PROTECTION OF AUTHOR’S COPYRIGHT

This copy has been supplied by the Library of the University of Otago on the understanding that the following conditions will be observed:

1. To comply with s56 of the Copyright Act 1994 [NZ], this thesis copy must only be used for the purposes of research or private study.

2. The author's permission must be obtained before any material in the thesis is reproduced, unless such reproduction falls within the fair dealing guidelines of the Copyright Act 1994. Due acknowledgement must be made to the author in any citation.

3. No further copies may be made without the permission of the Librarian of the University of Otago.

August 2010
Use Values of the Hollyford Valley Track:
with specific reference to the Proposed Haast - Hollyford Tourist Road.

Stuart J. Kane

A thesis submitted for the degree of Master of Arts in Geography University of Otago, New Zealand.

March, 1991
Acknowledgements

I would like to thank the following people for their time and help in the preparation of this Thesis:

- My supervisors Dr Geoff Kearsley and Dr Ross Cullen for the time spent proof-reading and for all their cheerful advice.

- Bill Mooney for the time spent helping to prepare the Maps, Diagrams and Tables. Hugh Kidd for proof-reading the text and bibliography.

- All the staff and post graduate students in the Geography department for their friendship and support while completing this thesis.

- The Department of Conservation for allowing me to stay on the Hollyford Valley Track free of charge. The Staff of the Hollyford Tourist and Travel company for the hot cups of tea and scones, and the shelter from the rain.

- My personal serfs Chris, Rob, Murray and Jane for their company and help while delivering questionnaires in the Hollyford Valley.

- Chris Garr for latexing the final draft of this thesis for the bargain price of 647 jugs.

Stuart Kane,

Note: This dissertation was formatted using the \LaTeX\ program on the Otago University VAX cluster.
Contents

Acknowledgements ........................................ ii
Contents ................................................... iii
List of Tables ........................................... vii
List of Figures ........................................... ix

1 Introduction ............................................ 1
   1.1 The Subject ......................................... 1
   1.2 The Issues .......................................... 1
   1.3 The Organisation of the Study ...................... 2

2 The Study Area ......................................... 4
   2.1 Introduction ........................................ 4
   2.2 Early History ....................................... 5
   2.3 The Hollyford Valley Track ......................... 7
       2.3.1 History ....................................... 7
       2.3.2 The Trip From the Hollyford Road End and to Martins Bay 8
   2.4 The Road, from Haast to Hollyford ................. 11
       2.4.1 Proposed Road Route .......................... 12
   2.5 The Proposed Road Route and the Hollyford Valley Track 15

3 The Review of Literature .............................. 17
   3.1 Introduction — Why is the Problem Economic? ........ 17
   3.2 The Role of Economics? ............................. 17
       3.2.1 The Role of Government ....................... 19
   3.3 The Notion of Value ................................ 21
       3.3.1 The Dollar Estimate of Value ................. 22
       3.3.2 Types of Value ................................ 22
       3.3.3 The Appropriate Value for Resource Allocation 23
   3.4 The Concept of Consumer Surplus .................. 23
5.5 Potential Use of the Hollyford Valley .......................... 65
5.6 Potential Users and the Hollyford Valley Track .................. 66
5.7 Actual and Potential User Opinions About Natural or Wilderness Areas ........................................ 68

6 Analysis of the Hollyford Valley Track with Reference to the Haast Hollyford Tourist Road .............................. 70
6.1 Contingent Valuation of the Hollyford Valley Track ............... 70
6.1.1 The Fitted Model ........................................ 71
6.1.2 Average Willingness to Spend on a Visit ..................... 71
6.1.3 Change in Aggregate Use Value ................................ 73
6.1.4 Factors Affecting Willingness to Spend ....................... 74
6.2 Actual Users' and Potential Users' Opinion and Attitude toward the Haast - Hollyford Tourist Road .......................... 74
6.2.1 The Actual User Group .................................... 74
6.2.2 Potential Users ............................................. 82
6.3 Test for Non Response Bias .................................... 88
6.3.1 Test for Non Response Bias Type One ....................... 88
6.3.2 Test for Non Response Bias type Two ....................... 90

7 Summary and Conclusion ........................................ 92
7.1 The Results, Points of Interest and their Meaning ................ 92
7.1.1 The Results .................................................. 93
7.1.2 The Total Proportions For and Against the Haast Hollyford Tourist Road ................................. 95
7.1.3 The Overall Results ......................................... 96
7.2 Methodological Strengths and Weaknesses ......................... 96
7.3 Implication for Future Research .................................. 97
7.4 Final Comments .................................................. 98

Bibliography .......................................................... 100

A Questionnaires ..................................................... 107
A.1 Actual User Questionnaires ...................................... 107
A.1.1 Private User Questionnaire .................................. 107
A.1.2 Commercial User Questionnaire .............................. 122
A.2 Potential User Questionnaire .................................... 137
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>$\chi^2$ Formula and Table</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>B.1 Formula for $\chi^2$ Values and Degree of Freedom.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B.2 The $\chi^2$ Table</td>
<td>151</td>
</tr>
<tr>
<td>C</td>
<td>Tables of Observed and Expected Frequencies</td>
<td>152</td>
</tr>
<tr>
<td></td>
<td>C.1 ACTUAL USERS ASIS</td>
<td>152</td>
</tr>
<tr>
<td></td>
<td>C.2 ACTUAL USERS AFTER</td>
<td>153</td>
</tr>
<tr>
<td></td>
<td>C.3 POTENTIAL USERS ASIS</td>
<td>154</td>
</tr>
<tr>
<td></td>
<td>C.4 POTENTIAL USERS AFTER</td>
<td>155</td>
</tr>
</tbody>
</table>
List of Tables

4.1 Actual User Response Rate. .......................... 51
4.2 Potential User Response Rate. ....................... 51
4.3 Total Response Rate to Surveys ....................... 52

5.1 Activities for which the Respondents Used the Hollyford Valley Track. .............. 58
5.2 Total number of visits to the Hollyford Valley Track. ........................................ 58
5.3 Number of Previous Visits in the Last Twelve Months. ........................................ 58
5.4 Previous Activities on the Hollyford Valley Track. .............................................. 59
5.5 Time Spent on the Track ........................................... 60
5.6 Use of Huts ................................................. 60
5.7 Which Hut? ................................................ 61
5.8 Use of Facilities? ........................................ 61
5.9 Proposed Track Route ........................................ 62
5.10 How Respondents Travelled to and from the Hollyford Valley Track. .................. 64
5.11 Reasons for Not Visiting a Natural/Wilderness Area ........................................... 65
5.12 Use of Natural/Wilderness Areas ........................................... 65
5.13 Use of Natural/Wilderness Areas by Potential Users ........................................... 66
5.14 Potential Users's Knowledge of the Hollyford Valley Track ............................. 67
5.15 Potential User's Use of the Hollyford Valley ....................................................... 67
5.16 "Is the knowledge that areas you consider to be Natural or Wilderness areas exist in New Zealand..." ....................................................... 69
5.17 "How important is it to you that Natural or Wilderness areas remain available for future generations?" ....................................................... 69

6.1 Mean Willingness to Spend Before and After the Haast - Hollyford Tourist Road ....................................................... 72
6.2 Characteristics affecting willingness to spend ....................................................... 75
6.3 Effect of proposed changes. ........................................... 76
6.4 How would the proposed changes affect actual users (by %).... 77
6.5 Would the road affect the route you would choose? .......... 78
6.6 How would the road affect the route you would have chosen? 78
6.7 Would the changes be ... ......................................... 78
6.8 Why would the proposed change be to the actual users advantage or disadvantage (by %) .......................... 79
6.9 Would you personally be in favour of such changes? ......... 80
6.10 Why would actual users be in favour of the changes (by %) . 81
6.11 Increase or decrease the likelihood of actual users returning. 82
6.12 Why would such changes increase or decrease the likelihood of actual users visiting (by %)? ..................... 83
6.13 Willing to spend more or less on trip ........................... 84
6.14 Willingness to spend on additional travel cost to the Hollyford Valley Track in its new form. ....................... 84
6.15 Would the changes increase or decrease the likelihood of potential users visiting the Hollyford Valley Track in the future? 84
6.16 Why would the changes increase or decrease the likelihood of potential users visiting (by %) ......................... 85
6.17 Why would the changes be to potential users advantage or disadvantage (by %)? ............................................. 86
6.18 Why would the changes be to potential users advantage or disadvantage (by %)? ............................................. 87
6.19 Are potential users in favour of the proposed changes? .... 88
6.20 Why potential users would or would not be in favour of the changes (by %)? .................................................... 89
6.21 Chi square test on the potential user sample group. .......... 90
6.22 Chi square test on the actual user sample group. .......... 90
6.23 Mean willingness to pay if non respondents are included as a rejection of the dollar amount asked. .................... 91
7.1 Actual Users: general comments. ................................. 94
7.2 Potential Users: general comments. ............................. 95
7.3 Total proportions for and against the road. .................... 96
List of Figures

