERN PORT		X						D,29	C,29			CARDINIA CK
DIAMOND CK	K10	BUNYIP R		X			1,S,15			D,29				DIAMOND CK

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
EAST CK	J10	WESTERN PORT							1,S,8					EAST CK
LABERTOUCHE CK	K10	TARAGO R		P,X										LABERTOUCHE CK
LANG LANG R	K10	WESTERN PORT	X	P,X					1,N,8	D,29	C,29			LANG LANG R
(continued)									1,S,8					(continued)
MAIN CK	I10	BASS STRAIT								D,29	C,29			MAIN CK
MORDIALLOC CK										D,29				MORDIALLOC CK
O'MAHONY CK	K10	LANG LANG R		P,X						D,29				O'MAHONY CK
RYSON CK	K09	BUNYIP R	X	X			1,N,15							RYSON CK
TARAGO R EAST BR	K09	TARAGO R	X	P,X			1,X,3			D,29	C,29	1,X,1		TARAGO R EAST BR
TIN CK	K09	BUNYIP R					1,N,15							TIN CK
YALLOCK CK	J10	WESTERN PORT BAY							1,N,8					YALLOCK CK
BASIN 29														BASIN 29
ARMSTRONG CK	K09	YARRA R		X			1,S,21							ARMSTRONG CK
BADGER CK	K09	YARRA R	X	X						D,29	C,29			BADGER CK
BAKER CK	K09	YARRA R						1,N,21						BAKER CK
BIG PATS CK	K09	YARRA R	X											BIG PATS CK
BRITANNIA CK	K09	LITTLE YARRA R	X				2,S,21	2,L,21						BRITANNIA CK
CEMENT CK	K09	YARRA R					1,N,21							CEMENT CK
(continued)							1,S,21							(continued)
CHUM CK	K09	MEYERS CK	X	X								1,X,1		CHUM CK
CLEAR CK	K09	YARRA R					1,R,21	1,N,21						CLEAR CK
CONTENTMENT CK	K09	WATTS R					1,S,21							CONTENTMENT CK
CROOKED CK	K09	YARRA R		X					1,S,9					CROOKED CK
DEEP CK	K09	O'SHANNASSY R	X	X				1,N,21						DEEP CK
DON R	K09	YARRA R	X									1,R,16		DON R
GRACE BURN	K09	WATTS R					2,N,21	1,R,21						GRACE BURN
(continued)							1,R,21							(continued)
(continued)							3,S,21							(continued)
LITTLE YARRA R	K09	YARRA R	P,X				1,R,21	1,R,21		D,29	C,29			LITTLE YARRA R
MCCRAE CK	K09	WOORI YALLOCK CK	X	X				1,L,21						MCCRAE CK
MCMAHON CK	K09	YARRA R	X	X				1,S,21						MCMAHON CK
MERRI CK	I09	YARRA R					2,S,21							MERRI CK
MICKS CK	K09	WATTS R										1,X,1		MICKS CK
O'SHANNASSY R	K09	YARRA R					3,N,21	2,N,21						O'SHANNASSY R
(continued)							2,S,21							(continued)
OLINDA CK	J09	YARRA R		X			1,S,21							OLINDA CK
(continued)							1,R,21							(continued)
PLENTY R	J09	YARRA R					1,S,21						FH/A,22	PLENTY R
STARVATION CK	K09	YARRA R		X			1,S,21							STARVATION CK
STEELES CK	J09	YARRA R						2,R,21						STEELES CK
TOMAHAWK CK	K09	SHEPHERD CK					1,S,21							TOMAHAWK CK
WALKER CK	K09	YARRA R	X					1,N,21						WALKER CK

