The Waiau River Recreation Survey

G W Kearsley

1994

Waiau River Working Party
Southland Regional Council

The Waiau River Recreation Study

G W Kearsley

INTRODUCTION

The Waiau River rises in Fiordland in South western New Zealand in the tributaries of the major glacial lakes of that region, the largest of which are Lake Te Anau, Lake Manapouri and Lake Monowai. After leaving the glacially eroded country of the Fiordland mountain ranges and the lakes, it is joined by its major tributary, the Mararoa, and then flows through depositional plains and an increasingly broad valley until it reaches the sea downstream of Tuatapere at Te Wae Wae Bay.

The Waiau drains an extensive catchment which can be subject to very high rainfalls, especially in the western mountains, and in its unmodified state was a very substantial river indeed, large, in fact, on a national scale. The very size of its flow inevitably attracted the attention of power developers, and, in the 1960s plans were made for the development of the hydro electricity resource, so as to supply an aluminium smelter proposed for Bluff, near to Invercargill (Day 1993).

Although the original plans to raise the level of Lake Manapouri were modified in the light of widespread public protest, a major (585 MW) power station was constructed at West Arm on Lake Manapouri (Howie, Brasell and Powell 1993). The effect of this construction, which was facilitated by the construction of a major weir at the Mararoa confluence, was to 'decapitate' the Waiau River and divert all of its upper catchment through the West Arm power station. The most significant aspect of this is the fact that the river's water, once abstracted for power generation, is not returned to it. Instead, after passing through the West Arm power station, it is discharged into Doubtful Sound on the West coast of the South Island. Thus, the flow of the lower reaches of the Waiau River was dramatically modified, to an extent without parallel within this country.

Because the Waiau river catchment includes some of New Zealand's most spectacular scenery, and because of the relative remoteness of almost all of its length, the river has been held to have high wilderness and recreational values, while its tourist potential and use has grown with the strong growth of international tourism in the past two decades. It seems likely, therefore, that the substantial diversion of flow that the Manapouri project required will have had some impact upon local, domestic and even international patterns of recreational use and enjoyment.

The purpose of this report is to analyse present patterns of recreational use, and, where possible, to examine the changes and perceptions of changes in recreation that have come about as a consequence of river control. The former task requires no more than a series of simple surveys, but the latter is more difficult, involving as it does perceptions and recollections that extend over many years. The assessment of opportunity costs within the field of potential tourist development, such as white water rafting or jet boat touring, that might have happened had the river not been changed is not a part of this analysis, although it would be possible for qualitative assessments to be made.

This report follows from an inventory of recreational and tourist facilities and gross numbers that has already been undertaken (Anderson 1992) and does not seek to quantify aggregate use levels, that already having been done, nor does it seek to

provide a further inventory of scenic, recreational and other facilities. Instead, the report concentrates on the opinions and evaluations of four distinct sample groups. The first of these was the recreational behaviour and perceptions of change associated with the present resident population within the immediate Waiau catchment, including both Te Anau and Tuatapere. In this survey, a very high proportion of local people was involved. A second sample survey sought the opinions of residents of the wider Southland region, as well as adjacent parts of Otago, and here the sample level was much less intense, but much the same pattern of questions was asked. A sample of visitors to the region was also interviewed at a variety of locations within the catchment, and, finally, face to face interviews were carried out with a sample of people who had fished the Waiau River and its associated lakes and tributaries, prior to river control being imposed.

In the survey of local residents, attempts were made to contact all of the residents of Tuatapere and the rural population of the Waiau Valley through all of its length. In addition, a sample of Te Anau residents was also canvassed. The method of survey was to deliver a questionnaire survey to each household, in person, and to arrange to collect it upon completion by an agreed date. This 'drop and collect' method attracts good response rates in general, certainly far more than mailed surveys, and allows detailed information to be collected insofar as respondents are not required to give instant opinions, but can instead spend time on their responses. The method is far less time consuming than face to face interview, but does not allow for interactive discussion.

Where residents were not at home, a repeat visit was made, both to drop and to collect, and if contact was not made at the drop phase, then a questionnaire and explanatory letter was left. If there was no contact at the collect phase, a reply paid envelope was left together with an explanatory letter. In the event, 461 usefully completed returns were received, representing a response rate of some 73%. No marked variation in response was detectable by area; elderly people were slightly more reluctant than others to reply. Since this was virtually a census, rather than a sample, confidence limits do not apply.

In the regional sample, the survey format was different. A random sample of households was selected from the appropriate Electoral Rolls and a questionnaire and reply paid envelope was mailed. This was followed by a reminder letter after a two week period. The sample size that was chosen was 400, allowing for confidence limits of $\pm$ 5% about the sample mean, at the 95% level. Put simply, this means that a sample value will fall within five per cent either way of a true population value 95 times out of 100. As with all such mail surveys, the response rate was much lower than with the personal contact achieved by the drop and collect method. In the event, 137 usable responses were received, a compliance rate of about 34%, a figure that is comparable with many other similar studies. Inevitably, such a response leaves open the question of the character of non-respondents, but it may be assumed that those with an interest in the topic in question would be more likely to respond than those who were in no way involved. In other words, folk who used, or had used the Waiau for recreation were more likely to reply than those who did not.

Visitors to the area were contacted at a variety of points for face to face interviews, using a brief formatted questionnaire. In a few instances, respondents chose to take a reply paid envelope and a survey form, which they later returned. Visitors to Te Anau, Manapouri, Tuatapere and various recreational sites along the river were interviewed, and a total of 221 responses was obtained. Interviews were spread from the beginning of January until Easter of 1993. The sample size reflects confidence limits of $\pm$ 6%.

Finally, interviews were conducted with anglers who had fished the Waiau River prior to control. A total of forty interviews was held; contact was made with an

initial list supplied by local people, which was then augmented by respondents nominated by interviewees themselves. The mode of interview was a face to face structured conversation. A series of prompt questions was observed, but discussion was allowed to develop as appropriate in each case.

Data were coded for computer analysis and processed using the SPSSx suite of programmes, a standard statistical package for the social sciences.

THE HOUSEHOLD SAMPLE

Patterns of Recreation

Ninety one per cent of those questioned were permanent residents, and a further six per cent were holiday home owners, five sixths of whom were from Invercargill, and the remainder mostly coming from elsewhere in Southland, such as Dipton and Winton. The remainder, two per cent, were visitors on holiday.

Respondents were first asked to list the kinds of outdoor recreation and leisure activities that they participated in in their local area, and the results are set out in Table 1.

Table 1

Types of outdoor recreation and leisure activities participated in, in the local area

Fishing	63
Boating	34
Swimming	24
Hunting / deer stalking	19
Walking	18
Tramping	15
Golf	13
Whitebaiting	12
Water ski-ing	10
Duck shooting	9
Picnics / barbecues	8
Shooting	7
Bowls	7
Canoeing	5
Cycling	4
Tennis	4
Scenic drives	3
Yachting	3
None	10

High levels of water based activity are recorded, with two thirds of respondents reporting fishing, for example; also important are hunting and walking, in various forms, so that ninety per cent of respondents reported outdoor activities of some kind. Not surprisingly, given the types of activity mentioned, nearly four fifths of respondents (79%) said that they were carried out on the Waiau River, or on Lake Manapouri or Lake Te Anau, or close by them. Those activities are set out in Table 2.

Table 2

Activities carried out on or close by the Waiau river system

Fishing	37
Boating	22
Swimming	13
Hunting	7
Walking	7
Duck shooting	6
Whitebaiting	6
Water ski-ing	5
Canoeing	3
Shooting	3

Picnics	2
Yachting	2

Given the nature of general outdoor recreation that was reported, and the prominence of the Waiau river system in those activities, the pattern of recreations reported is not surprising. However, it is clear that the Waiau is not the sole venue for water based activity; fishing, for example declines from 63 per cent to 37 per cent, saying, in effect that while nearly two thirds of respondents participate in fishing, only just over half use the Waiau system. In the same way, boating declines from 33 per cent to 22 per cent and swimming from 24 per cent to 13 per cent.

Frequency of recreational visits is set out in Table 3.

Table 3

Frequency with which the Waiau system and its vicinity are visited for recreational purposes

More than once a week	21
About once a week	18
More than once a month	20
About once a month	15
Less than once a month	13
Hardly ever at all	12
Never	2

The river and lakes are clearly popular as recreational venues; 39 per cent of respondents use them weekly, or even more frequently, whereas only 14 per cent hardly ever or never do so. Indeed, almost three quarters (74%) make such visits once a month or more. Such visits tend to be seasonal, as one might expect, and Table 4 sets out the frequency with visits are made by listing the percentage of people who make at least one such trip per month for each month of the year.

Table 4

Monthly distribution of recreational visits to the Waiau river system and its vicinity

January	56	May	28	September	29
February	49	June	22	October	43
March	40	July	20	November	48
April	36	August	26	December	51

As can be seen, there is a clear summer season and a clear winter. November to February are the peak months, with October, the start of the fishing season, marking the beginning of the more popular months, and the end of April, the end of the fishing season, their conclusion. June and July are the least popular months.

Information was collected on the frequency of visits per month for each month, and Table 5 contrasts the pattern of visits for January with that of June, representing the seasonal extremes.

Table 5

Number of times the Waiau system is visited for recreation per month

January	
None	44
1 - 3	29
4 - 6	16
7 - 10	4
11 - 15	3
16 - 20	3
more than 20	1
July	
None	80
1 - 3	15
4 - 6	4
7 - 10	1
11 - 15	-
16 - 20	-
more than 20	-

As can be seen, not only do far less people use the river system in winter, but those that do, use it much less frequently. Thus, 11 per cent use the river weekly or more in the summer, but only one per cent do so in the winter.

Respondents were then asked if there were other places that they visited for recreation in the Southland region to carry out the activities that they sometimes carried out on the Waiau, or on Manapouri or Te Anau. Thirty seven per cent said that there were, the most frequently mentioned are set out in Table 6

Table 6

Alternative locations for river and lake recreation

Lake Monowai	8
Lake Hauroko	6
Oreti River	5
Mavora Lakes	5
Mataura River	3
Lake Wakatipu	3
Aparima River	2
Mararoa River	1
Milford Sound	1
Greenstone River	1
Fiordland Coast	1
Wanaka	1
Borland Stream	1
Riverton	1
Port Craig	1
Southland Coast	1

A number of locations are listed, most of them being fishing sites throughout western Southland and Fiordland. When asked if any of these were superior to the Waiau and the associated controlled lakes, 11 per cent said that some were, with the major reasons being better fishing, remoteness and scenery, mentioned by two per cent each. Salt water and the presence of crayfish were also listed as reasons for preferring elsewhere, but these are not characteristics that the Waiau system can be expected to have.

Respondents were then asked to determine how important the Waiau River and Lakes Manapouri and Te Anau were for their personal recreation, and responses are set out in Table 7.

Table 7

Importance of the Waiau River and lakes for respondents' personal recreation

	Waiau	*Lakes*
Very important	44	37
Quite important	21	17
Only moderately important	15	18
Only incidental	6	7
Of no importance at all	3	3
Not applicable / no response	10	19

Nearly two thirds (65%) of respondents rated the Waiau as being of some importance, and over half (54%) saw the lakes in that light. By contrast, only nine per cent of those replying saw the river as being of little or no importance, and, similarly, only ten per cent rated the lakes that way, so that the importance of both is well established. This is emphasised even further when respondents are asked to rate the importance of the river and lakes for recreation in general, and not just for themselves, Table 8.