2.1 The Hollyford Valley Track ...................................... 10
2.2 The Proposed Haast - Hollyford Tourist Road .......... 14
2.3 The Haast - Hollyford Tourist Road and the Hollyford Valley Track 16

3.1 The Market Demand Curve ...................................... 18
3.2 Why There is a need for Government Intervention .......... 20
3.3 An Individual Demand Curve .................................... 24

4.1 The Logit Curve .................................................. 53

5.1 The Hollyford Valley Track ...................................... 63
1

Introduction

1.1 The Subject

The Hollyford Valley is valued by many people, it is an area of spectacular scenic beauty that for many years has been kept in isolation by the fact that the only means of visiting the valley is by foot or to a lesser extent by plane and boat. People who use the Hollyford Valley Track value the area for its scenic beauty and its solitude, as well as for its fishing, tramping and hunting resources. However because use of the Hollyford Valley Track is severely restricted by the lack of easy access, there are many people who currently do not use the area but who would value the opportunity to do so given the chance.

Consequently, the advantages and disadvantages of developing a road in the Haast - Hollyford Valley Track area has been the subject of much public debate. Those in favour of such a development suggest that the establishment of a road would not only open the area up to the tourism, but it would also provide easier access to all New Zealanders and not just a small advantaged segment of society. Those against the proposal suggest that any development within a national park is an unwelcome intrusion into an area that should be kept as a wilderness park, or at least, in a largely natural state.

1.2 The Issues

A large part of the discussion has centred on the fact that until now only those members of the public who are fit and have the time could visit the area, but if the Haast - Hollyford Tourist Road were to go ahead, it would allow access to the Hollyford Valley Track to a much wider sector of the public.
While those who currently have access to the Hollyford Valley Track may suffer a loss in benefit because of the road, those who do not have access to the track but would do so if the road proposal went ahead may gain benefit from the road.

The loss or gain of benefit, in this case 'use value', as a result of the road proposal is an example of an intangible. Any such loss or gain of use value to either group would represent a real cost or benefit of completing the road proposal, and should therefore be included as part of an economic appraisal of the proposal.

In order to assess the benefits to be gained and lost from the two alternative uses of the Hollyford Valley Track and in order to determine which use would be of the most net benefit for the public, it is necessary to use economic methods such as a non-market benefit assessment technique. This study will introduce and apply one such non-market benefit assessment technique, the Contingent Valuation method.

1.3 The Organisation of the Study

The study will be organised into the following chapters.

Chapter Two

Chapter two introduces the study area, its history and the history of the Haast - Hollyford Tourist Road proposal. Maps of the proposed road route are also presented in this section.

Chapter three

Chapter three is the review of literature; this is a review of the economics involved in the study. The concepts of value, consumer surplus, value measures, and the role of economics in relation to the overall study are explained. Finally the benefit assessment technique to be used is introduced and explained fully.

Chapter four

Chapter four, the methodology, introduces and explains the methods used in the study; the survey population, the sample selection, the survey administration, the questionnaire design, and the questionnaire analysis are explained with a full description of each step in the analysis.
Chapters five and six

Chapters five and six present the results of the study. Chapter five focuses on a general analysis of the survey results, while Chapter six presents the results from the economic analysis on the Haast - Hollyford Tourist Road proposal.

Chapter Seven

Chapter seven is the conclusion; this explains fully what the results mean, how they should be interpreted and in what context they should be used.
2

The Study Area

2.1 Introduction

The Hollyford River is located on the South West Coast of the South Island of New Zealand. The river is situated within a steep-sided valley, flowing due north. Approximately half way along its length the Hollyford River is joined by the Pyke River at a point just downstream from Lake Alabaster; the Hollyford River then flows into Lake Mckerrow before entering the Tasman Sea at Martins Bay (see Map 1 included at the end of section 2.3).

The Hollyford Valley Track forms a loop that follows the length of the Hollyford River. The track splits at the confluence of the Pyke and Hollyford Rivers, one branch follows the Pyke emerging on the West Coast at Big Bay. The second branch continues along the Hollyford River following the shoreline of Lake Alabaster to Martins Bay. The two branches of the track are joined by the section of beach that lies between Martins and Big Bay.

Access to the Hollyford Valley Track is gained via the Lower Hollyford road, which runs approximately 28 km down the Hollyford Valley. This road branches off Highway 94, the Te Anau-Milford road. The route that the Te Anau-Milford road follows was first proposed by W.H.Homer in 1889, but it was not until nearly half a century later, in 1929 that work on the road began. Construction began on the Homer tunnel in 1936 and by 1940 the tunnel was pierced. Initially access to Milford Sound through the tunnel was by foot only, visitors were picked up after walking through the tunnel and were transported to Milford Sound by bus. The enlarging of the tunnel was completed in 1953 with the tunnel officially open to private cars the following year. Over the years that followed there has been a tremendous increase in the number of visitors who use the Milford road.
This increase in the number of visitors to the area, along with the increase in the importance of tourism to New Zealand in general, has led to the idea of linking State Highway 94, the lower Hollyford road, with State Highway 6 at Haast. This would not only alleviate the need for a return trip from Queenstown but it would also create a spectacular scenic drive that would incorporate the Franz Joseph and Fox Glaciers, the spectacular scenery of South Westland and the magnificence of Milford Sound. At present those visitors who choose to visit Milford Sound after travelling down the West Coast by tour bus face a gruelling day long return trip from Queenstown.

What follows is an introduction to the study area, this will include the early history of the Hollyford Valley and Martins Bay area, a description of the proposed Haast-Hollyford Tourist Road followed by a description of the proposed road route. As will be explained in the two chapters which follow, this study is restricted to investigating what effects the proposed road will have on users and potential users of the Hollyford Valley Track, any wider implications that result from the road proposal are outside the scope of the study methodology.

2.2 Early History

Long before European explorers arrived there were Maori settlements in the Martins Bay Area. Well used Maori tracks existed from Lake Te Anau up the Eglington Valley and down the Hollyford Valley. Eeling parties often visited Lake Alabaster and remnants of gardens have been found at Lake McKellar. Legend has it that an explorer Ruki Haitu, who came to New Zealand around 850 AD crossed the mountains from Lake Wakatipu to the sea at Martins Bay, retracing his steps before proceeding to Foveaux Strait. When Europeans first began to explore the area there remained only two Maori families, notably Tutoko and his daughters, dubbed 'Sara and May'. The old man's name was given to the mountain that rises 2700 metres above the valley on the West while the names of his daughters were given to the two hills that confine Martins Bay (the features mentioned in this section can be found on Map 2, included at the end of Section 2.4).

Europeans first began to explore the Hollyford Valley area from the interior in the 1860s. However sealers plundered the colony at Long Reef well before 1860. David McKellar and George Gunn, runholders in the Mataura Valley were the first explorers to see the Hollyford from the interior, when in 1861 they travelled from the head waters of the Oreti and Mataura Rivers, then up the Greenstone, to look down on the Hollyford Valley.

Two years later four separate explorations were undertaken, the object being
to find a route from Wakatipu to the sea. The search was for a port to remove gold from the Central Otago goldfields, as at this time there was no established road network to the east and Dunedin, or to the west and Australia. One party (lead by Cameron), got no further than a saddle at the head of the Routeburn. Another party lead by Sym's and Sutcliffe found a pass which they would not reveal. They sailed around the coast in an unsuccessful attempt to find their way in from the sea.

Patrick Quirk Caples in January of 1863 was the first to reach Martins Bay from Wakatipu. After three attempts he reached Martins Bay by descending from the Harris Saddle and travelling above the length of the Hollyford River (which he named after his birthplace in Ireland). Caples sited an encampment at the Bay and fearing “wild Maoris”, he secretly explored Martins Bay, washed his hands in the salt water of the ocean, then made off back up the Hollyford Valley.