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
COWIE CK	H10	CORIO BAY										1,S,16		COWIE CK
HOVELL CK	H10	PORT PHILLIP BAY							3,S,10					HOVELL CK
LITTLE R	I09	PORT PHILLIP BAY										2,S,16		LITTLE R
MOORABOOL R	H09	MOORABOOL R	X						2,S,10	D,29	C,29	2,R,16	WP/F,22	MOORABOOL R
(continued)												4,S,16	WP/A,22	(continued)
(continued)												1,N,16		(continued)
MOORABOOL R EAST BRANCH	H09	MOORABOOL R	X										WCH/S,22	MOORABOOL R EAST BRANCH
(continued)													WCH/F,22	(continued)
MOORABOOL R WEST BRANCH	H09	MOORABOOL R	X										WCH/S,22	MOORABOOL R WEST BRANCH
STONY CK	H09	LITTLE R										2,R,16		STONY CK
BASIN 33														BASIN 33
BARWON R	G09	BASS STRAIT	P,X	P,X	4,R,20					D,29	C,29	6,S,16	WP/A,22	BARWON R
(continued)												2,N,16		(continued)
(continued)									1,N,11			4,R,16		(continued)
LEIGH R	G09	BARWON R	X									3,S,16		LEIGH R
(continued)												2,R,16		(continued)
MUDDY WATERHOLES CK	H09	BRUCE CK										1,S,16		MUDDY WATERHOLES CK
WAURN PONDS CK	H10	BARWON R									C,29	1,R,16		WAURN PONDS CK
YARROWEE R	H10	BARWON R										1,S,16	WP/A,22	YARROWEE R
(continued)													WP/T,22	(continued)
BASIN 34														BASIN 34
LITTLE WOODY YALOK	G09	WOODY YALOK R										1,S,16		LITTLE WOODY YALOK
SPRINGDALLAH CK	G09	WOODY YALOK CK										1,S,16		SPRINGDALLAH CK
WOODY YALOK R	G10	LAKE CORANGAMITE	X			P						1,R,16	WCH/A,22	WOODY YALOK R
(continued)												1,S,16		(continued)
BASIN 35														BASIN 35
AIRE R	F11	SOUTHERN OCEAN	X	P,X					3,S,11	D,29	C,29		SU/S,22	AIRE R
(continued)													SU/A,22	(continued)
ANGLESEA R	H10	BASS STRAIT		P,X						D,29	C,29			ANGLESEA R
BARHAM R EAST BR	G11	BARHAM R	X	P,X					1,S,11	D,29	C,29		SU/A,22	BARHAM R EAST BR
BARHAM R WEST BR	G11	BARHAM R	X	P,X										BARHAM R WEST BR
CALDER R	F11	AIRE R									C,29			CALDER R
CARLISLE R	F11	GELLIBRAND R	X						1,S,11		C,29			CARLISLE R
CARISBROOK CK	G11	BASS STRAIT	X								C,29			CARISBROOK CK
CHAPPLE CK	F11	GELLIBRAND R							1,S,11					CHAPPLE CK
CHARLIES CK	G11	GELLIBRAND R										2,X,2		CHARLIES CK
CUMBERLAND R	G11	BASS STRAIT	X							D,29	C,29		SU/N,22	CUMBERLAND R
CURDIES R	E11	SOUTHERN OCEAN	P,X	P,X						D,29	C,29	1,S,16		CURDIES R