Table 8

Overall importance of the Waiau River and lakes for recreation in general

	Waiau	*Lakes*
Very important	75	76
Quite important	15	9
Only moderately important	4	2
Only incidental	-	-
Of no importance at all	1	1
Not applicable / no response	5	12

Here, when overall perceptions are examined, it is clear that both the river itself and the lakes are very highly rated. Three quarters think that both are 'very important', and a full 90 per cent rate the river as being at least quite important, with the lakes enjoying a comparable figure of 85 per cent. By contrast, virtually no one sees them as being unimportant.

Finally, in this section, respondents were asked to list the recreations that they were aware of people carrying out on the Waiau, Table 9.

Table 9

Recreational activities carried out on the Waiau by people in general

Fishing	84
Boating	75
Swimming	35
Canoeing	14
White baiting	12
Rafting	5
Hunting	4
Picnics	4
Duck shooting	4
Camping	2
Tramping	2
Walking	2
Jet ski-ing	2
No response	9

Responses closely fit the declared patterns of recreation, except that the more visible water based activities are reported more widely than they are participated in. Thus, five per cent of respondents mention rafting, but only one person mentioned it as a personal activity. Similarly, while 22 per cent boat on the Waiau, 75 per cent are aware of it as an activity, and the same relationship holds true for canoeing and jet ski-ing. In effect, the Waiau,s reputation as a recreational body of water is based partly upon actual participation, but also upon peoples' awareness of highly visible activities such as boating and rafting. In the same way, the more passive activities are under reported in this Table.

Respondents were finally asked to assess which parts of the Waiau system are especially used for recreation. In this case, verbal responses were collected, rather than asking respondents to draw upon a map. These are presented in Table 10.

Table 10

The parts of the Waiau that are especially used for recreation

All of it	20
Clifden Bridge	14
Lower reaches	13
The mouth	13
Upper Waiau	10
Tuatapere	9
Te Anau - Manapouri	5
Wherever road access	4
Monowai	2
Lakes	2
Balloon Loop	2
Lagoon	1
Rainbow Reach	1
No response	31

In addition to the places listed in the Table, a number of very specific locations were also mentioned, but the most frequently mentioned parts are the Upper Waiau, from Te Anau to Manapouri, Clifden Bridge and Tuatapere to the sea. Thus, the least mentioned area is that stretch from Manapouri and the weir down to Clifden Bridge, and it is this area that is most difficult of access.

Recreation and River Control

In this section, respondents were asked for their perceptions of how control of the river had affected their recreational experiences, if at all, and was thus restricted to those who had experience of the river prior to hydro development. In all, some 47 per cent said that they had used the Waiau River for recreation before it was controlled for electricity generation, and of these some 82 per cent felt that their recreation had been changed either in type or quality because of changes brought about by river control, Table 11.

Table 11

The extent to which recreation is seen as having changed because of river control

Definitely	71
Probably	11
Not sure/don't know	7
Probably not	7
Definitely not	4

If respondents reported that the type of recreational use that they made of the Waiau River had changed, they were first asked if there were any activities that they had stopped altogether or done less of, Table 12.

Table 12

Changing recreational use of the Waiau

Activities stopped altogether on the Waiau

Boating	15
Fishing	11
Rafting	2
Swimming	3
None	13

Activities done less of on the Waiau

Fishing	34
Boating	15
Whitebaiting	6
Swimming	6
Picnics	2
None	4

Boating and fishing are the two main activities that have been given up altogether, and it is the same two that are pursued less. Indeed, 30 per cent of eligible respondents said that their boating had been affected, and 45 per cent said that their fishing had been, although the tendency was to fish the river less rather than to give it up altogether. Rafting and swimming were also mentioned by several people as activities that had been given up altogether, while individuals commented on the fact that particular long distance boat trips were now impossible. It was no longer possible to boat from Tuatapere to Manapouri, or to go from Manapouri to Te Anau. Another person mentioned that they could no longer simply sit and watch the flow of a big and strong river.

When asked why they had given up their various activities, most (18%) said that there was simply not enough water, while some two per cent specifically mentioned the unpredictability of level and volume of water flow. Three per cent believed that fish were now fewer and smaller, and three per cent mentioned weed and slime collecting in the river, together with gorse colonising the banks. Individual boaters

stated that their path was blocked by dams, and individual fishermen commented on the declining frequency of big runs of fish.

Similar reasons were given for reduced activity. Twenty per cent said that there was not enough water and nine per cent believed that there were fewer and smaller fish. Fluctuations in river level bothered six per cent, comprising both boaters and fishermen, and a similar proportion complained of river weeds, gorse and slime. Three per cent referred to problems of silting and two per cent drew attention to increased difficulty of access to the main river as a consequence of low flow.

When asked if they had been able to take up new activities, five per cent said that they were able to swim in the river because the lower water and slow speed were much safer, but no other activity was mentioned in this context, save for the two per cent who mentioned, probably sarcastically, walking across the river, and the two individuals who mentioned increased TV viewing. Overall, it is clear that respondents believe that many more opportunities have been lost than have been gained, and that these are largely because of reduced river flow.

In the light of the above, one might expect that respondents would perceive a diminution in the quality of their recreational experiences, and such proved to be the case, Table 13.

Table 13

Changes in the quality of recreational use of the Waiau

Activities that are poorer or less satisfying than they were

Fishing	44
Boating	21
Whitebaiting	9
All	5
Duck shooting	3
Swimming	2
Canoeing	2
None	2

Activities that are better or more satisfying than they were

None	24
Swimming	10
Fishing	3

As in Table 12, it is the most popular pastimes of fishing and boating that are affected, with whitebaiting also significant. Again as before, the principal reason is deemed to be low water flow, cited by a full 37 per cent of respondents, while ten per cent referred to water level and rate of flow fluctuations. Fewer and smaller fish were listed by seven per cent, and six per cent mentioned the presence of slime and weed. Three per cent saw the presence of the weir as an impediment to fish passage and thus successful breeding, and two per cent listed silting as reducing their experiences. Among the more individual complaints were an assertion that oysters were now poorer in quality with fewer minerals going down the Waiau and a complaint that the beaches had become stonier with silt and sand being trapped within the river. Silt in suspension was held to be responsible for a reduced level of fish feed, while the deposition of silt was seen to affect fishing through the filling in of the better holes.

The improvement in swimming conditions was again attributed to lower and slower water, with consequent greater safety, although it should be noted that two per cent

saw this as detracting from their more exciting swimming in the original river. A small number of fishermen approved of the enhanced access that control structures gave them, and one or two approved of the better opportunities for sighting and stalking fish, but they are very much in a minority. A number of individuals cited the calmer flow as providing them with opportunities for rafting, boating and canoeing, but they are few in number, and also very much in a minority.

Existing recreational users of the river were asked if various aspects of river management could improve their recreational activities. Similarly, low or non-users were asked if such management could provide better opportunities to make more use of the river. A number of attributes of river management were listed, and responses are set out in Table 14. Relatively few responses were offered, and it is clear that many respondents do not believe that river management will improve their recreation; they would prefer full restoration of the river, and occasionally said so.

Table 14

Management actions to improve recreational experiences

	Present users	*Potential users*
Managing flow levels		
Provide consistent flow	11	4
Return more water to river	6	3
Increased sustainable flow (for fish)	3	1
More natural flow	3	1
Direct Mararoa flow to Waiau at all times	2	1
Raise levels	1	-
Manage to accommodate fish spawning	1	-
Modifying river bed		
Clearing weed	4	-
Dredge worst gravel deposits	2	-
Link Mararoa directly to Waiau	2	-
Managing water quality		
Keep clean and silt free	2	-
Control farm run-off	2	-
Maintain natural flow	1	-
Stop weed build up	1	-
Divert Mararoa water directly to Waiau	1	-
Modifying existing facilities		
Provide fish ladders	1	-
Remove Mararoa dam	1	-
Remove Te Anau control structure	1	1
Providing new facilities		
Stock river with fish	2	-
More boat ramps and access	2	2
Toilets	2	-
Install decent fish ladders	1	-
More car parking	-	2
No more boat ramps	-	2

In their suggestions for river flow management, the bulk of respondents who made suggestions asked for more consistent flows above all else, which, together with more water in the river was seen as the best prospect for reducing siltation and weed infestation. In this section, and elsewhere, strong pleas were made for the Mararoa to be diverted so as to flow directly into the Waiau.

Modifications to the bed were principally seen in terms of weed control and sediment removal, but individual comments included the removal of large boulders that are hindering river flow (although it was not stated where) and the better marking of underwater obstacles. Willows were seen as a problem in one case, and it was suggested that the main channel be deepened to provide a single and faster body of water. Few comments were made about water quality, save to say that it should be weed and silt free, while individuals commented on the need for commercial boats on the lakes to be fitted with sewage holding tanks.

Although few common suggestions were made about facilities improvement, save for those listed, a number of individual comments were received. These included a number of requests for tracks and access ways to be provided and kept open, for tracks and huts to be improved, for noxious weeds to be removed from various places, and for proper fish ladders to be installed. A number of comments suggested that the former river should be restored, that the various control systems be removed or that power should cease to be generated. A number of new facilities were proposed, and, apart from those listed, individuals suggested camp and picnic sites at various locations, a swing bridge at Pearl Harbour and the release of salmon into the river. Two per cent suggested that, far from providing additional boat ramps, no more should be created. In their view there was already too much boating on the river, and they did not want it to become 'another jet boat race track'.

Beach levels on Lake Te Anau and Lake Manapouri can be controlled as a consequence of lake level control for hydro power generation, so respondents were asked to comment on beach based recreation. First they were asked how much of a beach they would like Lake Manapouri and Lake Te Anau to have, from a scenic point of view.

Table 15

Preferred beach sizes for Lake Manapouri and Lake Te Anau

A very large beach	6
Quite a large beach	36
A fairly small beach	25
A very small beach	2
No beach at all	2
No preference	30

Generally, extremes of beach size are not preferred. Quite a large beach is the single most preferred option (36%), but a quarter nevertheless prefer a fairly small beach (25%). The reasons for those choices are given in Table 16.

Table 16

Reasons for preferred beach sizes

Large beaches	
Room (espec. for children)	8
Look nicer	7
Picnics/BBQs	5
Recreational opportunities	4
More natural	3
More usable	2
Better boat access	1
Smaller beach	
Looks nicer	7
More natural	6
Better boat access	1

Opinion was divided as to which looked nicer, but generally, larger beaches are associated with recreational activities and smaller ones with a more natural appearance.

Almost two thirds (63%) had used the lake beaches for recreation, and the ways in which they had done so are set out in Table 17.

Table 17
Use of lake beaches for recreation

Picnics / barbecues	28
Boating	18
Water ski-ing	14
Swimming	13
Fishing	10
Walking	9
Camping	4
Access (hunting, tramping)	3
Beaching boat	3
Hunting	1
Canoeing	1
Sailing	1

While picnics and barbecues are the single most popular recreation on beaches, they are used in association with a range of water sports, as well as having a clear role in the provision of access.

Respondents were asked if the control of lake levels affected their recreation in any way, and answers were evenly balanced; 34 per cent said that it did, but 35 per cent said that it did not. The ways in which recreation was affected are listed in Table 18.

Table 18
Ways in which recreation is perceived to be affected by lake level control

Low levels	
Better access for fishing	3
Detrimental to fishing	3
Obstacles for fishing and boating are exposed	2
Fish breeding areas exposed	1
Mooring boats is difficult	1
Causes slumping on beaches	1
High levels	
No or insufficient beach	6
Launching boats too difficult	4
Detrimental to fishing	1
Access too difficult	1
Fluctuating levels	
Detrimental to fishing	5

The Table speaks for itself, and all conditions are unfavourable to some recreation, to a degree, and all are perceived to have a negative impact on fishing. The loss of beaches and access with a high lake is seen as the largest concern.