The fourth party led by Captain Alabaster sailed to Martins Bay in the cutter “Aquila”; taking the ship across the bar of the Hollyford River he entered Lake McKerrow. He then took a smaller boat up the Hollyford to explore the upper valley, his party climbed Key Summit and went up the Pyke River to discover the lake that now bears his name.

With no knowledge of these four expeditions and determined to prove a good route from Wakatipu to Martins Bay, Dr (later Sir James) J. Hector, first explored the way up the Greenstone Valley from Lake Wakatipu. He then sailed to Martins Bay and with the help of Henry Paramatta (Hector’s Maori guide), they travelled up the Hollyford Valley connecting with the Greenstone Valley and Lake Wakatipu.

This route was seen as way of transporting gold from the Central Otago fields to Australia, but the business community of Dunedin sensing the danger, prevailed upon the government to complete coach roads to the east. In 1864 a survey party examined the westerly route and reported that no road was possible and the idea was dropped. The track however continued to be used by gold miners en route to Jacksons Bay and Martins Bay.

In 1867 there was a resurgence in interest in Martins Bay because the Westland gold rush was taking trade and population from Otago. By 1868 the Otago Provincial Government decided on a settlement in the Martins Bay — Lake McKerrow region. In 1870 they decided to form a ‘township’ at Lake McKerrow, called Jamestown, and by the end of 1870 there were 7 or 8 houses at Jamestown. A promise had been made that a track suitable for horses would be formed, and such a track was surveyed but 16 years passed before even the first rough track was passed. Until then transport was dependent entirely on steamers that came every two or three months; passengers and supplies had to be ferried from the steamers by small boat. This was dependent on the right sea and weather conditions; if it was too rough the steamer sailed by, to return in another three months.
Tragedy punctuated life at Jamestown with monotonous regularity. Drownings and infant deaths were common in a place where there was no hope of care by a doctor. A wet climate meant frequent flooding and a constant plague of sandflies and mosquitoes. On top of this there was no one but one's immediate family to communicate with.

By 1879 Jamestown was deserted, and there were only a handful of settlers remaining at Martins Bay. Numbers slowly dwindled, and by the turn of the century only the McKenzie family, who farmed in the area, remained. When the McKenzies wished to sell their cattle they had to first clear the track and then drive the herd 250 km up the Hollyford, and down the Greenstone, Mavora and Oreti Valleys to Mossburn.

The McKenzie family sold out to Davy Gunn in 1926, but they continued to work with him until World War II.

Gunn became something of a legendary figure in the Hollyford, driving cattle, improving the pioneer tracks, building huts, until he knew the region better than any man before and since. None of Davy Gunn's exploits surpassed the lifesaving journey he made in 1936 after a plane crashed at Martins Bay and help was desperately needed for the injured survivors. In twenty hours he walked from Big Bay round the coast to Lake McKerrow, rowed up the lake, then rode and lead his horse more than forty kilometres to the road construction camp at the head of the Hollyford, where he telephoned for another plane to pick up the survivors on the beach.

Sources: Temple (1977)
Holland (1976)
Hall-Jones (1976)

2.3 The Hollyford Valley Track

2.3.1 History

By the 1920s trampers were becoming interested in the Hollyford Valley area. In 1936 Davey Gunn began guiding parties through to Martins Bay using his own huts. Later, so that trampers could avoid the "Demon Trail" he put a launch, the 'Gratitude' on Lake McKerrow (a description of the track route including the Demon Trail is given in section 2.3.2).
Gunn eventually went into partnership with a sports firm from Invercargill, offering guided tours, which included food, accommodation and the launch trip. A ten day riding trek was also available, the trek continued from Martins Bay to include the Big Bay, Upper Pyke circuit. Gunn introduced hundreds of travellers to the valleys of the Hollyford, Pyke and Cascade between 1926 and 1955.

After Davey Gunn’s tragic drowning in 1955, guided tours were not available through the valley. Ed Cotter took over the venture in the mid 1960s, but found it difficult to make the tours pay. In 1969 Jules Tapper took up the challenge, he upgraded the available facilities by constructing new lodges at Martins Bay and the Lower Pyke, airstrips were installed, and a jet boat moored at Pyke Lodge. Later the National Park Service (now Department of Conservation) upgraded the Hollyford Track and installed its own huts. There is now a choice of guided and private tours, which include aeroplane and jet boat trips.

Source: Hall-Jones (1988)

2.3.2 The Trip From the Hollyford Road End and to Martins Bay

One of the attractions of the Hollyford Valley Track, is that apart from the Homer Saddle and the Demon Trail Hut the track follows a river valley and is therefore relatively flat and easy going. Whereas the Routeburn, Milford and Kepler Tracks all include a mountain pass in their track routes, the highest point on the Hollyford Valley Track is 168 metres. The Hollyford Valley Track begins at the end of the Lower Hollyford road which drops down steadily from the open spaces of the Darran Mountains. The road ends (and the track starts) at Humbolt Creek (a map of the Hollyford Valley Track is included at the end of this section).

By the time you reach the road end at Humbolt Creek you will have become accustomed to the softly enveloping forest, attuned to the nature of the country that lies ahead.

The atmosphere is close and moist, insects abound, the forest silence is broken by the roar of the great river or, away from its banks, the whoosh-whoosh of bush pigeons flying heavily through the trees or the parroting rattle and bell call of Kakas in their canopy.

Temple (1980, 27)

The Hollyford Valley Track is approximately 58 kilometres long, the track begins by winding with the changing course of the river, it then swings away as the river course changes. After about 10 kms or 3 hours walking time from the start, the track emerges on to the open flat of Hidden Falls. As the name suggests Hidden Falls are totally obscured until one is almost upon them.
From Hidden Falls Hut, the track leads through the forest and then climbs to its highest point of 168 metres, at Homer Saddle. Not long after the beginning of the climb, the full splendour of Mt Madeline is seen through openings in the trees, further back and to the right Mt Tukoto can also be seen. From this point the track drops to Little Homer Falls and Little Homer Creek. Half an hour from the creek one returns to the banks of the Hollyford River, which the track follows until the point where the waters of the Pyke and Hollyford Rivers join. Soon after are the clearings of the Lower Pyke landing and lodge. One quarter of an hour from the clearing is the Department of Conservation's Lake Alabaster Hut at the edge of the lake of that name. This section of the track is approximately 12km long with a normal walking time of 3 1/2 hours.

The track returns from Lake Alabaster to cross the Pyke River suspension bridge at a point just above the Lower Pyke Landing, the track then passes beneath rough bluffs, as it swings through the bush beneath the Skippers Range. There is no view until after an hour one emerges once again on the banks of the Hollyford, now swollen by the Pyke waters. The track follows the bank of the river's eastern channel to the head of Lake McKerrow. This channel is normally dry or carrying only a small volume of water so it is an easy matter to cross to McKerrow Island and its hut, although when in flood the channel becomes impassable. Further on around on the shore of Lake McKerrow is Demon Trail Hut. It is approximately 7 km to Lake McKerrow Hut, from Lake Alabaster, with a normal walking time of 2 1/2 hours, and a further 4 km or 1 1/2 hours walking time to Demon Trail Hut from this point.

From Demon Trail Hut, the track goes back into the bush then drops close to the shore again. This sets a pattern, up and down the spurs along the lake, crossing bluffs, gullies and numerous creeks, hence the name 'Demon Trail', until the track drops to the lake shore and Hokuri Hut, approximately 12 km and 4 1/2 hours normal walking time from the Demon Trail Hut.

From the Hokuri Hut the trail follows the shore of the lake; an hour from the hut lies Jamestown. An hour later the track leaves the lake and moves back into the bush. Eventually the forest breaks to reveal sandhills and an airstrip, an hour from which airstrip is the Martins Bay Hut. Beyond the hut lies Long Reef, with its seal and penguin colony. In all this section of the track, from the Demon Trail Hut to the Martins Bay Hut, is approximately 14 km in length normally taking 3 1/2 hours to complete.