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
ELLIOT R	G11	BASS STRAIT							1,S,11		C,29			ELLIOT R
ERSKINE R	G11	BASS STRAIT	X							D,29	C,29	1,R,16	SU/N,22	ERSKINE R
FORD R	F11	AIRE R								D,29	C,29			FORD R
GRASSY CK	H10	BASS STRAIT								D,29	C,29			GRASSY CK
GELLIBRAND R	F11	SOUTHERN OCEAN	P,X	P,X					2,S,11	D,29			SU/F,22	GELLIBRAND R
(continued)													SU/A,22	(continued)
JOHANNA R	F11	BASS STRAIT									C,29	2,X,2		JOHANNA R
KENNET R	G11	BASS STRAIT	X							D,29	C,29			KENNET R
PAINKALAC CK	H10	BASS STRAIT		X						D,29	C,29			PAINKALAC CK
PARKER R	G11	BASS STRAIT								D,29	C,29			PARKER R
SHERBROOKE R	F11	BASS STRAIT								D,29	C,29			SHERBROOKE R
SKENES CK	G11	BASS STRAIT	X							D,29	C,29			SKENES CK
ST GEORGE	G11	BASS STRAIT	X							D,29	C,29			ST GEORGE
THOMPSON CK	H10	BASS STRAIT		P,X						D,29				THOMPSON CK
WILD DOG CK	G11	BASS STRAIT	X							D,29	C,29			WILD DOG CK
WYE R	G11	BASS STRAIT	X							D,29	C,29			WYE R
BASIN 36														BASIN 36
BILLY BILLY CK	F08	FIERY CK										1,R,16		BILLY BILLY CK
BROKEN CK	F09	MOUNT EMU CK										1,S,16		BROKEN CK
BRUCKNELL CK	E10	HOPKINS R									C,29			BRUCKNELL CK
BURCHETT CK	E09	MUSTON CK										1,S,16		BURCHETT CK
FIERY CK	E09	HOPKINS CK	X	X								1,R,16		FIERY CK
GOOD MORNING BILL CK	E08	LAKE BUNINJON										1,R,16		GOOD MORNING BILL CK
HOPKINS R	E10	SOUTHERN OCEAN	P,X	P,X						D,29	C,29	5,S,16	WP/A,22	HOPKINS R
(continued)												2,R,16	WCH/A,22	(continued)
(continued)												1,N,16		(continued)
(continued)					5,R,20									(continued)
LUBRA CK	D09	MUSTON CK										1,S,16		LUBRA CK
MERRI R	D10	SOUTHERN OCEAN	P,X	P,X						D,29	C,29	1,S,16		MERRI R
MT EMU CK	E10	HOPKINS R	X		2,R,20					D,29	C,29	4,S,16	WP/A,22	MT EMU CK
MT EMU CK	E10	HOPKINS R											WCH/A,22	MT EMU CK
SALT CK	E10	HOPKINS R										1,S,16		SALT CK
TRAWALLA CK	E08	MOUNT EMU CK										1,R,16		TRAWALLA CK
YOUL CK	D10	SPRING CK										1,S,16		YOUL CK
BASIN 37														BASIN 37
DARLOT CK	C10	FITZROY R	X	P,X			3,S,21			D,29		1,R,16	WP/F,22	DARLOT CK
(continued)								2,I,21	1,S,12			1,S,16	WP/T,22	(continued)
EUMERALLA R	D10	LAKE YAMBUK	X					1,S,21		D,29	C,29	1,R,16		EUMERALLA R
(continued)								2,I,21						(continued)
FITZROY R	C10	PORTLAND BAY	X						1,N,12	D,29	C,29	1,R,16		FITZROY R
JOHNSTONE CK	B10	DISCOVERY BAY							1,S,12					JOHNSTONE CK
MOYNE R	D10	BELFAST LOUGH	X									1,S,16	C/T,22	MOYNE R

Stream and basin	Grid no	Tributary of :	Angling		Canoe	Car. Camp	Flora	Fauna	Geol/geom.	Fish diversity	Fish status	Cult heritage	Scenic value	Stream and basin
			Intro	Native										
(continued)												1,R,16		(continued)
SCOTT'S CK	E10	CURDIES R										1,R,16		SCOTT'S CK
SHAW R	D10	SOUTHERN OCEAN								D,29	C,29			SHAW R
SURREY R	D10	SOUTHERN OCEAN								D,29	C,29			SURREY R
BASIN 38														BASIN 38
BOONAWAH CK	D09	LAKE LINLITHGOW						1,S,21						BOONAWAH CK
CRAWFORD R	B09	GLENELG R	X						1,S,12	D29	C,29	1,S,16		CRAWFORD R
GLENELG R	B10	SOUTHERN OCEAN	P,X	P,X		P	5,S,21	1,S,21		D,29			GR/N,22	GLENELG R
(continued)					1,N,20			1,R,21	1,S,12			3,S,16	GR/A,22	(continued)
(continued)					1,R,20								WP/T,22	(continued)
GLENGULIN R	B09	GLENELG R									C,29			GLENGULIN R
GRANGE BURN	C09	WANNON R	X	X	1,R,20				1,N,12			1,X,1	WP/T,22	GRANGE BURN
GREEN CK	D08	DYER CK					1,R,21							GREEN CK
MOLESIDE CK	B10	GLENELG R	X					1,S,21						MOLESIDE CK
MOSQUITO CK	A08	CRAWFORD R												MOSQUITO CK
MUDDY CK	D09	GRANGE BURN							1,N,12					MUDDY CK
STOKES R	B09	GLENELG R								D,29	C,29			STOKES R
WANNON R	B09	GLENELG R	X			P	1,X,18	1,R,21		D,29	C,29	1,S,16	GR/S,22	WANNON R
(continued)													WP/A,22	(continued)
YARRAMYLIJIP CK	C08	GLENELG R						1,S,21						YARRAMYLIJIP CK
BASIN 39														BASIN 39
MOSQUITO CK	A08	BOOL LAGOON (SA)					1,S,21				C,29			MOSQUITO CK

Notes:

1. The Kiewa and King Rivers are considered to have other important fish conservation values.
2. The original fabric of the Chinese Gardens site has been disturbed by earth moving equipment over the last 20 to 30 years.