Values and Scenery

In this section, respondents were asked to consider the scenic values of the Waiau catchment, and to reflect upon general values that the river might have for them, over and above its recreational worth. Nearly two thirds believe that the river has special significance or value for themselves and/or their family. Those values are set out in Table 19.

Table 19

Special values of the Waiau River

Natural beauty and scenery	14
Part of the area's heritage	12
Recreational opportunities	11
Farm boundary / live(d) nearby	10
Fishing	5
Once a beautiful and majestic river	2
Peaceful / a refuge	2
Focal point of area	1
Source of drinking water	1
Was best fishing and boating river in NZ	1

Natural beauty and recreational values predominate, together with concepts of peacefulness and heritage, as well as a certain amount of nostalgia. The river also provides a sense of place and unifying focus for the region. Table 20 lists the ways in which those values have been changed by river control, since 42 per cent believe that they have, as opposed to the 25 per cent who feel that they have not.

Table 20

Ways in which values have been changed by river control

Decreased flow	10
Only half the river it used to be	8
There are now extreme fluctuations	7
Broom and gorse have spread	4
Increase in weed	3
More erosion	3
No decent fishing	3
Shingle build up	2
River has been taken away	2
Low flow means more pollution	2

Although the Table largely records material changes, it is clear that the river is perceived as being diminished in both size and meaning; it is 'only half the river it used to be'. Environmental degradation through erosion and the spread of weeds is also associated with river control.

Some 16 per cent of respondents use the river for anything other than recreation, principally for domestic water (6%), stock water (3%), as a boundary (2%) and as a source of employment (2%), including working as a fishing guide. About 13 per cent felt that those uses had been impacted upon by river control. There was no over-riding consensus of impacts, rather a series of individual responses. One or two answers were mainly concerned with the inadequacy of the river as a stock boundary creating a need to fence; it was reported that fences are prone to flood damage. Others reported changing water tables; one respondent was obliged to move because of water damage to farm property while another reported a falling water table and drying out of swamplands. Several commented on reduced recreational values and

others said that the river had been destroyed, while one respondent remarked that the water was now undrinkable.

Scenic values were questioned further and Table 21 shows how the scenery of the Waiau Valley is rated by respondents. Since the Upper Waiau and the lakes are either in or adjacent to Fiordland National Park, it was not felt necessary to enquire as to their scenic status.

Table 21

Evaluations of the scenery of the Waiau Valley (from Manapouri to the sea)

Exceptional	20
Impressive	26
Picturesque	28
Moderate	9
Uninspiring	2
Dull	1
No response	14

Clearly, the Waiau Valley is seen as scenically attractive; nearly half (46%) see it as impressive or better, and a further 28 per cent see it as at least picturesque, whereas virtually no one sees it as unattractive. When asked to list the most scenic parts, the Clifden Bridge was most frequently mentioned (8%), although relatively few people responded to this question, Table 22.

Table 22

Most scenically attractive parts of the Waiau Valley

Clifden Bridge	8
Upper Waiau	6
Bush areas	5
Monowai Bridge	4
Blackmount valley	3
Tuatapere Domain	3
Between the Lakes	2
Monowai	2

Most people attributed considerable importance to the river itself as a part of the scenery of the valley, Table 23.

Table 23

Importance of the river itself as a feature of the Waiau Valley

Most outstanding feature	47
Fairly important feature	33
Not very important	2
Hardly noticeable	1
Irrelevant	-
No response	17

Similarly, virtually no-one thought that control of the river had improved its scenic qualities, although almost one in five thought that it had made no difference, Table 24.

Table 24

Extent to which control of the river for power generation purposes make the Waiau Valley more or less scenically attractive ?

Much more attractive	1
Rather more attractive	1
Makes no difference	19
Rather less attractive	27
Much less attractive	28
No response	24

Clearly, there was a strong feeling among the majority that control of the river had reduced its scenic value, the reasons given are set out in Table 25.

Table 25

Reasons for views expressed in Table 24

Low flow and lack of water	23
Noxious weeds along bank	11
No longer a mighty river	11
Silting and gravel	5
Slime and weed in river	4
Erosion and slumping	4
Unnatural level variations	2

The views expressed are hardly surprising, given the responses to earlier questions, and again focus on lowered flows, the loss of what was once 'the mighty Waiau' and the perceived consequences of low flow, such as weeds, gravel and slime. While the Waiau Valley is still seen as scenically attractive, the river itself is a major part of the scenic values of the area, and there is no doubt but that the river's intrinsic qualities have been reduced by development, so that the overall scenic values of the valley have been reduced accordingly.

THE REGIONAL SAMPLE

Patterns of Recreation

Respondents were first asked to list the kinds of outdoor recreation and leisure activities that they participated in in their local area, and the results are set out in Table 1. Although the pattern is broadly similar to that encountered within the Waiau catchment, there are some clear differences.

Table 1

Types of outdoor recreation and leisure activities participated in, in the local area

Fishing	46
Boating	10
Swimming	4
Hunting / deer stalking	15
Walking	21
Tramping	23
Golf	10
Whitebaiting	1
Water ski-ing	2
Duck shooting	1
Picnics / barbecue	2
Shooting	7
Bowls	4
Canoeing	1
Cycling	6
Scenic drives	2
Yachting	1
Camping	7
Snorkelling	2
Gardening	3
Rugby	6
None	10

Fishing and boating are still popular, but to the same extent, whereas tramping has a higher level of popularity than in the Waiau itself. Other water based activities such as swimming, whitebaiting and water ski-ing are mentioned less, no doubt partly because they are not participated in so often by, say, people from towns that are not river based, and also because they are not so high in the perceptions of those people. The contrast between the two surveys is that between a river based population and the general regional community. About half of those who responded (54%) said that they carried out some activities on the Waiau River, or on Lake Manapouri or Lake Te Anau, or close by them. It should be noted though, that the sample is probably self-selected to a degree by those who do have an involvement with the Waiau or the Fiordland Lakes. Those activities mentioned are set out in Table 2.

Table 2

Activities carried out on or close by the Waiau river system

Fishing	22
Boating	10
Swimming	3
Tramping	13
Hunting	3
Walking	4
Camping	4

Duck shooting	2
Whitebaiting	1
Water ski-ing	2
Rafting	2
Canoeing	1
Shooting	3
Picnics	1
Yachting	2

Given the nature of general outdoor recreation that was reported, and the relative prominence of the Waiau river system in those activities, the pattern of recreations reported is again not surprising. Again, it is clear that the Waiau is not the sole venue for water based activity; fishing, for example declines from 46 per cent to 22 per cent. In this case, nearly half of respondents participate in fishing, only just over a fifth use the Waiau system at all. On the other hand, boating stays at ten per cent in both Tables, indicating the regional importance of the resource for boating, and swimming is much the same, declining only from four to three per cent, an insignificant difference.

On a regional basis, the Waiau is used much less frequently than it is by its neighbouring population; the frequency of recreational visits is set out in Table 3.

Table 3

Frequency with which the Waiau system and its vicinity are visited for recreational purposes

More than once a week	1
About once a week	2
More than once a month	5
About once a month	9
Less than once a month	43
Hardly ever at all	37
Never	4

Visits are, in the main, only occasional, and while well over a third of local residents used the river weekly, or more often, only a tenth as many within the wider region do so. By contrast, most regional visits are less than once a month, if at all, so that the resource is not widely used on an aggregate regional basis. Such visits tend to be even more seasonal than is the case with the local community, as one might expect, and Table 4 sets out the frequency with visits are made by again listing the percentage of people who make at least one such trip per month for each month of the year.

Table 4

Monthly distribution of recreational visits to the Waiau river system and its vicinity

January	45	May	20	September	13
February	32	June	14	October	26
March	30	July	16	November	30
April	26	August	11	December	39

As can be seen, there is still a clear summer season and a clear winter, but the summer season is much shorter than for locals. January and perhaps December are the peak months, with October, the start of the fishing season, again marking the beginning of the more popular months, and the end of April, the end of the fishing season, their conclusion. June to September are the least popular months. As indicated by Table 3, the overall volume of visits is consistently less than is the case for the local community.

As with the local residents, information was collected on the frequency of visits per month for each month, and Table 5 contrasts the pattern of visits for January with that of June, representing the seasonal extremes for Waiau residents.

Table 5

Number of times the Waiau system is visited for recreation per month

	January	
None		55
1 - 3		42
4 - 6		2
7 - 10		-
11 - 15		-
16 - 20		-
more than 20		-
	July	
None		84
1 - 3		16
4 - 6		-
7 - 10		-
11 - 15		-
16 - 20		-
more than 20		-

Only a small number visit the river system even once in the winter, and, in fact August shows an even lower visit rate, with just 11 per cent visiting, and then usually only once. January is the peak month for both samples, but for the regional sample, less people visit, and the frequency of visits, which remains firmly around the once per month level, is clearly and significantly lower.

Respondents were then asked if there were other places that they visited for recreation in the Southland region to carry out the activities that they sometimes carried out on the Waiau, or on Manapouri or Te Anau. Fifty eight per cent said that there were, a predictably higher figure for this sample; the most frequently mentioned alternatives are set out in Table 6.

Table 6

Alternative locations for river and lake recreation

Lake Monowai	2
Lake Hauroko	3
Oreti River	5
Mavora Lakes	5
Mataura River	11
Aparima River	4
Mararoa River	1
Milford Sound	1
Fiordland Coast	1
Waikaia	5
Catlins	3
Queenstown	7
Stewart Island	2
Bluff Harbour	2

Again, most of the locations listed are premier fishing sites throughout western Southland and Fiordland. The major difference between the two samples, though, is

the marked prominence of the Mataura River in this case, together with the relative downplaying of the southern Fiordland lakes. It might reasonably be supposed that this provides a more balanced regional perspective. When asked if any of these were superior to the Waiau and the associated controlled lakes, 32 per cent said that some were, with better fishing, remoteness and scenery, mentioned by two per cent or so each, again being among the major reasons. However, proximity to home drew by far the most responses, 16 per cent in all.

As in the previous sample, respondents were then asked to determine how important the Waiau River and Lakes Manapouri and Te Anau were for their personal recreation, and responses are set out in Table 7.

Table 7

Importance of the Waiau River and lakes for respondents' personal recreation

	Waiau	*Lakes*
Very important	14	20
Quite important	18	24
Only moderately important	21	17
Only incidental	18	18
Of no importance at all	16	13
Not applicable / no response	13	8

About a third (32%) of respondents rated the Waiau as being of some importance, half of the local community's assessment, but nearly (44%) saw the lakes in that light, which is a figure only ten per cent less than the local value.. By contrast, a further 34 per cent of those replying saw the river as being of little or no importance, and, similarly, 31 per cent rated the lakes that way, so that the importance of both is well established. However, it is also clear that the lakes have the stronger regional attraction, and hold their attractive power with distance to a considerably greater extent than does the Waiau itself. The overall importance of both is much more strongly emphasised when respondents are asked to rate the importance of the river and lakes for recreation in general, and not just for themselves, Table 8.

Table 8

Overall importance of the Waiau River and lakes for recreation in general

	Waiau	*Lakes*
Very important	64	74
Quite important	21	16
Only moderately important	6	3
Only incidental	-	-
Of no importance at all	5	-
Not applicable / no response	8	7

Here, when overall perceptions are examined, it is clear that both the river itself and the lakes are very highly rated. Two thirds think that the river is 'very important', and a full 85 per cent rate the river as being at least quite important, a figure not far removed from that in the Waiau sample. Three quarters see the lakes as 'very important', and this again asserts their superior regional drawing power. By contrast, virtually no one sees them as being unimportant, and the same is largely true for the river itself.