Source: Temple (1977)
FIGURE 2.1: The Hollyford Valley Track
2.4 The Road, from Haast to Hollyford

The possibility of a road south from Westland was suggested as early as 1876 by Duncan Macfarland, a resident of Jacksons Bay. In February of 1884 a survey party led by Gerhard Muellor, the chief surveyor for Westland reported that

A splendid inland line of road from the Cascade Plateau to the junction of the Pyke and Hollyford can be had”

Hall-Jones (1988, 130)

Muellers ‘splendid inland line of road’ lay dormant for one half of a century until in 1937 work started on the road by extending the Milford Road 20 kilometres down the Hollyford Valley. As originally proposed the road was;

1. to make available the superb mountain scenery of the Lower Hollyford;
2. to make available the timber in the Provisional State Forests in the Hollyford, Martins Bay and Big Bay region; and
3. to provide access to the settlement areas around Martins Bay.

Holland (1976)

From 1940–1960 very little attention was paid to the area, the road and bridges deteriorated to such an extent that the road was closed beyond 13 kilometres from the State Highway 94 turnoff. After 1960 the existing road was upgraded and by 1967 the road had been extended to the flats beyond High Falls Bluff, some 28 km from the State Highway 94 turnoff (refer to the map which is included at the end of this section).

In 1968 work began in earnest on the northern end of the road line with construction of a properly formed road over the Martyr Saddle, down into the Cascade. During the 1970s the road looked likely to take off again when a North American company “Kennecott” showed interest in asbestos in the Red Hills Range. However samples showed that mining was not viable.

At present the northern segment of the road now ends at the Martyr Homestead on the Cascade flat 43 kilometres from Haast. In the South the road now stretches 18km down the Hollyford Valley from the Milford Road (State Highway 94).

As has been indicated, in the past the road has been promoted for reasons of inter-regional access, accessibility and resource development, as well as for tourism. However the present revival of interest in the road by organisations such as the West Coast United Council is founded much more centrally on the road’s tourism potential, the development of the National Park and State Forest policy being such that
development of the timber resource is an unlikely prospect. The attraction of the road in its present context is that it will offer a link between the tourist attractions of the Fox and Franz Joseph Glaciers and Milford Sound. But more importantly “...it is being promoted as providing an experience for tourists in an area of magnificent natural beauty.”

McDermott Miller (1989, i)

In addition it is seen as completing a spectacular circuit, alleviating the long return trip from Milford to Te Anau or Queenstown, which all present road visitors must make. The road as proposed will run through a national park and wilderness area, this same area is being promoted for World Heritage status. Those who support the idea of the tourist road suggest that it is of no use having a resource such as the scenic beauty of South Westland, if only a small number of people have access to it. For example, the idea of a spectacular tourist drive through South Westland has drawn support from a wide range of people; noted conservationist David Bellamy has given his blessing to the proposal, suggesting that ...

“the more people who can see it [the land] the way they want to see it then the more people who will be rooting to retain it as a world heritage site.”

(Southland Times 15.5.89)

Those who are not in favour of the road suggest that the two are incompatible, that it is impossible to use an area noted for its wilderness qualities as a major tourist attraction, and at the same time retain the wilderness characteristics that make the area special. Royal Forest and Bird Protection Society president Alan Mark expresssed this feeling by describing the road link “as an intrusion into an area which should be kept as a wilderness park.”

(Southland Times 25.7.89)

The idea of a road connecting the West Coast with South Westland has been promoted for over one hundred years. Over this time a number of different road routes have been proposed. The section that follows will introduce the road route currently favoured, this particular road route will be the focus of this study.

2.4.1 Proposed Road Route

The proposed road route is described in the pre-feasibility study prepared by the McDermott Miller Group Ltd for the then Tourism Minister the Hon Jonathon Hunt. This was in response to the May 1989 Tourism 2000 conference. At this conference tourism and conservation groups showed renewed interest in the idea of a Haast-Hollyford Tourist Road.
From State Highway 6 at Haast, the route follows the existing well-formed Jack­
sons Bay road to the Arawata River Bridge from which point the road follows the  
Jackson River South West (see the map included at the end of this section, the solid  
black line is the proposed road route). It swings north west crossing the Martyr River  
and descends to the Cascade River flats. From this point two options are available.

Inland Route

The first and most direct route continues inland. The route follows a track reported  
to have been surveyed by G.T. Murray in about 1888. The route starts at a point  
above Monkey Puzzle Gorge and follows a track constructed in 1889, more or less  
alongside the left bank of the Cascade River for some 9km. From here it climbs  
to Cascade Saddle (this stretch is acknowledged as being very difficult and led to  
investigations into the alternative Coastal Route).

From Cascade Saddle two variations are possible.

1. George River Variation. This follows a bridle track that descends from Cas­
cade Saddle to the George River at its confluence with the Duncan River.  
From this point the route sidles westward swerving across Junction Hill and  
George Plateau to ascend the Pyke Saddle.

2. The Duncan River Variation. From Cascade Saddle the route continues to  
climb to the west above the Duncan River. Crossing the Duncan it follows the  
west bank up and over an easy saddle to Low creek. Low Creek is followed  
until “Low” Saddle where the route swings down to meet the Jerry River.  
From here it sidles down crossing above Pyke Saddle to the top of the climb  
(this is shown on the map using a dotted black line).

Inland Route (continued) Cascade to Pyke

From above the Pyke saddle or the “Top of the Climb” the route descends west  
of Durwards Creek to the Pyke. The road then follows the Pyke River with steep  
sidles required above the eastern shorelines of the lakes. Between the lakes it is  
relatively easy going on the flat floor of the glacial formed valley.

Beyond Alabaster the road passes the confluence of the Pyke and Hollyford  
rivers, continuing up the Hollyford Valley to join the existing Hollyford road con­
necting eventually with the Milford Road (State Highway 94).
FIGURE 2.2: The Proposed Haast - Hollyford Tourist Road
Coastal Route

From Martyr Homestead the route is assumed to follow west and south to cross the Cascade River below Colin Creek. The road would then follow the existing partially formed Cascade to Bam Bay road. From Bam Bay to Big Bay a bush-covered shelf is followed. This route is virtually flat except for two rock bluffs. Large cuttings or tunnels would appear necessary at these points. At Hackett River a variation is possible. This route would climb from the coast before the Hackett River and would descend to Big Bay (see the map included at the end of this section).

From Big Bay the Coastal route would join the inland route at the Pyke river and continue south to Lakes Wilmott and Alabaster.

Lake McKerrow Option

This route leaves the Coastal and Inland Route at Big Bay and traverses the Jamestown Saddle to the south. It then sidles the eastern side of Lake McKerrow through to the outlet of the Hollyford River following south to the confluence of the Hollyford and Pyke Rivers (see the map included at the end of section).

Source: McDermott Miller (1989)

2.5 The Proposed Road Route and the Hollyford Valley Track

The route proposed for the Haast - Hollyford Tourist Road, has been overlayed on a map of the Hollyford Valley Track. This study is based on the more favoured Inland and Coastal routes both of which would follow the path of the Hollyford Valley track from Lake Wilmott to the Lower Hollyford road end. This would shorten the length of the track considerably, but at the same time would give increased access to Lake McKerrow and Alabaster as well as the previously isolated Red Hills - Cascade wilderness areas.

What will be considered in this study is the effect such changes will have on current and future users of the Hollyford Valley Track. It may well be that the loss of a large section of the track will be compensated for by the increase in accessibility to others who do not currently use the Hollyford Valley Track. The next chapter, the Review of Literature describes the methods which will be employed to measure the effect which the proposed Haast - Hollyford Tourist Road will have on users and potential users of the Hollyford Valley Track.
FIGURE 2.3: The Haast - Hollyford Tourist Road and the Hollyford Valley Track
The Review of Literature

3.1 Introduction — Why is the Problem Economic?

As has been described previously there is conflict over the future use of the Hollyford Valley Track, between those who would like the resource to remain the way it is, a scenic and isolated area through which a walking track runs, and those who would like the Valley to be linked by road from the West Coast, thereby forming a scenic highway between Central Otago, Fiordland and the West Coast.

To satisfy the public, and to ensure that resources are employed efficiently, they need to be allocated to their highest valued uses. The problem has an economic dimension, because it arises out of competing demands for a scarce resource. To ensure that the Hollyford Valley Track’s resources are allocated in accordance with the importance placed on them by users, the value or benefit derived from the competing uses of the resource must be estimated.