Key to codes in table:

The entry codes are as follows: The last number (numbers 1 to 29) identifies the source of information, angling excepted. These are listed in the Information Sources Section. The information sources for angling are 23 and 30, see below. For recreational angling, car-based camping, fish diversity and fish conservation status, an entry indicates that it meets the following criteria:

Angling

Introduced species (P) high level of significance
 Native species (P) high or average level of significance
(Information Source number 23)

Introduced species (X) undifferentiated (local, regional or State) significance Fish diversity (D) at least 7 native freshwater species
 Native species (X) undifferentiated (local, regional or State) significance Fish conservation status (C) presence of native species with an 'endangered' or 'vulnerable' or 'potentially threatened' status
 Car-based camping (P) presence of popular camping spots, in terms of size or numbers of sites
(Information Source number 30)

Scenic landscapes The river/landscape setting of each high scenic value reach is listed prior to the source number (22). The first letters describe the landscape character type. The letter following the '/' describes the river-setting category.

Landscape character type

MBP Murray Basin Rivers WCH West Central Hills
 WP Western Plains FH Foothills
 SL Southern Lowlands EH Eastern Highlands

G Grampians
 U Southern Uplands
 C Coastline

River setting category

N Natural A Agricultural
 S Semi-natural T Small town—suburban
 F Farm—forest

For canoeing, nature conservation values (flora, fauna, and geological/geomorphological sites of significance) and cultural heritage values (post-contact sites) the leading number indicates the number of sites or reaches with the particular level of significance, and the middle letter indicates the level of significance, as follows:

I	International	R	Regional	X	Significance level not formally assessed but is at least of regional significance		
N	National	O	Outstanding	A	Extremely rare species present	S	State H High B Species present that are endangered or localised in occurrence.

INFORMATION SOURCES

1. Royal Historical Society of Victoria.
Rivers and Streams - First submission number 37.
2. Gellibrand River System Committee.
Rivers and Streams - First submission number 40.
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4. Department of Sport and Recreation.
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Rivers and Streams - First submission number 70.
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Sites of geological and geomorphological significance in East Gippsland. Ministry for Conservation - Environmental studies series report No 320.
7. Rosengren, N.J. (1984).
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8. Rosengren, N.J. (1984).
Sites of geological and geomorphological significance in the Western Port Bay catchment. Ministry for Conservation - Environmental studies series report No 401.
9. Rosengren, N.J., Frood, D.I. and Lowe, K. (1983).
Sites of environmental significance in the floodplain of the upper Yarra River. Upper Yarra Valley and Dandenong Ranges Authority: Melbourne.
10. Rosengren, N.J. (1984).
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11. Rosengren, N.J. (1984).
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12. Rosengren, N.J., Mallen, J., and Shepherd, T. (1981).
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13. Forbes, S.J., Gullan, P.K., and Walsh, N.G. (1981).
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APPENDIX VI

Conservation Status of Native Fresh-water Fish Species

Status in Victoria (1990)	Fish species (common name)
Presumed extinct	Agassiz's chanda perch
	southern purple-spotted gudgeon ² (restricted)
Endangered	freshwater herring
	trout cod ² (endangered)
	barred galaxias (previously brown galaxias) ² (endangered)
	Ewens (variegated) pigmy perch ² (vulnerable)
Vulnerable Indeterminate	Australian grayling ² (potentially threatened)
	freshwater catfish
	Macquarie perch ² (restricted)
	Murray cod
	silver perch
	Tasmanian mudfish
	broad-finned galaxias
	dwarf galaxias
	spotted galaxias
	pouched lamprey
	golden perch
	Yarra pigmy perch ² (potentially threatened)
	flat-headed galaxias
	mountain galaxias
	Cox's gudgeon
	striped gudgeon
	freshwater hardyhead
	Lake Eyre hardyhead
	river blackfish
Restricted	bony bream
	two-spined blackfish
	crimson-spotted rainbowfish
Uncertain	western carp gudgeon
	Midgleys Lakes carp gudgeons
	dwarf flat-headed gudgeon
	Non-parasitic lamprey
Presently common and/or widespread	short-headed lamprey
	short-finned eel
	long-finned eel
	common galaxias
	Australian smelt
	small-mouthed hardyhead
	estuary perch
	southern pigmy perch
	tupong
	flat-headed gudgeon
	blue-spot goby
	bridled goby
	Tamar River goby

1 Koehn, J., & Morrison, A. (1990).

2. The Australian conservation status of these species is listed in brackets. Jackson, P. (1991)