Finally, in this section, respondents were asked to list the recreations that they were aware of people carrying out on the Waiau, Table 9.

Table 9

Recreational activities carried out on the Waiau by people in general

Fishing	70
Boating	24
Swimming	15
Canoeing	5
White baiting	6
Rafting	6
Hunting	12
Picnics	5
Duck shooting	1
Camping	4
Kayaking	2
Tramping	11
Walking	2
No response	17

Fishing is the clearly dominant activity in this Table, close to the level cited by the Waiau sample, but the importance of boating is very much less, and swimming relatively so. By contrast, hunting and tramping are much more strongly emphasised in this sample.

Respondents were finally asked to assess which parts of the Waiau system are especially used for recreation. In this case, verbal responses were collected, rather than asking respondents to draw upon a map. These are presented in Table 10.

Table 10

The parts of the Waiau that are especially used for recreation

All of it	26
Upper Waiau	10
Lakes	2
No response	48

The range and level of responses is far less than in the local community's response, and, while the pattern is broadly similar, with the choices being either for all of the river, or for the Upper Waiau, the range of detail is very much less. Similarly, the level of non-response is markedly higher.

Recreation and River Control

In this section, respondents were asked for their perceptions of how control of the river had affected their recreational experiences, if at all, and was thus restricted to those who had experience of the river prior to hydro development. In all, some 26 per cent said that they had used the Waiau River for recreation before it was controlled for electricity generation, and of these some 49 per cent felt that their recreation had been changed either in type or quality because of changes brought about by river control, Table 11.

Table 11

The extent to which recreation is seen as having changed because of river control

Definitely	36
Probably	13
Not sure/don't know	13
Probably not	23
Definitely not	16

These figures are less than for the Waiau sample. Not only had fewer experienced the river prior to control., but of those that had, considerably less felt that their recreation had changed and over three times as many felt that it had not. This, of course, may well have something to do with different frequencies of use and type of recreation, as well as the personal meanings that people attach to recreation, their expectations and previous experience.

If respondents reported that the type of recreational use that they made of the Waiau River had changed, they were first asked if there were any activities that they had stopped altogether or done less of, Table 12.

Table 12

Changing recreational use of the Waiau

Activities stopped altogether on the Waiau

Fishing	20
Boating	11
Visiting Beach	8
Walking	3
None	10

Activities done less of on the Waiau

Fishing	31
Boating	14
Rafting	3
None	3

Boating and fishing are the two main activities that have been given up altogether, and it is the same two that are pursued less. Twenty five per cent of eligible respondents said that their boating had been affected, and 51 per cent said that their fishing had been, although the tendency was to fish the river less rather than to give it up altogether. This is particularly understandable as the Waiau was not the first choice for significant numbers in any case. Rafting was also mentioned by several people, while several commented on the fact that it was necessary to be much more careful.

When asked why they had given up their various activities, many (10%) said that there was simply not enough water, while as many specifically mentioned the unpredictability of level and volume of water flow. Three per cent mentioned weed and slime collecting in the river, together with gorse colonising the banks.

Similar reasons were given for reduced activity. Eight per cent said that there was not enough water and a similar number believed that there were fewer and smaller fish. Fluctuations in river level were the largest concern, at 11 per cent, comprising both boaters and fishermen, and four per cent complained of river weeds, gorse and slime. Three per cent referred to the increased stoniness of the beaches

and six per cent drew attention to increased danger as a consequence of rapidly fluctuating flow.

When asked if they had been able to take up new activities, none was able to list any, save for one person who had taken up fishing, but it was not clear if this was as a consequence of river control. Several mentioned that they had taken up non-water based activities, such as golf. Overall, it is clear that respondents believe that many more opportunities have been lost than have been gained, and that these are largely because of reduced river flow and fluctuations in flow.

As before, respondents saw a reduction in the quality of their recreational experiences, Table 13.

Table 13

Changes in the quality of recreational use of the Waiau

Activities that are poorer or less satisfying than they were

Fishing	36
Boating	11
Whitebaiting	8
All	6
Duck shooting	3
Deer stalking	3

Activities that are better or more satisfying than they were

None	10
Fishing	3
Deer stalking	3

As in Table 12, and as with the Waiau sample, it is the most popular pastimes of fishing and boating that are affected, with whitebaiting also significant. Again as before, the principal reason is deemed to be low water flow, cited by some 28 per cent of respondents, while ten per cent referred to water level and rate of flow fluctuations. Fewer and smaller fish were listed by eight per cent, and 11 per cent mentioned the presence of slime and weed. Six per cent saw increased access as allowing more people in to disturb themselves and fish and deer. Silt in suspension was held to be responsible for a reduced level of fish feed, while the deposition of silt was seen to affect fishing through the filling in of the better holes. Rapids had become easier, and there were fewer backwaters for duck habitat.

The improvement in recreation that was cited by a few was seen as deriving from enhanced access across control structures and through lower and safer flows

Existing recreational users of the river were asked if various aspects of river management could improve their recreational activities. Similarly, low or non-users were asked if such management could provide better opportunities to make more use of the river. A number of attributes of river management were listed, and responses are set out in Table 14. Relatively few responses were offered, and it is clear that many respondents do not believe that river management will improve their recreation; they would prefer full restoration of the river, and occasionally said so.

Table 14

Management actions to improve recreational experiences

	Present users	*Potential users*
Managing flow levels		
Provide consistent flow	11	4
Return more water to river	8	3
Stricter erosion control	8	-
More natural flow	3	3
Direct Mararoa flow to Waiau at all times	3	3
Give notice of control gates opening	3	3
None	8	10
Modifying river bed		
Clearing weed	7	-
Allow natural stability	3	-
Allow river to take a natural course	3	-
Leave alone	11	25
Managing water quality		
Control farm run-off	8	-
Control fuel spills at Pearl Harbour	2	-
Maintain natural flow	1	-
Stop weed build up	1	-
Nothing can be done	8	15
Modifying existing facilities		
Better access and facility signs	7	-
Provide fish ladders	3	3
Provide more access	3	3
Provide controlled ski areas	-	10
Improve lake huts	-	4
Nothing can be done	3	10
Providing new facilities		
Toilets	10	3
More boat ramps and access	8	3
Stock river with fish	3	-
Install decent fish ladder	3	3
Litter bins	2	-
Provide more huts on the Waiau	2	-
Enough is being spent already	-	3
Nothing can be done	3	8

In their suggestions for river flow management, the bulk of respondents who made suggestions asked for more consistent flows above all else. Erosion control was also important In this section, and elsewhere, strong pleas were made for the Mararoa to be diverted so as to flow directly into the Waiau.

Modifications to the bed were principally seen in terms of weed control and allowing the river to take a natural course. It was argued that if the river was left in a natural state, then nothing need be done. Water quality was seen as most affected by farm run off and fuel and oil spills from boats, especially at Pearl Harbour, Manapouri.

The suggestions that were made about facilities improvement,were similar to those encountered in the Waiau sample. These included a number of requests for tracks and access ways to be provided and kept open, for tracks and huts to be improved and for proper fish ladders to be installed. Toilets would clearly be a popular facility.

Overall, fishing was the recreation that would most benefit.

Beach control

Beach levels on Lake Te Anau and Lake Manapouri can be controlled as a consequence of lake level control for hydro power generation, so respondents were asked to comment on beach based recreation. First they were asked how much of a beach they would like Lake Manapouri and Lake Te Anau to have, from a scenic point of view, Table 15.

Table 15

Preferred beach sizes for Lake Manapouri and Lake Te Anau

A very large beach	7
Quite a large beach	38
A fairly small beach	26
A very small beach	1
No beach at all	2
No preference	25

Generally, extremes of beach size are not preferred. Quite a large beach is the single most preferred option (45%), but a quarter nevertheless prefer a fairly small beach (27%). These figures are quite similar to those offered by the local community, with a slightly stronger preference for large beaches in the regional sample. The reasons for those choices are given in Table 16, and are again not greatly dissimilar to local views.

Table 16

Reasons for preferred beach sizes

Large beach	
Beaching boats	7
More usable	6
Safer for children	5
Looks nicer	4
Better for picnics	3
Better for water skiers	2
Better for fishing	1
Small beach	
Looks nicer	9
More natural	5
Absence of boulders and mud	2
Better for swimming	2
Better for fishing	1

Larger beaches were favoured for recreational activities, in the main, while smaller beaches were felt to be natural and to look more attractive, so that there seems to be a direct conflict between activities and aesthetics.

Over two thirds (68%) had used the lake beaches for recreation, and the ways in which they had done so are set out in Table 17.

Table 17
Use of lake beaches for recreation

Picnics / barbecues	22
Boating	11
Water ski-ing	8
Swimming	10
Fishing	10
Walking	10
Camping	5
Tramping	5
Access	5
Hunting	4
Canoeing	1

While picnics and barbecues are the single most popular recreation on beaches, they are used in association with a range of water sports, as well as having a clear role in the provision of access. The regional sample tended to emphasise the latter in particular, with a stronger emphasis on walking and tramping than the local community.

Respondents were asked if the control of lake levels affected their recreation in any way, and answers were evenly balanced in the Waiau sample, but in the regional responses, 23 per cent said that it did, but 47 per cent said that it did not. The ways in which recreation was affected were rarely mentioned, with only the difficulty of parking boats when levels are high and the impact of fluctuations on fishing being raised by more than single individuals. This is in contrast to a wide range of answers given by the Waiau sample.

Values and Scenery
In this section, respondents were asked to consider the scenic values of the Waiau catchment, and to reflect upon general values that the river might have for them, over and above its recreational worth. A little under half (45%) believe that the river has special significance or value for themselves and/or their family. Those values are set out in Table 18.

Table 18
Special values of the Waiau River

Natural beauty and scenery	13
Childhood memories	2
Fishing	2
Recreational opportunities	2
Once a beautiful and majestic river	2
Peace	2

Natural beauty and scenery is the predominant value, but concepts of peacefulness, recreation and a certain amount of nostalgia are also present, as with the local sample. The latter also included much more of a sense of place and of heritage, indicating the special strength of local attachment to the area. Table 19 lists the ways in which those values have been changed by river control, although only 29 per cent believe that they have, as opposed to the 46 per cent who feel that they have not, an almost exact reversal of local perceptions.

Table 19

Ways in which values have been changed by river control

Only half the river it used to be	7
Broom and gorse have spread	2
Increase in weed	2
Balance of nature upset	2
Flooding	2

These responses are in accord with local views, although they are a much abbreviated version of them.

Only six per cent of respondents said that they used the river for anything other than recreation, and the only specific response was from the two per cent who appreciated its natural beauty, which they apparently did not associate with recreation, although it can safely be assumed that many others did. All of those respondents thought that those values had been affected by river control, and they cited the reduced size of the river, both land and aquatic weeds and the erosion of banks.

Scenic values were questioned further and Table 20 shows how the scenery of the Waiau Valley is rated by respondents.

Table 20

Evaluations of the scenery of the Waiau Valley (from Manapouri to the sea)

Exceptional	18
Impressive	38
Picturesque	23
Moderate	8
Uninspiring	1
Dull	-
No response	12

Clearly, the Waiau Valley is seen as scenically attractive; this sample is in reasonably close agreement with the local community, and, in fact, ten per cent more (56%) see it as impressive or better, and a further 31 per cent see it as at least picturesque, whereas virtually no one sees it as unattractive. When asked to list the most scenic parts, the Upper Waiau was most frequently mentioned (3%), While the Lower Waiau, Redcliff, Manapouri and Blackmount were also mentioned.