This study aims to assess the benefits to be gained and lost from the completion of the Haast - Hollyford Tourist Road by users and potential users of the Hollyford Valley Track.

3.2 The Role of Economics?

In economics, value is represented by relative worth, utility, or importance. Value is used as a guide in the allocation of resources. We can measure value in dollars. This is a useful strategy because the dollar as a common unit can show the value of other goods and services which people are willing to give up to obtain the good in question; choices are then made in terms of available dollars and demand priorities, or expectation of satisfaction.
FIGURE 3.1: The Market Demand Curve

An individual consumer's evaluation of the satisfaction derived from consuming a good or a service is reflected in the price which they are willing to pay for that good or service. Individual consumer evaluations can be aggregated into a "Market Demand Curve". Figure 3.1 is an example of a market demand curve, it shows the relationship between the price of a good, or a service, and the total quantity demanded by consumers at each price during a given time period.

Total benefits to the consumers of a good or a service can be shown as the (shaded) area under the demand curve. This is an economic measure of how much aggregate pleasure, usefulness or utility consumers obtain from that good or service. Using market generated information of this kind, it is possible to monitor consumer behaviour, and thereby consumer preferences. For example, a change in the total area under the market demand curve for a good or a service indicates an increase or decrease in the total benefits derived by consumers from that good or service. As explained earlier this is an economic measure of the utility gained from consuming that good or service and thereby gives an indication of aggregate consumer preferences.

This form of benefit assessment is satisfactory for those goods and services which are bought and sold in the market-place. However, ...

in many situations the market fails to accurately reveal the social benefits and costs of a good or a resource and to allocate them to their best uses.

(Kerr et al. 1985, 24)
Such a situation arises for “Public Goods” or

...a class of goods and services for which the enjoyment by one individual does not preclude simultaneous enjoyment of those very same goods by other individuals

(Samuelson 1954)

3.2.1 The Role of Government

Kerr, et al. (1985) suggest that the services associated with parks and protected areas have characteristics in common with pure public goods which will cause an under valuing and hence under supplying of the public goods if they were allocated in the private market.

The characteristics which parks and protected areas have in common with public goods are noted in Just et al. (1982) they are:

1. one person can derive benefit without preventing another person from enjoying the same benefit; and

2. it is impossible to force an individual to pay for the service according to the benefit derived.

In their study of the economic benefits of Mount Cook National Park Kerr et al. (1985) offer an explanation as to why these characteristics necessitate government intervention in the management and supply of public goods such as parks and protected areas (Figure 3.2).

Assume society is comprised of two individuals. Each consumer derives value from the commodity or service Q. For the purposes of this example Q is assumed to represent a particular class of land proposed for national park status. Marginal Value (M.V) reflects the monetary value to consumers of consuming an additional unit of Q. M.V is assumed to decline with an increase in Q.

Once an area has been set aside for a national park, it is available for both person 1 and person 2. One cannot prevent the other from deriving value from the resource. Total M.V is therefore the sum of each individual’s M.V.

M.C measures the cost of producing one more unit of Q. While M.V measures the value to consumers of consuming one more unit of Q. Therefore at point \( Q \) where \( M.C = M.V \), the cost of the good to society is exactly equal to the value that consumers place on it. \( Q \) is therefore an optimal allocation of Q.

Figure 3.2 shows \( Q \) to be optimal because the marginal cost (M.C) of preserving \( Q \) equals total M.V.
FIGURE 3.2: Why There is a need for Government Intervention. Source Kerr et al. (1985).
A competitive market will fail to achieve this socially optimal allocation of resources because a private firm facing M.C cannot determine the marginal value of Q for each consumer. Furthermore once Q has been provided it is not possible to exclude those who do not pay (Kerr et al. (1985, 25–26)).

Some form of government intervention is therefore necessary to attain this optimal level of supply, this is why the supply of public goods such as national parks has evolved within what is known as a non-market institutional framework. That is the government intervenes and assumes the role of producer, deciding how much is to be supplied.

The Hollyford Valley Track is an example of a natural resource which has some of the characteristics of a public good, and decisions about its use are made within a non-market institutional framework. To ensure that its resources are allocated in accordance with the importance placed on them by consumers, the value or benefit derived from competing uses of the Hollyford Valley Track must be estimated.

Once these estimations have been calculated, the government is in a better position to make economically-efficient decisions about the Hollyford Valley Track taking into account consumer preferences and values.

### 3.3 The Notion of Value

On many occasions members of the general public are upset over the use of dollars when measuring relative value of various commodities, this includes natural resources such as the Hollyford Valley Track. Most of this is caused by confusion over what is meant by value, and why dollars are often used to measure it.

The concept of value is described by Sinden and Worrell (1979) as

> Anything that is worthwhile having or doing is said to be of value to the persons involved. When a number of things would all be of value those that would be more advantageous are said to have greater value. Value is used as a measure or indication of relative importance and the comparative values of alternative things or actions provide guides for choices and decisions.

(Sinden and Worrell 1979, 3)

As has been previously explained the absence of a market necessitates estimating values for Public goods (in this case the Hollyford Valley Track).
3.3.1 The Dollar Estimate of Value

The most relevant economic measure of value when a formal market does not exist is the consumer's willingness to spend part of their income on a commodity. This serves as a basis for what the results of a freely functioning market would have been (Clawson 1966). This set of values is comparable to economic values established for other commodities through market behaviour, where tangible commodities and products are bought and sold.

So that these values may be compared, they are measured in a common unit of exchange, the dollar. The dollar is used merely because of the ease of comparison which it provides. By using the dollar it is possible to find the relative values which people place on most goods. This is done by observing the rates at which people are willing to trade off one thing for another, or the value of other goods and services which people are willing to give up to obtain the good in question.

3.3.2 Types of Value

Natural resources such as the Hollyford Valley Track provide different types of value to different people. Kerr (1986) identifies four:

1. Use Value: the value of the present and expected use of a resource. Use values can only be gained by travelling to the site in question.

2. Option Value: when there is risk associated with the future demand or supply of a resource, expected future use values must be modified. This modification is option value, and is analogous to a type of insurance premium.

3. Quasi-option Value: the value of improved knowledge about a resource. Quasi-option value exists in cases where the outcomes of possible future uses of a resource (or even the possible uses themselves) are uncertain, some alternative uses necessitate irreversible changes, and there is some possibility of gaining better information in the future. The information has no value if an irreversible change has been implemented before the information is obtained. On the other hand, if no irreversible change has been made then the new information may be used to find a more efficient allocation of resources. Retaining a resource in its natural state preserves all options for future use, and so maximises quasi-option value. (Kerr et al. 1985).

However, since these future outcomes are not known at present, by definition quasi-option value cannot be estimated.
4. Existence Value: the value of simply knowing that a resource exists. Existence value is completely separate from use value. There are many examples which illustrate the existence of this type of value, e.g., people donating to a wildlife fund to protect endangered species, even though the chances of them seeing the species in question is very slim.

A fifth type of value closely related to existence value is “Bequest Value” and is the value of, or satisfaction derived from, leaving a natural resource to future generations.

3.3.3 The appropriate value for resource allocation

Knetsch and Davis (1966) identified the type of values that are important when making decisions relative to resource allocation. They suggested that it is the incremental values that should be focused upon. The value that has relevance for a specific decision is the extra benefit to be gained from a proposed addition to a resource. For example, an efficient allocation of resources requires that the cost of supplying the resources in question should equal but not exceed the value to be gained from that allocation of resources. In the case of the Hollyford Valley Track the resources have been allocated, however what has been proposed is a change in the use of those resources. The value that is of importance when decisions are being made about the use of the Hollyford Valley Track therefore is the value of this change in resource use, that is the added benefits and costs to users and potential users of the Hollyford Valley Track as a result of the proposed Haast - Hollyford tourist road.

Once the additional costs and benefits to both users and potential users are known then it may be used as part of an appraisal of the proposed changes to ensure that the Hollyford Valley Track’s resources are employed in an economically efficient manner.

3.4 The Concept of Consumer Surplus

To enjoy using a natural resource such as the Hollyford Valley Track an individual must incur costs, such as equipment, accommodation, travel expenses, and so forth. Such costs may be thought of as analogous to the price an individual must pay to enjoy the benefits to be gained from visiting the Hollyford Valley Track. Each individual has a different set of preferences, and any decisions about the price that an individual will pay to visit the Hollyford Valley Track is subject to those preferences, in just the same way as an individual decides how to allocate his or her
income on goods and services which are bought and sold in the market place.