Most people attributed considerable importance to the river itself as a part of the scenery of the valley, Table 21.

Table 21

Importance of the river itself as a feature of the Waiau Valley

Most outstanding feature	34
Fairly important feature	51
Not very important	1
Hardly noticeable	1
Irrelevant	2
No response	10

These values also reflect local views; they are less inclined to regard the river as the most outstanding feature, but they do agree that it is at least fairly important, in fact, to an even greater extent than the locals.

As before, virtually no-one thought that control of the river had improved its scenic qualities, although almost a quarter thought that it had made no difference, Table 22. By far the majority thought that control had been detrimental.

Table 22

Extent to which control of the river for power generation purposes make the Waiau Valley more or less scenically attractive ?

Much more attractive	-
Rather more attractive	2
Makes no difference	25
Rather less attractive	27
Much less attractive	18
No response	26

Clearly, there was a strong feeling among the majority that control of the river had reduced its scenic value, the reasons given are set out in Table 23.

Table 23

Reasons for views expressed in Table 22

No longer a mighty river	10
Low flow and lack of water	6
Unnatural variations in lake levels	2
Noxious weeds along bank	2
Ugly low lake levels	2
Obtrusive man made structures	2
Slime and weed in river	1

The views expressed are similar to those expressed by the local community, and again focus on lowered flows, the loss of what was once 'the mighty Waiau' and the perceived consequences of low flow, such as weeds and slime. However, there is a more limited range of views, they are not expressed as widely, and some detailed features, such as gravel in the river and slumping of the banks are not so widely noticed. As with the Waiau sample, the Waiau Valley is still seen as scenically attractive, the river itself is a major part of the scenic values of the area, and there is no doubt but that the river's intrinsic qualities have been reduced by development, so that the overall scenic values of the valley have been reduced accordingly.

THE REGIONAL VISITOR SAMPLE

Visiting Patterns

Exactly half of all visitors interviewed were on their first visit to the area, as might be expected, this was particularly true of overseas visitors, who comprised some 38 per cent of the sample, and who were particularly to be found in the Te Anau area. Of the half who had visited before, one to three previous visits was the usual case, although some had visited 'many' times previously, Table 1.

Table 1
Number of previous visits

One	10
Two	8
Three	4
Four	2
Five or more	8
Many/Lots	14

While some had only been in the study area on previous visits in recent times, many had been regular visitors for many years, Table 2.

Table 2
Time since first visit to study area (years)

Five	9
Ten	6
Fifteen	5
Twenty	9
More than Twenty	10

Thus, 19 per cent of the sample had visited the place where they were interviewed for twenty years or more; there is no significant difference among the various interview sites.

About a quarter (24%) had reached their destination by travelling on the Southern Scenic route, which runs from Balclutha to Te Anau via the Catlins, Invercargill, Riverton and Tuatapere. This figure was much higher for the sites outside Fiordland, given that it is very difficult to arrive there without using at least some part of the route. Interestingly, only five per cent were unsure as to whether they had used the route or not, an indication that the route enjoys a high level of recognition.

Length of stay was not generally very long, Table 3, with the majority intending to stay at their destination for one to three days, but with a small percentage intending to remain for two weeks or more.

Table 3
Length of stay in the study area (days)

Less than one	3
One	25
Two	20
Three	14
Four	9
Five or six	9
Seven	7
Eight to fourteen	10
More than fourteen	3

Attractions and activities

The main attractions and activities of the area are set out in Table 4, which differentiates between Te Anau and the associated Fiordand area, and the Clifden and Tuatapere district of the Lower Waiau. Overall, the most popular activities and attractions are scenery, including the Lakes, tramping and walking and water based sports, such as fishing in particular.

Table 4
Principal activities and attractions per district

Activity	*Te Anau*	*Lower Waiau*
Scenery	29	18
Tramping tracks	35	8
Bush walking	19	8
Milford Sound	16	-
Gateway to Milford Sound	9	6
Boating	8	-
Fishing	7	17
The lakes	6	6
Mountains	5	4
Variety of activities	3	-
Glow worm caves	3	-
Peace and quiet	3	6
Forests	-	2
People	-	4
Shooting	-	8
Doubtful Sound	2	-
Farming	-	4
Sports day	-	19
Beach	-	4
River	-	6

In the case of Te Anau, the region's attractions were focussed upon tramping, scenery and proximity to Milford Sound, although a small number on the Lower Waiau also mentioned access to Milford. Fishing is mentioned in both regions, but is emphasised more in the Tuatapere area; by contrast, boating is only mentioned in Te Anau. The Lower Waiau sample tended to emphasise fishing, shooting, the river and peace and quiet, as well as the sports event which some were attending. Scenery is also important, but less so than in Te anau, where rather more people were able to list several attractions than was the case in and around Tuatapere, where the non response rate was considerably higher, with more than half not being able to give a specific answer.

Those interviewd were then asked whether they had ever taken a trip on either Lake Te Anau, Lake Manapouri or the Waiau River on that or any other visit. In general terms, exactly half said that they had, and these are detailed in Table 5.

Table 5

Trips taken on Lake Te Anau, Lake Manapouri and the Waiau River

Trip	*Te Anau*	*Manapouri*	*Waiau*
Glow worm caves	24	-	-
Fishing	6	4	3
Boating	10	9	1
Milford Track access	6	-	-
Water Ski-ing	1	1	-
Power Station	-	10	-
Deep Cove/Doubtful Snd	-	11	-
Dusky Sound	-	1	-
Jet boating	-	-	1

Many of the trips listed are place specific, commercial ventures, such as the visit to the glow worm caves on Lake Te Anau or the West Arm power station and its extension to Doubtful Sound on Lake Manapouri, and these are the two most popular by far. General fishing and boating trips are significant, especially with repeat domestic visitors, and, while these are carried out by some visitors to the Lower Waiau area, the proportion is lower than for visitors to the Lakes. Jet boating on the Waiau took place both on the Upper Waiau, where it is a commercial operation, and more informally in the Clifden area.

Given that many visitors will be restricted to commercial operations or to knowing locals with a boat, it was necessary to ask about recreation that took place beside the lakes and river, as well as actually on them, and the results of this question are set out in Table 6. In this case a third or so (33%) of respondents indicated that they had, which indicates the importance of commercial ventures in making use of the lakes and river, although it should be remembered that frequency of activity was not asked in these questions, so that one is unlikely to take regular commercial trips to, say, the glow worm caves, but might very well go on numerous fishing trips.

Table 6

Recreations carried out beside the Lakes and the Waiau River

Activity	*Te Anau*	*Manapouri*	*Waiau*
Fishing	9	6	7
Boating	5	4	1
Water ski-ing	3	1	-
Walking	4	1	1
Tramping	12	2	2
Picnics	2	2	1
Camping	1	1	-
Kayaking	-	1	-
Swimming	2	2	-

Te Anau is particularly important for tramping, and many respondents mentioned the Kepler Track, which follows the lake for some distance, as well as the Milford Track, which begins at the head of the lake, and which, although it leaves the lake immediately, is probably associated with it because of the lake trip which is required to begin the tramp. Fishing and boating are equally important on both lakes, while

fishing predominates on the Waiau. In the case of tramping beside the Waiau, responses refer almost entirely to the section of Kepler Track that follows the river.

Overall, it is clear to see that the lakes, especially, are important for both commercial and informal recreation, and are a major component of many visitors' recreational activity. This is less true of the Waiau River, although fishing is important, and, on the Upper Waiau, the river is associated with the popular Kepler track.

Respondents were asked to evaluate the importance of the various water bodies as a part of their overall recreational experience, and these responses are set out in Table 7.

Table 7

The importance of river and lake based trips and activities to holiday enjoyment

Highlight of the holiday	26
Quite an important part of the holiday	24
Minor part of the holiday	7
Not at all important	2
Not applicable	41

As was indicated by the responses to previous questions, such activities seemed to be important, and they are declared to be so by the visitors themselves. Over half of the visitors to the study area described the trips and activities available as a highlight or an important part of their holiday; when this figure is calculated for those who had actually taken trips or engaged in water based recreation, the figure rises to over 83 per cent.

When asked about the control of the lake and river system for power generation, only 18 per cent were unaware that such was the case; these were mainly first time overseas visitors. Only ten per cent said that their recreational activities had been affected by river control, and the majority of these were interviewed at Tuatapere and Clifden. Table 8 describes the ways in which they believed their recreation had been so affected.

Table 8

Ways in which recreation was believed to be affected by river and lake control

Lower river flow	2
River rising quickly	2
Whitebaiting poorer	1
Dams are an eyesore	1
Canoeing less good	1
Lower lake levels	1
More constant water level	*1*
More open	*1*

In the above Table, percentages quoted are those for the whole sample; it is necessary to multiply them by ten in order to arrive at the percentage responses from those who felt that their recreation had been affected. Most references wee to the Waiau River itself, rather than the lakes, although they, too, are mentioned. The effects are normally adverse, mainly involving river volume and rate of flow, but the italicised comments are from respondents who thought that their recreation had been improved by river control, through the opening up of access along river banks and lake shores, and by more constant water levels.

Finally, in this section on recreational activity, water based recreation was set into the context of overall recreational activity. Respondents overall activities are set out in Table 9, where it can be seen that trips to Milford Sound predominate, both as completed and as intended activities.

Table 9
Intended and already completed activities

Activity	*Te Anau*	*Lower Waiau*
Milford Sound	35	-
Glow worm caves	16	-
Power station	12	-
Bush walks	14	-
Doubtful Sound	10	-
Manapouri boat trip	10	-
Tramping/Walked tracks	10	2
Kepler Track	8	-
Milford Track	7	1
Milford boat trip	6	2
General relaxation	5	4
Boating	5	15
Trout observatory	4	-
Helicopter ride	3	-
Lake Te Anau boat trip	3	-
Routeburn	2	-
Hollyford Track	2	-
Visited friends, relatives	1	11
Camping	1	1
Sea kayaking	1	-
Fishing	-	4
Beach	-	4
Sports event	-	19

As can be seen, a wide variety of activities was undertaken or intended by the Te Anau sample, including a range of commercial recreation and tramping or bush walking. Milford Sound and Fiordland in general are major features of their activity patterns. In the Tuatapere area, fishing, boating, visiting friends and attending a sports event are the most popular. The lakes are quite important for the Te Anau area, but the river itself is not really mentioned. In Tuatapere, by contrast, the river is much more the basis of purposive activity, outside simply visiting friends and relatives.

Scenic Values

When dealing with scenic values, respondents were first of all asked to evaluate the scenery of the area in which they were interviewed, Table 10, and it is clear that there is an overall high evaluation of the scenic qualities of the area.

Table 10
Overall scenic evaluations

	Total	*Te Anau*	*Waiau*
Exceptional	42	48	21
Impressive	40	42	38
Picturesque	13	10	29
Moderate	3	-	10
Uninspiring	2	-	7
Dull	-	-	-

Overall, the scenery of the area is highly regarded, especially in and around Te Anau, where most people thought that it was at least impressive. In the Lower Waiau, evaluations were still high, but not so high as in Te Anau, and, while the modal evaluation was still 'impressive', rather more thought that the area was picturesque or even moderate.

When asked if any places were more attractive than the rest of the area, nearly half (47%) thought that there were, and the following highlights were noted, Table 11. There was no real difference between the sub-areas on this point, although rather more people around Te Anau were unsure (10% rather than 2%) but that is probably a function of unfamiliarity.

Table 11
Scenic highlights

Alpine areas	9
Milford Sound	8
Bush and forest areas	6
Homer Tunnel	3
Fiords generally	3
Lake Manapouri	3
The lakes	2
Lake Hauroko	2
Waterfalls	2
Kepler Track	2
National Parks generally	2
Milford Road	2
Coast	2

In general, as might be expected, the most popular areas were the generically described mountain and bush environments that make up the National Parks. One or two places were mentioned specifically, notably Milford Sound. Respondents from the Lower Waiau nominated the coast or Lake Hauroko in the main, although this subsample generally did not nominate outstanding areas. By and large, respondents from around Tuatapere and Clifden rated the local scenery quite highly, but, with the exception of the two cases listed, they did not recognise particular scenic highlights. Respondents were then asked how important the various water bodies were as a component of the landscape, and they were almost universally regarded as important, Table 12.

Table 12
Importance of the Waiau River and the Lakes as a feature of the study area

Most outstanding feature	39
Fairly important feature	54
Not very important	3
Hardly noticeable	-
Irrelevant	-

Given the importance of water bodies in scenic evaluation, this Table presents no surprises, but it does confirm the importance of water and its surroundings in the visual quality of the study area; opinions did not vary to any extent between the sub areas. Control of the river and lakes did not seem to affect the scenic qualities of the study area for most people, but for those who did notice an effect, it was more likely to be adverse, Table 13.

Table 13
Scenic consequences of river and lake control

Much more attractive	1
Rather more attractive	7
Makes no difference	60
Rather less attractive	17
Much less attractive	5
No opinion	10

In the Lower Waiau, rather more people had a strongly adverse opinion. Eleven per cent of people there thought that control made the area much less attractive, whereas only three per cent thought that around Te Anau. However, the small minority who thought that control was an improvement were also from the Lower Waiau, citing improved access as their main reason. While most people were able to express an opinion, few were able to express a clear reason for that opinion; such responses as were given are set out in Table 14, which has a very high 60 per cent no response rate, although it should be realised that that largely reflects those who felt that control made no real difference.

Table 14
Reasons for opinions held in Table 13

Not so natural	8
No obvious impact	8
More interesting features revealed	*7*
Less flow	3
Structures scar landscape	3
Better river access	*2*
Beach scarring with changing levels	2
Environmental consequences	2
River no longer wild	1
Activities restricted	1

Italicised responses relate to positive evaluations of the impact of control; the negative consequences speak for themselves, and revolve around perceived loss of naturalness, both on the lakes and river.

Beaches

Respondents were then informed that beach levels on Lake Te Anau and Lake Manapouri can be controlled as a consequence of lake level control for hydro power generation. They were then asked how much of a beach they liked Lake Manapouri and Lake Te Anau to have, from a scenic point of view. Replies are set out in Table 15.

Table 15
Preferred lake beach sizes

A very large beach	5
Quite a large beach	27
A fairly small beach	39
A very small beach	14
No beach at all	1
No response	13

The preferences tend towards rather smaller beaches, rather than large ones, although a quarter prefer quite a large beach, and, although most responses are

within the middle of the range, substantially more prefer a very small beach to a very large.

Table 16
Reasons given for preferred beach size

Larger beaches	
General access	11
Walking access	10
Recreational space	10
Picnics	9
Room for sunbathing	3
Easier for boat access	3
More space	3
Smaller beaches	
Aesthetic considerations	6
More natural	8
Large beaches attract others	4
More water	4
More private	2
Other	
Whatever is natural	9
Not very important	4

Those who favoured larger beaches did so for reasons of access and space, whereas those who preferred smaller cited privacy, aesthetics and naturalness. A full nine per cent preferred whatever was natural, a powerful reminder of the importance of authentic nature for modern tourists.

Slightly under half of the overall sample had used the lake beaches for recreation; as might be expected, rather less of the Lower Waiau sample had done so, but, becaused of the lakes' proximity, this was not a significant difference. Again, domestic visitors and repeat visitors were much more likely to have done so than overseas, first time overseas tourists, Table 17.

Table 17
Recreational use of lake beaches

Walking	16
Picnics	15
Boating	8
Fishing	7
Sunbathing	6
Swimming	5
Camping	2

As can be seen, there is a high level of informal use of lake beaches among the visitor population, with walking and picnicing the most popular, with nearly two thirds (63%) of those indicating recreational use listing those activities. When the lower response rate from the Lower Waiau is taken into account, well over a third of all visitors to the Lakes area make such use of the beaches, and it is clear that they are a very important recreational resource.

Travel choices

The role of the free independent traveller (FIT) in visiting patterns is clearly emphasised in the fact that only five per cent of those interviewed were on a

structured package trip, comprised entirely of respondents interviewed in Te Anau. In other words, 95 per cent of the sample had chosen specifically to visit the study area of their own volition; their reasons are set out in Table 18, both for the whole sample and sub-regions within it, where percentages relate to the proportion of that area giving a particular answer.

Table 18
Reasons for visiting the study area by district

	Total	*Te Anau*	*L. Waiau*
En route to Milford/Fiordland	22	21	-
Scenery	12	16	-
Walking and tramping	10	12	-
Sports event	9	-	40
Visiting friends and relatives	8	4	43
Hadn't been before	7	9	-
To walk Milford Track	6	8	-
Family wished to visit	4	2	13
Previous enjoyment	4	6	-
Word of mouth	4	3	-
Free accommodation	3	4	-
To show friends	3	4	-
To use the lakes	3	-	4
Part of a package	3	4	-
Peace	2	2	4
To visit glow worm caves	2	3	-
To walk Kepler Track	2	3	-
Quieter than Queenstown	2	3	-
Not commercialised	1	2	-
Nostalgia	1	-	4

The importance of Milford Sound to the area is clearly seen in this Table, together with the role of the various tramping and walking opportunities, as well as scenery in general. These are particularly appropriate to Te Anau, visitors to Tuatapere tended to emphasise visiting friends and relatives (VFR) and attendance at sporting events. Apart from these, no specific recreation was listed as a principal reason for visiting either locale to any great extent, and it seems that general environmental and contextual values are more important in the destination decision.

Personal profiles

Half of the sample (53%) were male, and there was a tendency for respondents to be in younger age categories than the overall population, Table 19. This reflects the active nature of much recreation in the area, although older visitors are by no means excluded.

Table 19
Age categories of the sample

younger than 18	6
18 - 25	23
26 - 45	50
46 - 60	14
older than 60	5

The occupations of respondents are set out in Table 20.

Table 20
Occupation

Professional	28
Managerial/technical	11
Services	5
Skilled	10
Unskilled	12
Unemployed	2
Student	17
House person	9
Retired	5

There is a very strong bias towards higher socio-economic backgrounds and to students in the sample, although this is not so true for the Lower Waiau. This is very much in accordance with expectations of those who are interested in such activities as tramping, or who are overseas visitors.
The nationality of respondents is set out in Table 21.

Table 21
Nationality

New Zealand	62
Australia	13
United Kingdom	7
United States	6
Germany	5
Netherlands	2
Switzerland	2
Japan	1
Singapore	1
Other	3

The nationalities listed are much as might be expected, except that the Asian nations are apparently under represented. In fact, this is at least in part because many Asians are still to be found on scheduled tours and spend relatively little time in Te Anau itself, although this is rapidly changing. As might be expected, also, virtually all of those sampled on the LowerWaiau were New Zealanders, apart from a small group of Australians. Domestic visitors to that area tended to come from Southland, whereas those to Te Anau were from a much wider base, but with a tendency for the more adjacent districts to be more represented than remoter areas.

THE FISHERMEN SAMPLE

Those interviewed had come from throughout Southland, but notably Invercargill, Winton and Te Anau, where two also had holiday homes. Others came from Gore, Lumsden and Balfour, as well as Tuatapere, Nightcaps and smaller settlements; some had been farmers within the province, while one had resided in Christchurch for much of the time.

In total, they had fished the Waiau River for many years prior to control, in some cases for 30 or more years, effectively since childhood. Most had fished for at least 20 years, while a significant number mentioned ten years; with the exception of one interviewee who cited five years, ten years was the minimum experience reported. The frequency of fishing varied. Those who lived locally reported very frequent trips, but others, especially those from the Eastern parts of Southland would fish some weekends and holidays. One respondent, for example, would take four one week trips in the course of a normal year. Another could remember fishing with both his father and grandfather, from an early age. All had accumulated a long experience of the river and its fishery.

Experience prior to river control

When asked where they fished, the majority listed all or part of the stretch of river between the two main lakes, namely the Upper Waiau. Several expressed preferences for particular locations, such as the outlet from Lake Te Anau, Queens Reach, Balloon Loop and Horseshoe Bend. The second most popular place was the stretch from below the Mararoa confluence to Redcliff, and this was sometimes a second choice of those who fished the Upper Waiau. One or two fished the mouth of the river, up as far as Tuatapere in one case, while several mentioned the Clifden area. Confluences with streams such as the Borland Burn and Wairaki were also mentioned, while one or two mentioned that it was possible to fish anywhere; if one had a boat it was possible to fish successfully from islands in the main river. Only one or two mentioned the lakes as venues, partly because a boat was required, but most felt that the quality of fishing was better in the river itself.

The best areas for fishing, at that time, were considered to be the places that were reported as having been fished, perhaps not surprisingly. By and large, the very best spots were said to have been located on the Upper Waiau and towards Lake Te Anau.

Most respondents had fished a wide range of rivers, such as the Oreti, Mataura and all the tributaries of the Waiau at one time or another. Most had fished in other parts of Otago and Southland, such as on the Pomohaka and Wyndham or had ventured into Fiordland and fished such streams as the Clinton and Arthur, and most had fished around Queenstown and Wanaka, as well. The reasons for doing so were a mixture of convenience and variety. Those who did not live close by the Waiau would fish local streams a lot of the time; most locals would go off on a trip elsewhere at some stage.

The Waiau was the top preference for about half of the sample, they preferred the river to any other, but for others the first choice was the Oreti or the Mataura, in particular. This was governed partly by convenience and partly by the quality of fishing. One or two had no overall single preference. For those who did choose the Waiau as their preferred river, the main reasons had to do with the size and quality of fish; several mentioned the exceptional fighting qualities of Waiau fish, while 4-8 lb fish were mentioned several times. Other reasons included the ease with which one could 'get away' into exceptional scenery and the extent to which one could travel unimpeded up and down the river by jet boat. Being able to stop at small isolated islands was seen as a major benefit.

There is no doubt that the river was seen as an exceptional fishery. It was widely regarded among the sample as being first class, as one of the top ten spinning rivers in New Zealand, and overall, one of the best in the country; it was graded 10/10. Words such as 'fantastic','brilliant' and 'excellent' were widely used. The reasons given were that it was above all a reliable river, with consistently big fish, and as many salmon as trout. It was said that one could catch up to four or five fish in the space of an hour, and that one could reasonably expect three or four on a normal day. Others remarked that it was too difficult to catch a bag limit, and various accounts of a high point in fishing were recounted, such as the occasion when one respondent claimed to have caught eight fish in eight casts at the mouth of the Wairaki in the 1950s. Various accounts were given of having seen large migratory shoals of fish in places where very few are seen today. Size estimates were quite similar, in the range of 3-5 lb. The beautiful environment was a further plus, and this is especially true of the Upper Waiau, the Lakes and the Blackmount Valley.

The fishery was said to be self protecting, in that access was often difficult, so that there were sanctuary areas that were rarely fished. The Waiau was described as a magnificent river, with a big volume of clean water and a huge amount of fly life and other feed. The flow was a sequence of swift runs and deep pools that provided a variety of fishing, and allowed fish to move right throughout the river system. The river was described as never dirty and with stable banks; there were no problems of shifting shingle or sediment, the bottom was never fouled, slime and weed were unknown, and so an ideal insect habitat was consistently available.