At any one time there is likely to be an upper limit to how much people are willing to spend on anything, and this includes visiting the Hollyford Valley Track. From this upper limit a person’s total willingness to pay to visit the Hollyford Valley Track will be progressively less and less for each successive visit to the track until that person has visited the track enough and is not prepared to pay anything for another visit.

As an illustration of this, in figure 3.3, the line between $P_1$ and $Q_1$ represents the upper and lower limits to each individual’s willingness to pay. This represents an individual’s demand curve for the Hollyford Valley Track, it shows the relationship between the quantity of a good an individual will choose to consume, given the price they must pay. $P_1$ is the maximum the consumer is willing to pay to visit the Hollyford Valley Track, and $Q_1$ is the quantity the consumer is willing to consume at zero price.

If it costs $P_x$ to visit the Hollyford Valley Track, then at any cost below $P_1$ but above $P_x$, the consumer is deriving benefit over and above the amount paid. This benefit is described as Consumer Surplus. In Figure 1.3 the total consumers surplus is equal to the shaded area $P_x E P_1$

If it is possible to estimate a demand curve and know the price faced by consumers it is possible to estimate consumer surplus. This can be thought of as net benefit or value that users derive from a resource, good or service. Techniques that are employed to value unpriced goods are also often used to attempt to estimate consumer surplus which in turn is used as a measure of value.
3.4.1 Hicksian Measures of Consumer Surplus

The concept of consumer surplus just explained employs the Marshallian demand curve. However, if it is suspected that expenditure on the public good is a substantial part of the consumer’s total expenditure then the theoretically correct concept of consumer surplus is the Hicksian concept. This is because the acquisition of the public good will affect consumption of other commodities, will change the consumer’s real income, changing the marginal utility of money and thus the position of the demand curve.

Kirkland (1988, 19)

Hicks (1943) suggested that the Marshallian concept of consumer surplus was inappropriate because it treated consumer surplus as an absolute magnitude, or “...a consumer just because he is in such a position, is getting so and so much consumer’s surplus.” The Hicksian concept of consumer surplus is relative not absolute.

We are always considering the movement from one defined situation to another defined situation; we are asking what is the gain (or loss) of money income which would measure the gain (or loss) of economic welfare resulting from the movement.

Hicks (1943, 41)

The Hicksian concept of consumer surplus can be estimated using four related measures of Hicksian consumer surplus namely, compensating variation, compensating surplus, equivalent surplus and equivalent variation.

Compensating measures of value are the amount of compensation which would need to be received to restore the consumer’s welfare to the level it was before a change occurred. Whereas equivalent measures of value are the amount the consumer would be willing to pay to prevent the change if it is perceived as being detrimental to him/her, if the change is seen as being beneficial it follows that equivalent variation is the amount the individual would be willing to pay to have the change occur.

Clearly then, compensatory measures of value are about willingness to sell (WTS) or accept (WTA) compensation and equivalent measures of value are about willingness to pay (WTP) to prevent or to ensure a change.

The analyst has two compensating and two equivalent measures to choose from. Compensating surplus should be used, if the consumer is constrained to purchasing the original goods, or compensating variation if the consumer is free to rearrange purchases. Similarly equivalent surplus should be used if adjustment in purchases is
not possible, and equivalent variation if purchases are not constrained to the original good.

Kerr (1986, 14) suggested that "choice between variation and surplus measures will be dictated by the nature of the goods involved." He gave the examples of a change in national defence, where consumers have no option in the amounts they consume, in this case surplus measures are appropriate. But in the case of an entrance fee to a forest park, users may decide on the number of trips they wish to take at the new fee, and so variation measures are appropriate.

3.4.2 A divergence between WTP and WTA?

Kerr (1986, 4–14) demonstrates the relationship between all four Hicksian measures of Consumer surplus. He showed that equivalent variation is less than consumer surplus which was less than compensating variation (i.e. equivalent variation < consumer surplus < compensating variation) for a potential cost and the opposite is true for a potential gain, and in any case willingness to pay is less than consumer surplus which is less than willingness to accept (i.e. WTP < CS < WTA).

Economic theory does suggest that the minimum amount of compensation required by a current user of a good may exceed his/her stated WTP to avoid the proposed change. Hence equivalent variation will underestimate consumer surplus and compensating variation will overestimate it. However, until recently it was thought that the variation between the two approaches was negligible. For example, Willig (1976) calculated strict bounds for estimating the magnitude of differences between competing measures of consumer surplus. Willig’s calculations showed that the difference in most cases would be less than 10%.

Rowe et al. (1980) observed the difference between WTP and WTS for the same public good over several studies. In this paper the equivalent and compensating measures of consumer surplus proved to be statistically different, but the authors explain this as being due to:

1. equivalent surplus being income limited while compensating surplus is not; and

2. liability rules and strategic behaviour possibly influencing the equivalent surplus and compensating surplus values differently.

They concluded that the results indicated estimates of surplus measures were within 10% of each other. Given the imprecision that characterises survey responses, empirical differences in the range of 10% have until recently been assumed to be unimportant.
In recent years researchers have reported substantial differences between WTS and WTP. Gregory (1986, 335) noted that

... the weight of the collected evidence suggest that economists are ill advised to dismiss the empirical results on the grounds that they apply only in special cases, contradict established theories, or derive from biased preference revelation procedures.

Knetsch (1990) concluded that the conventional assertion that values attached to gains, and that commensurate losses are equivalent, and the advice that 'practically speaking it does not appear to make much difference which definition is accepted' seemed now to be incorrect for a large class of environmental and other values. This was following initial research with Sinden in (1984) and again in (1987).

Coursey et al. (1987) also agreed with this, suggesting that psychological arguments such as hypothetical bias (see section 3.6.2) and cognitive dissonance may be of value in explaining the difference. Cognitive dissonance is a psychological term which describes the fact that the divergence between WTP and WTA may result from lack of market experience, for example, respondents may not be used to the idea of bidding for the type of good being valued in many Non-market valuation studies.

It is becoming increasingly obvious that the greater part of recent research is showing that consistent and large differences between WTP and WTS are being generated. What then is the correct measure to use?

3.4.3 Choice of the Correct Measure of Value

While not all researchers are in agreement about the existence or the size of the disparity between WTP and WTS, most if not all, agree that in practice it may not be possible to calculate the theoretically correct measure. In such a case, one or the other measures of value needs to be used. If this is the case

... the analyst should be aware of what type of value he is measuring and if this is the theoretically correct one, and be able to explain and qualify his results if there are implications of under- or over-assessment.

Kirkland (1988, 47)

Harris (1984) suggested that

... the correct approach should be obvious for the situation to be analysed, eg. quality improvement with associated WTP for benefit or
quality deterioration with associated cost and need for compensation (WTS). If the choice is not obvious then a separate calculation of both WTP and WTS should be made.

Harris (1984, 203)

There are also other factors to consider when deciding which measure of value to use for example,

Often the type of problem being dealt with and the available estimation technique will dictate which measures can be estimated. For example, the contingent valuation method produces Hicksian measures because it estimates maximum willingness to pay or minimum willingness to accept compensation, while the travel cost method estimates the demand curve and thereby the Marshallian consumer surplus.

Devine (1987, 78)

Section 4.4 explains which particular measure of value was chosen as suitable for this particular study.

3.5 Non-market Valuation Techniques

An increase in the use of economic appraisal techniques that require the costs and benefits to be quantified, for example Cost Benefit Analysis, has lead to the need for more quantitative or objective forms of analysis to measure the consequences of alternative polices and projects.

In the past, procedures have been developed with a considerable degree of success to assess the value of a variety of resource development issues, including flood protection, irrigation, and power services. In many cases a market has not existed and values have been imputed for value determination using nonmarket valuation techniques.

Knetisch and Davis (1966)

This is not a panacea for resolving all problems of resource development, however, or even all conflict among potential users, but it does provide a basis for comparing alternatives.