Experiences after river control

Almost all respondents continued to fish the river after it was controlled. A couple did not, citing the reduced flow which made boating more difficult with more exposed and barely submerged rocks to navigate. One said that the river had changed so much that he simply gave up fishing there, remembering how good it used to be. Many others reported reduced fishing levels, stating that they used other rivers more frequently now. It was noted that there were few fishing spots available when the river was high.

When asked about changes to the river that they had perceived, several respondents made the point that there had been general environmental changes going on in any case. In particular, it was noted that there had been more farm development, and that run-off was an increasing problem; another respondent referred to the blowing of Balloon Loop, which was also thought to have had considerable, but unspecified consequences. Several mentioned that there was an increase in fishing pressure in the more popular areas, especially on the Upper Waiau. That having been said, however, there was no doubt that the river had changed, as far as all respondents were concerned.

The first and most obvious of these was the sheer size of the river. Control reduced the level of flow very significantly, but it was also believed to have altered the clarity of the river water, which was perceived as containing more algae and slime. The amount of material that was being deposited was also greatly increased, so that the former deep holes began to fill up, while the mouth was said to be less open. a consequence of this was that whitebait, salmon and native fishes were all less able to gain access from the sea, and their numbers were thus reduced. The changed flow also led to erosion of the banks and greater instability, which impacted upon habitat and sediment load. The river became altogether much more unpredictable.

The reduced flow was believed to have led to a reduced water table in many areas; this meant that some creeks were smaller and prone to drying up. This particularly affected the spawning rate and eliminated or reduced the nursery areas available for smaller fish. The lower flow also made access more readily available, so that anglers were able to go to many more places; inaccessible sanctuaries became easily

accessible fisheries, at a time when fishing pressure was increasing in any case. All of this was believed to have had a catastrophic effect on the quality of the fishery, leading to fewer, smaller and less dynamic fish.

Erosion of banks and trees falling into the river were significant problems, and this had led to increased sedimentation, as had the reduced rate of flow. The upper reaches of the river had become colonised by weed and slime, and this was covering major spawning beds, especially downstream of the Te Anau control structure. Another problem with spawning was that fish tended to spawn in areas that subsequently dried out; conversely, as in the 1984 flood, there had been occasions when spawning areas had been washed out as water was spilled. After a major spill fish could be caught in side channels, which later dried up or provided insufficient food. The straightening of creeks and small streams as a part of the land development programme meant that juvenile fish were less able to enter or live in them.

The weirs and control structures were seen as a major barrier to sea-run and migratory fish. The absence of effective fish ladders was seen as a major failing, and one that could still be corrected. Even if it were, however, it would take many years for the fishery to recover, if ever. The reduced mingling of bloodlines that such separation brought about has, it is believed, led to a reduction in the quality of lake fish and fish in the critical reaches of the Upper Waiau. There are fewer fish because there is less migration and less food.

The amount of feed available has been affected by water volume and water quality, as well as by the unstable river bed; both sediment and weed were perceived as inimical to insect and larval life, with consequent impoverishment of fish stocks. Divers in the upper reaches were reported to have seen extensive sand movement and seen few or no fish.

A problem with a smaller river is the fact that the water is no longer shaded in many areas, and that the shallower, slower water warms up too readily, a situation especially disliked by Rainbow trout, and several respondents remarked that the proportion of Rainbows had dropped, whereas that of Browns had risen.

Several respondents paid tribute to the efforts of the Rod and Gun Club, who had attempted to take fish around the Mararoa weir by physically carrying them, but it was accepted that this could never be a substitute for unimpeded passage. It was also recognised that recent years had seen more co-operation between ECNZ and the Rod and Gun Club, and it was accepted that ECNZ was making greater efforts to minimise the consequences of fluctuations in flow.

Overall, the number and size of fish was believed to have declined, not only in the river itself, but in the lakes as well, and it was suggested that the Waiau had been a nursery for them. The largest fish prior to control were said to have reached weights of 20-25 lb; now it was unusual to catch one above 3lb. The average catch was estimated at about 1 to 2 lb. Rainbows, especially, were said to have dropped in size, while there were no more Atlantic salmon.

As a result of the foregoing, the rating of the river was thus considerably downgraded. While it had been rated 10/10 prior to control, many rated it as 3/10 subsequently, describing the Waiau as a reasonable fishery, but nowhere near as good as it had been. Others rated it at 4/10 and a couple at 6/10, while another remarked that it was still reasonable, but far less than it had been. 'A shadow of itself' was a phrase that was used several times. In general, it was thought that the Upper Waiau between the lakes was the area most affected, and some respondents thought that the area from Tuatapere to the sea was the least affected. One

respondent rated that stretch as still being 8/10, but that was something of a minority opinion, although not everyone actually fished that area. Similarly, a couple of respondents felt that the Redcliff area, though changed in character, was not as badly affected as some places.

It was generally agreed that decline was still going on, and that the quality of the fishery was slowly getting poorer. This was qualified in one or two cases by respondents who felt that there had been a mild recovery up until four or five uyears ago, but that decline had again set in. It was felt that the process of decline was cumulative, and several respondents felt that there had been a marked deterioration over the last four to five years. This was attributed in some cases to the build up of slime.

At the same time, at least two respondents felt that this may not have been entirely the fault of the control process, and both mentioned that they felt that there had been some deterioration prior to control being implemented, certainly as a result of increased fishing pressure, and perhaps from the consequences of land development within the catchment. To an extent, others agreed, and it was remarked that there had been significant decline on such rivers as the Clinton and the Worsley. Put simply, there is much more fishing pressure; there are many more boats on the lakes, for example, and improved techniques and equipment have also contributed.

Possible Improvements

Several possible improvements were suggested, apart from the removal of the dams. Of these, two were by far the most frequently mentioned. The first was a widely repeated request that the Mararoa should be allowed to flow around the weir. This, it was believed, would have two consequences, namely, a much better flushing of sediment from the Waiau below the weir, and the re-establishment of the Mararoa fishery itself. The second group of suggestions had to do with the level and fluctuation of flow. In general, it was believed that as slow a rate of fluctuation as possible would be advantageous, especially during the spawning season, so as to keep redds covered, while slow changes would also reduce bank erosion. Excessive lows, in particular, should be avoided. If there were a reliable 10-20 cumec flow through the weir, then it was believed a substantial trout nursery would establish downstream.

There was considerable support for the introduction of an effective fish ladder on the Mararoa weir; present facilities and the netting programme were seen as simply not adequate, and access for new bloodstock to the landlocked populations was seen as critical; a hatchery at Te Anau would also help with this. It was suggested by one respondent that the control gates at Te Anau were little used, and that they could be removed, thus allowing natural and unimpeded passage.

Other comments

Among the other comments made about the post-control river, the most common was about the loss of jet boating, both through impediments on the river, and through variable flows and submerged obstructions, such as trees and rocks. This was reducing access in some areas, and having a considerable effect on visiting anglers as a sub-set of the tourism market. The reduced amount of flow going down the river was believed to reduce the number of whitebait entering the stream, and movement and clogging of the river mouth, also attributed to the consequences of control, was exacerbating this.

CONCLUSIONS

Residents of the Waiau Valley use the river a great deal for recreational activities; it is their core resource in many cases. The activities undertaken focus upon fishing and boating, as well as a range of lesser recreations. Activity is seasonal, as might be expected, and the Waiau is rarely the only water body that is used, although, of course, it is usually the most convenient. Most people saw it as very important, if not for themselves, then for others; all parts are used, but some, such as the Upper Waiau between the major lakes, stand out especially.

It was agreed that the river and consequent patterns of recreation have changed since the implementation of the control programme. Fishing and boating in particular have ceased, or have declined, or else have become less satisfactory, mainly because the present flow is considered to be insufficient. Other factors, such as silting are also considered to have an influence and remedial measures suggested revolve around the need for consistent flow, greater flow and the clearance of weed and silt. A variety of suggestions for improving the quality of fishing were offered.

On the lakes that are subject to control, there was no single view on preferred sizes of beach, although moderate scales predominated. Users preferred slightly larger beaches so as to gain access and carry out a range of recreational pursuits, while those who preferred a smaller beach spoke mainly of appearance and naturalness. The river was seen to have special values for local people, associated with heritage and scenic beauty, in particular, and the river itself was seen as an essential part of the scenery. Almost everyone thought that control had reduced those values, mainly because of the loss of the river's power and magnificence.

In the wider regional sample, overall views are similar to those held locally, but they are often expressed less emphatically and in less detail. Thus, patterns of recreation are similar but less intense; they are more seasonal and less frequent and more use is made of alternatives, especially the Mataura. Overall, the regional sample rated the river as less important for themselves than did the locals, but they rated it just as highly in general terms.

This sample also saw considerable changes as a result of river control, and, while the range of responses tended to be less, their views closely echo those of the local sample. In other words, fishing and boating had been affected, both in quality and volume, as had a variety of other activities. The reasons were the same and the proposed remedies the same as well. As before, there was a feeling that remedial actions other than full restoration of the river would have little effect. Attitudes to beach size and uses of beaches were also similar, but in their discussion of other values, the regional sample spoke mainly of scenic attraction and little of heritage. The scenery was highly regarded, the river was seen as an important component of the visual landscape and control was seen as having negative effects upon scenery.

Visitors to the area included folk who had been many times before as well as first time visitors, who tended more to be from overseas. Lengths of stay were not generally long, but a wide range of outdoor activities was listed as having been undertaken. Especially noteworthy was the emphasis on tramping, which contrasted strongly with the activity patterns of local people. High proportions listed water based recreation, but much of this took the form of commercial excursions upon the lakes, rather than use of the Waiau itself, and these were seen as important components of holidays or visits.

The scenery was rated in the highest terms, although this tended to be coloured by an emphasis on mountain and bush landscapes and a tendency to think more widely than the river and lakes. The river was seen as a fairly important part of the scenery of

the study area, but the majority did not feel that control had had significant effects, although a minority were concerned at the unnaturalness of control structures in particular.

Beaches were quite widely used, and attitudes to beach size and use closely mirrored local responses. When asked why they had chosen to visit the area, the importance of the Fiordland National Park in general and Milford Sound in particular was quite marked for the Te Anau sample. In the river valley proper, local events and visiting friends and relatives were much more important reasons. In neither case was the Waiau itself an overt reason, but the river system is clearly a major contributor to the scenery of the Fiordland area.

Detailed responses were received from long term users of the Waiau and the lakes. Selected for their experience of fishing the river both before and after control, these were people able to comment in detail on changing events, although, it must be remembered that problems of recall must still arise. In detail, there was a general feeling that the river had declined as a fishery, and the consequences of water flow on fish numbers and quality were explained in some depth. Similarly, detailed explanations of the effect of the barriers to fish movement that the various control structures provided were spelled out, especially as regards bloodlines and the quality of fish.

Apart from the removal of dams completely, a number of suggestions for improving the fishery were made, and these had to do with control of water levels during spawning and the diversion of the Mararoa below the weir, for example.

Overall, everyone, from all samples, who knew and used the Waiau River prior to control felt that it had been degraded as a recreational resource, and clear and detailed reasons were given as to how and why that was. A variety of remedial actions was suggested, not all of which were entirely practical, but some of which might well be. Nonetheless, the river continues to be a major recreational resource for local people, and, to an extent for the wider region. As a tourist and domestic visitor venue, the Waiau catchment is the context for considerable activity, which revolves around tramping and water based recreation, both commercial and informal. Scenic values are clearly very important, and the river is a major component part of these, but it is also true that as tourist activity grows, the lower reaches of the Waiau have the potential to attract more visitors, and the protection of water based recreational values, including the enhancement of fishing, is an important part of this.