Clawson (1966)

3.6 Estimation Techniques

This section will briefly introduce each major non market benefit assessment technique, all methods mentioned are explained in full in either Sinden and Worrell
Benefit assessment techniques when used on natural resources such as the Holford Valley Track attempt to determine consumer preferences. In doing this, such techniques can be split into two groups. The first group relies on revealed preferences. They have a common feature in that the prices of substitute or complementary goods are used to value unpriced environmental goods. The other group examines expressed or announced preference. This group has the common feature of relying on survey-based data. They employ surveys to determine peoples’ preferences, and thereby place values on environmental/public goods (Bentkover et al., 1986).

Techniques that rely on expressed or announced preferences, estimate value directly by determining maximum willingness to pay or minimum willingness to sell. While techniques that rely on revealed preferences estimate value indirectly by determining demand curves and hence consumer surplus (Kerr, 1986).

The two most commonly used benefit assessment techniques which use revealed preferences are the Travel Cost method (T.C.M.) and the Hedonic Price method. The T.C.M. uses the fact that while some activities are not valued directly it is necessary to pay for some other good or service to engage in them. The T.C.M. uses the cost of travel as a proxy for the WTP of a consumer. By observing the change in activity participation following a change in transport costs, it is possible to make inferences about value. The Hedonic Price method works on the basis that commodities have bundles of characteristics and that demand is determined by these attributes. When a person selects a commodity, he/she is making a choice about the amount of each attribute wanted. By isolating and varying the particular attribute of interest, it is possible to observe a person’s marginal W.T.P. for a change in the amount/level of that attribute.

There are a variety of techniques that explore expressed or announced preferences, the most widely used method being the Contingent Valuation Method. This method employs a questionnaire to directly ask people about the values they would place on non-market commodities. In this way it is possible, through aggregating the data gained, to calculate mean WTP and/or WTS. This method will be explained further in the next section.

There are other methods of using survey-type data to estimate values, such as trade off games, the costless choice method, the Delphi method and indifference curve mapping, all of which are explain in Sinden and Worrell (1979) or Kerr and Sharp (1987). A major problem with these methods is that they require extensive interviewing, and are therefore costly both in terms of time and monetary resources. Furthermore these interviews can often be difficult to conduct, and as they require an introduction to concepts many find difficult to understand, they may also take a
considerable time to complete, and therefore the interviewee may become unwilling to continue.

As was mentioned in section 3.3, the choice of estimation technique can dictate the choice of which measure of value is used. For example if the travel cost method or hedonic methods are chosen then value will be estimated by deriving a demand curve and hence consumer surplus, whereas if the contingent valuation method is chosen, value will be estimated using the maximum WTP or minimum WTS measures of value.

3.6.1 Choice of an Estimation Technique

Each estimation technique is subject to certain general assumptions that govern the choice of technique that can be used. Factors such as complexity and cost of data collection can also influence the choice of an estimation technique. In addition to this there are inherent characteristics of the proposed application that need to be considered.

Kerr (1986) explained that "... when choosing a method for a particular valuation exercise attention should be given to;

1. values to be quantified
2. information availability and suitability
3. expense."

These criteria were followed when deciding on the appropriate estimation technique for this exercise.

The values to be quantified in this exercise are use values of the Hollyford Valley Track, most methods could be used to assess use values, however this study is also interested in potential user values. The T.C.M could not be used to quantify such values, because the T.C.M only measures use value.

Also, because this study aims to look at the effect on the use value of the Hollyford Valley Track of a proposed change, and because the T.C.M and Hedonic price method both use revealed preferences to estimate the value placed on a non-market good, the data required to implement methods of this type are not available. Furthermore in the case of the Hedonic Price Method there is no other good or attribute with which to link the use of the Hollyford Valley Track.

Techniques such as trade-off games, the Delphi method, indifference curve mapping and the costless choice method, would not be suitable for the purposes
of this study because of the following reasons. The complexity and length of interviews would mean difficulties in obtaining a sufficient number of willing subjects. Also this would become an expensive and impractical exercise, because of the distance that would need to be travelled and the time that would be involved in interviewing the subjects. Furthermore most of the methods mentioned are relatively new or have not previously been widely applied, any results gained might therefore be regarded with more suspicion than the more widely used methods.

The contingent valuation method is capable of assessing and quantifying the values required for this study. The information required can be collected and collated relatively easily and in a form suitable for the necessary data analysis. Finally, the contingent valuation method can be applied in a manner that is inexpensive in comparison to other methods.

How the contingent valuation method does this will now be explained in detail, and particular attention will be given to: the methods initial development; the qualities required for a good contingent valuation study; and the strengths and weaknesses of the method.

3.7 The Contingent Valuation Method

3.7.1 Initial Development

The contingent valuation approach to non-market valuation arose from the work of Knetsch and Davis (1966), who suggested that through a properly constructed interview it would be possible to elicit from recreationalists information concerning the maximum price they would pay in order to avoid being deprived of a particular area for whatever use they may make of it.

Randall et al. (1974) produced what was to become the cornerstone of studies which use a hypothetical or contingent market. This study used a bidding game technique to reveal the loss of benefit or aesthetic environmental damage associated with the Four Corners power plant and Navajo mine, in New Mexico, U.S.A.

The respondents were shown three sets of photographs depicting three levels of environmental damage around the power plant. The interviewers pointed out the features of the photographs to each respondent. The bidding game technique was then used to elicit willingness to pay for the abatement of damages. The results of the study indicated the existence of substantial benefit from abatement of this environmental damage.

Randall et al. concluded that the technique was successful in meeting its objective (valuing the abatement of environmental damage), adding that the technique
"... seemed amenable to use as a research tool for valuation of a wide variety of public goods" (Randall et al. 1974, 148).

Since then the contingent valuation method has been applied to a wide range of areas in a large number of different ways. Some of the different ways in which the method has been applied are outlined below (they are included as examples in section 3.7.3, the qualities of a good contingent valuation study).

3.7.2 The Technique

Rend et al. (1983) is quoted in Cummings et al. (1986) as describing the contingent valuation method as:

Contingent valuation devices involve asking individuals, in survey or experimental settings, to reveal their personal valuation of increments (or decrements) in unpriced goods by using contingent markets. These markets define the good or amenity of interest, the status and level of provision and the offered increment or decrement therein, the institutional structure under which the good is to be provided, the method of payment, and (implicitly or explicitly) the decision rule which determines whether to implement the offered program. Contingent markets are highly structured to confront respondents with a well-defined situation and to elicit a circumstantial choice contingent upon the occurrence of the posited situation. Contingent markets elicit contingent choices.

3.7.3 The Qualities of a Good Contingent Valuation Study

As Rend et al. explained the Contingent Valuation method uses simulated (hypothetical) markets similar to actual markets, if they exist, to identify value.

Walsh (1986, 203) suggests that the reliability of the value estimated depends, in part upon:

- the base in which the nature of the hypothetical market is described;
- the change in the recreation activities or resources to be valued;
- the time period for which the valuation applies;
- the method of hypothetical payment; and
- the type of value question asked.
The reasoning behind this is explained below:

The hypothetical market should be described clearly to ensure that respondents know their rights, and the rights of others in the market. These rules should be realistic and credible, and encourage market behavior with which the consumer is familiar.

The qualities of the resource being evaluated must be described realistically and precisely, to ensure that adequate information is available to the respondent.

Thus good studies involve carefully presented descriptions of the resources or changes in environmental quality that are to be valued. Verbal descriptions and visual aids such as photographs, charts and maps are often used.

Bishop and Heberlein (1987, 101)

The time period for which the valuation applies should also be made clear, whether it be the right to use a resource for one year, for one day, or for one trip. This information should be spelled out to the respondent, so that it is clear what is being valued over what time period.

Respondents should usually be asked their WTP for an increase (or increment) in a recreation opportunity or resource. This is because "...it offers respondents the chance to value something they desire, and thus it is unlikely to provoke an offended reaction." (Walsh 1986, 204)

Brookshire et al. (1980) explain "...it seems formats which directly observe WTP are most effective." They then go on to say ...

The results from our hypothesis tests suggest that, in contexts where compensation is not customarily paid to those who experience decrements in natural and environmental amenities, iterative bidding formats for direct observation of WTA do not appear to collect reliable data.