REFERENCES

Anderson M 1992 *Report on Tourism and Recreation in the Waiau Catchment* Waiau River Working Party - Recreation Task Group, Southland Regional Council.

Day D 1993 *Historical Review of the Waiau River and Coastal Area* Waiau River Working Party - Recreation Task Group, Southland Regional Council.

Howie R, Brasell R and Powell S 1993 *The Role of Manapouri within the ECNZ Generation System ; A Report Prepared for the National Issues Taskgroup of the Waiu River Working Party* Electricity Corporation of New Zealand Limited, Wellington.

Appendix

WAIAU RIVER RECREATION STUDY

This survey is about patterns of recreation and scenic values in and around the Waiau valley, and is being carried out by the Centre for Tourism at Otago University.

All of the information that you give us will be treated with the strictest confidence, and, as you can see, we do not ask for names and addresses, unless you choose to supply them, so that you cannot be identified in any way.

The results of this study will help in the future planning of this area, and help to make balanced decisions about the use of water in the Waiau system. We appreciate the assistance that your answers will give us.

Geoff Kearsley
University of Otago

Patterns of Recreation

1. Are you a permanent resident, a holiday home owner, or are you simply here on holiday ?

   Permanent resident .....
   Holiday home owner .....
   Visitor on holiday .....
   Other, please specifiy .....

   If you are on holiday, where do you normally live ?
   .....

2 What kinds of outdoor recreation and leisure activities do you participate in, in your local area ?
   .....
   .....
   .....

3. Are any of these activities carried out on the Waiau River, or on Lake Manapouri or Lake Te Anau, or close by any of them ?

   Yes No

   If yes, please list them in the order of their importance to you.
   .....
   .....

4. How frequently do you visit the Waiau, or the Lakes, and their vicinity for recreational purposes ?

   More than once a week .....
   About once a week .....
   More than once a month .....
   About once a month .....
   Less than once a month .....
   Hardly ever at all .....

5. Do your activities take place at any particular times of the year ? If they do, could you state approximately when by listing the number of recreational trips that you would normally make each month.

January	.....	May	.....	September	.....
February	.....	June	.....	October	.....
March	.....	July	.....	November	.....
April	.....	August	.....	December	.....

6. Which parts of the Waiau River, or its vicinity, and which parts of the Lakes do you usually visit for recreation?

Please mark the areas that you use on the map provided at the back of this survey form.

7. Do you go to any other places in the Southland region to carry out the activities which you sometimes carry out on the Waiau, or on Manapouri or Te Anau ?

Yes No

If you do, could you please list them ?

.....

.....

8. Of the various places that you have listed in the previous question, are there any that you prefer to the Waiau or the Lakes ?

Yes No

If there are, which are they, and why do you prefer them ?

.....

.....

9. Overall, how important are the Waiau River and the two lakes for your personal recreation ?

	Waiau	Lakes
Very important	.....	.....
Quite important	.....	.....
Only moderately important	.....	.....
Only incidental	.....	.....
Of no importance at all	.....	.....

10. Regardless of whether you personally use the Waiau or the lakes for recreation,how important, in general, do you think they are as recreational resources ?

	Waiau	Lakes
Very important	.....	.....
Quite important	.....	.....
Only moderately important	.....	.....
Only incidental	.....	.....
Of no importance at all	.....	.....

11. What recreational activities, that you are aware of, are carried out on the Waiau by people in general ?

.....

.....

12. Which parts of the Waiau, overall, are especially used for recreation ?

.....

.....

Recreation and River Control

If you would like to be consulted further about your recreation and the impact of river control upon it, or if you have further information that you would like to pass on, please write in your name and address, or, if you prefer, return it on a separate piece of paper with this survey form

Name .....

Address .....

.....

13. Did you use the Waiau River for recreation **before** it was controlled for electricity generation ?

Yes No

If yes, has the quality or type of your recreation changed in any way, because of changes brought about by river control ?

Definitely	.....
Probably	.....
Not sure/don't know	.....
Probably not	.....
Definitely not	.....

14. If the **type** of recreational use that you make of the Waiau River has changed :-

a. What activities have you stopped altogether on the Waiau ?

.....

.....

Why did you stop ?

.....

.....

b. What activities have you done less of on the Waiau ?

.....

.....

Why do you do less of them ?

.....

.....

c. What new activities have you been able to take up ?

.....

.....

What made this possible ?

.....

.....

15. If the **quality** of your recreational use of the Waiau has changed :-

a. What activities are poorer or less satisfying than they were ?

.....

.....

Why is this ?

.....

.....

b. What activities are better or more satisfying than they were ?

.....

.....

Why is this ?

.....

.....

16. If you use the Waiau River for recreation **now,** what could be done to improve your recreational activities ?

*Please be as specific as possible, and describe **what** you would like done, and **how** it would be an improvement.*

1. By managing river flow levels differently ?

.....

.....

2. By modifying the river bed ?

.....

.....

3. By managing water quality differently ?

.....

.....

4. By modifying existing facilities ?

.....

.....

5. By providing new facilities ?

.....

.....

6. What activities would be improved by these suggestions ?

.....

.....

17. Even if you do not use the Waiau for recreation now, could anything be done to give you the opportunity to make more use of the river ?

*Please be as specific as possible, and describe **what** you would like done, and **how** it would be an improvement.*

1. By managing river flow levels differently ?

.....

.....

2. By modifying the river bed ?

.....

.....

3. By managing water quality differently ?

.....

.....

4. By modifying existing facilities ?

.....

.....

5. By providing new facilities ?

.....

.....

6. What activities would be made possible by these suggestions ?

.....

.....

18. *Beach levels on Lake Te Anau and Lake Manapouri can be controlled as a consequence of lake level control for hydro power generation.*

How much of a beach do you like Lake Manapouri and Lake Te Anau to have, from a scenic point of view ?

A very large beach	.....
Quite a large beach	.....
A fairly small beach	.....
A very small beach	.....
No beach at all	.....

Could you tell us why ?

.....

19. Have you made any use of the beaches around Lakes Manapouri and Te Anau, either for access, or for recreation ?

Yes No Unsure

If yes, could you please tell us how ?

.....

20. Does the control of Lake levels affect your recreation in any way?

Yes No Unsure

If it does, could you please describe how ?

.....

Values and Scenery

21. Does the Waiau River have any special significance or value for you and/or your family ?

Yes No

If yes, could you please describe this for us ?

.....

.....

22. Has the control of the Waiau River for power generation changed these values in any way ?

Yes No

If yes, could you please tell us how ?

.....

.....

23. Do you use the Waiau River for anything other than recreation ?

Yes No

If yes, could you please tell us what ?

.....

.....

24. Has the control of the Waiau River for power generation changed these activities in any way ?

Yes No

If yes, could you please tell us how ?

.....

.....

25. How do you personally rate the scenery of the Waiau Valley (from Manapouri to the sea) ?

Exceptional .....
Impressive .....
Picturesque .....
Moderate .....
Uninspiring .....
Dull .....

26. Are any parts of the Waiau Valley more scenically attractive than the rest ?

Yes No

If yes, could you please tell us which they are ?

.....

.....

27. How important is the river itself as a feature of the Waiau Valley ?

Most outstanding feature .....
Fairly important feature .....
Not very important .....
Hardly noticeable .....
Irrelevant .....

28. Does the control of the river for power generation purposes make the Waiau Valley more or less scenically attractive ?

Much more attractive	.....
Rather more attractive	.....
Makes no difference	.....
Rather less attractive	.....
Much less attractive	.....

Could you tell us how and why ?

.....

.....

A Little About Yourselves

This information is being collected so that we can say something about the types of people who use the Waiau River. We remind you that all of this is entirely confidential and that you cannot be identified in any case.

29. How many male and female members of the household are there?

Male ..... Female .....

30. How many people are there in each of the following age categories ?

younger than 18	.....
18 - 25	.....
26 - 45	.....
46 - 60	.....
older than 60	.....

31. Which best describes your household ?

Single person	.....
Group of friends	.....
Single parent	.....
Couple, no children at home	.....
Couple with children	.....

32. If you have children living at home, what are their ages ?

.....

33. What are the ethnic backgrounds of household members ?

.....

34. What are the normal occupations of household members ? *(please be as specific as possible)*

.....

35. For how long have you lived in, or come on holiday to, this area ?

.....

Thank you very much for your assistance

Location ..... *Date* .....

WAIAU RIVER RECREATION STUDY
Visitor Survey

1. Is this your first visit to the ..... area ?

   Yes No

   If it is not, how often have you visited ..... before, and when did you first come here ?

   .....

   Did you travel along the Southern Scenic Route to get here ?

   Yes No Unsure

2. How long do you intend to stay in the ..... area on this visit ?

   .....

3. What do you consider to be the main attractions and activities that ..... offers as a holiday centre ?

   .....

   .....

4. Have you taken any trips on Lake Te Anau, Lake Manapouri or on the Waiau River, either on this or previous trips ?

   Yes No

   If you have, please give details :-

   Lake Te Anau .....

   Lake Manapouri .....

   Waiau River .....

5. Have you carried out any recreational activities on or beside Lake Te Anau, Lake Manapouri or the Waiau River, either on this or previous trips ?

   Yes No

   If you have, please give details :-

   Lake Te Anau .....

   Lake Manapouri .....

   Waiau River .....

6. How important were such trips and activities to the enjoyment of your holiday ?

   Highlight of the holiday .....
   Quite an important part of the holiday .....
   Minor part of the holiday .....
   Not at all important .....

7. Were you aware that the Lakes and the Waiau River are controlled for power generation purposes ?

Yes No

8. Have the consequences of lake and river control affected your recreational activities ?

Yes No Unsure

If yes, please tell us in what ways.

.....

.....

9. What other trips and activities do you intend to carry out, or have already done while you are at ..... this time ?

Already done

.....

.....

Intended .....

.....

10. How do you personally rate the scenery of the .....area ?

Exceptional	.....
Impressive	.....
Picturesque	.....
Moderate	.....
Uninspiring	.....
Dull	.....

11. Are any parts of the ..... area more scenically attractive than the rest ?

Yes No

If yes, could you please tell us which they are ?

.....

12. How important is the Waiau River and the Lakes as a feature of the ..... area ?

Most outstanding feature	.....
Fairly important feature	.....
Not very important	.....
Hardly noticeable	.....
Irrelevant	.....

13. Does the control of the river and lakes for power generation purposes make the ..... area more or less scenically attractive ?

Much more attractive	.....
Rather more attractive	.....
Makes no difference	.....
Rather less attractive	.....
Much less attractive	.....

Could you tell us why ?

.....

14. *Beach levels on Lake Te Anau and Lake Manapouri can be controlled as a consequence of lake level control for hydro power generation.*

How much of a beach do you like Lake Manapouri and Lake Te Anau to have, from a scenic point of view ?

A very large beach	.....
Quite a large beach	.....
A fairly small beach	.....
A very small beach	.....
No beach at all	.....

Could you tell us why ?

.....

.....

Have you made any use of the beaches around Lakes Manapouri and Te Anau, either for access, or for recreation ?

Yes No Unsure

If yes, could you please tell us how ?

.....

.....

15. Did you specifically choose to come to ....., or was it included in a package trip ?

Specific choice Part of a package

16. What particularly made you choose ..... as a place to visit on holiday ?

.....

.....

17. What is your usual address ?

Town	.....
District or Country	.....

18. Are you male or female ?

Male Female

19. Which age category do you come into ?

younger than 18	.....
18 - 25	.....
26 - 45	.....
46 - 60	.....
older than 60	.....

20. What is your normal occupation ? (please be as specific as possible)

.....

Thank you very much for your assistance

Location ..... Date .....