Brookshire et al. (1980, 488)

A realistic and neutral mechanism for payment must be part of the contingent valuation questions. Contingent valuation researchers have reasoned that the more realistic the situation, including the mechanism for payment, the easier it will be for people to accurately respond. The aim of contingent valuation questions is that people will respond in ways that reflect the values which they place on the resource. If the payment mechanisms (or payment vehicle) are not neutral then, question answers can reflect an emotional reaction against the payment vehicle. For example, while using a tax as a payment vehicle is realistic, people may use
the contingent valuation question to express dissatisfaction with tax rates. There is therefore potential for conflict between realism and neutrality, and in such case compromises are necessary, Bishop and Heberlein (1987).

Five different approaches to asking contingent valuation questions may be distinguished, and these are outlined by Bishop and Heberlein (1987, 102-104).

1. A Bidding Game, the most widely applied technique, involves eliciting the maximum amount which a respondent is willing to pay through a series of questions. The interviewer begins at a 'starting point', a specified amount. If the respondent replies affirmatively, then the amount is increased, until a maximum WTP point is reached. If the respondent is not WTP, then the starting point amount is lowered successively until an acceptable amount is reached.

The application necessitates either personal or telephone interviews, this has led to research orientated to less expensive mail questionnaires. There is also concern over starting point bias. In order to initiate the bidding process a starting point needs to be used; starting point bias occurs if the initial bid chosen by the interviewer affects the final bid of the respondent (see section 3.6.3).

2. In the open-ended question, respondents are left to devise their own maximum values. The technique lends itself to mail surveys, and does not influence the respondent by stating a starting point. This technique has not been used widely because researchers feel that the method does not provide a sufficient 'stimulus for information' to help people consider the values of environmental resources, especially since most people have not valued such resources before. Brookshire et al. (1986) found that open-ended questions consistently produced values lower than those produced using the bidding game technique.

3. The Payment Card, is designed both to avoid starting point bias and to provide information to help respondents. The resources being valued are described, the payment vehicle explained and then a payment card is produced which shows the amount spent on other public-provided goods (The card is tailored to each respondent's income category). After considering the card, the respondent is asked what he or she will pay for changes to the resource in question. In this type of application it seems likely that there is the possibility for bias similar to that of the starting point bias in the bidding game method. However this method has not been widely used, so little is known about such issues.
4. The dichotomous choice format as used by Bishop and Heberlein (1979), involves presenting different respondents different amounts at random, and the respondents are merely required to answer 'yes' or 'no' to a fixed amount. This approach has the advantage of being easily incorporated in mail surveys, but analysis of data is more involved than for other techniques. Loomis (1990) compared the comparative reliability of the dichotomous choice and open-ended contingent valuation methods, and showed that reliable estimates can be made using either type of contingent valuation method. However the dichotomous choice method has the advantage in terms of reduced freedom for the respondents, without any apparent loss in reliability.

5. Contingent ranking is a relatively new technique where respondents are not asked directly about environmental assets, but are asked to rank various combinations of environmental quality and monetary outlay, with values being inferred through statistical analysis of the rankings.

Researchers are not in agreement as to which technique is the better, and the choice of which technique is most suitable is largely left to individual judgement. The choice however is governed to a certain degree by the inherent nature of the resource to be valued, and financial and other constraints.

The theory and implementation of a contingent valuation is simple, although there is the possibility that bias can arise in survey results. These areas of bias are documented below using recent literature to provide empirical examples.

3.8 The Potential for Bias in Contingent Valuation Analysis

3.8.1 The Strategic Bias Question

It has been suggested that respondents to a contingent valuation survey may believe that by overstating WTS or under estimating WTP the result of the survey will support the outcome they desire. For example, respondents may give a lower estimate than they are actually willing to pay, if they believe the survey is going to assist in establishing a market price for the non-market good; or if respondents believe the survey will affect policy decisions, then they may overestimate their willingness to sell in an attempt to influence public policy (Cairns 1985, 64).

Brookshire et al. (1976) tested for strategic bias by inspection of the actual bid distribution. If the contingent valuation method bids included a large number of
zero bids and high bids, thus producing a "flat" distribution of bids, strategic be-
behaviour was assumed to be prevalent (i.e. the respondents were assumed to be un-
derestimating WTP and overestimating WTA). Results from their study indicated
that strategic behaviour was not prevalent.

Rowe et al. (1980) approached the problem by classifying the subjects as con-
servationers or developers. Each subject was questioned on his/her attitudes about
environmental issues. If there was a correlation between bids and attitudes, then
this was interpreted as indicative of strategic bias. The results yielded no significant
correlations.

Cummings et al. (1986) suggested that strategic behaviour should not be sig-
nificant in carefully designed contingent valuation instruments. This judgement is
based on three considerations:

1. the absence of strong evidence for free rider behaviour in experiments de-
signed specifically to test for such behaviour;

2. the fact that most contingent valuation instruments do not offer obvious op-
portunities or incentives for attempting to manipulate the outcome; and

3. visual inspection of bids does not suggest strongly biased responses.

Cummings et al. suggests that strategic bias will not be a significant problem
in purely hypothetical or contingent market settings. Therefore, one approach to
reducing the incentive to bias results in this manner is to emphasise the hypothetical
nature of the survey. However, this action will serve to strengthen any hypothetical
bias in the survey.

3.8.2 The Hypothetical Bias Question

People do not always behave as they say they would in hypothetical
circumstances. The problem arises because of a lack of incentive to
determine one's own preferences, a task which may be quite onerous,
if there is no apparent reward. This is summarised in the old saying
"ask a hypothetical question, get a hypothetical answer..."

(Kerr 1985, 12)

Bishop and Heberlein (1979, 927) suggested that the process of buying things
in an actual market

...is markedly different than spending an hour or two at the most with
a mail survey or personal interviewer attempting to discern how one
might behave in a market for a commodity for which one has never actually paid more than a nominal fee.

Thayer (1981) examined both theoretically and empirically the hypothetical nature of the survey techniques, the questionnaire information structure, and the bidding procedure starting point, to determine their effect on individual bid behaviour. Thayer found these three potential forms of bias to be insignificant, and in particular that the hypothetical nature of the bidding game did not induce biased bid behaviour.

However, the potential for hypothetical circumstances to bias results should not be dismissed, and for this reason it is important to design contingent valuation questions carefully, so that respondents are presented with a credible, simulated market, thereby enabling the individual to evaluate the alternatives and provide realistic estimates (Kirkland 1985, 28).

3.8.3 Questions Relating to Questionnaire Design

Past experience has shown that if care is not taken in the design and pre-testing stages of questionnaire design there exists the possibility that the final results may be affected by a poorly designed contingent valuation questionnaire. These potential biases are now examined using examples from recent studies.

Information Bias

A definition of Information Bias is given in Kerr (1986) in the following terms...

This is a problem of the amount of information provided to respondents about the implications of proposed changes can affect bids. The hypothetical nature of the method, and the inability of respondents to completely visualise all changes, or predict the actions of others.

Kerr (1986, 19)

Rowe et al. (1980) and Thayer (1981) conducted similar tests for information bias, but the results were in direct contrast (a description of the two experiments is included in the section on starting point bias). Rowe et al. found that information bias was significant in affecting the results of the study, while Thayer found information bias to be insignificant.

Thayer concluded from these results that if
...the non market commodity to be valued is familiar to respondents, the payment vehicle requires institutionalized behaviour, and the hypothetical situations are understandable and within the realm of reason, then biased results will not result. However, if the situations are too abstract and the individual is required to act in an unfamiliar manner, then the valuation exercise may be susceptible to various starting points, information structures etc.

(Thayer 1981, 42)

Cummings et al. (1986, 209) makes two observations when commenting on information bias and the contingent valuation method (C.V.M).

First, an integral part of pre-tests of questionnaires must be the effort to balance the subject’s need for information with his/her general capacity to absorb — process — the information. Secondly, one must avoid interpretative generalisations of C.V.M. results to environmental changes other than those specifically described in the C.V.M instrument.

To counter the problem of information bias the questionnaire format should be designed with these comments in mind. That is where possible any hypothetical market used as part of a contingent valuation study should be understandable and 'within the realm of reason' and if a questionnaire is to be used, it should be pre-tested so as to balance the subject’s need for information with their capacity to absorb. Also care should be taken to avoid interpretative generalisations.

Instrument or Payment Vehicle Bias

It is suggested that in some circumstances, respondent answers may in part, reflect dissatisfaction with the chosen payment vehicle (e.g. tax rates) instead of the values they place on resources.

Sandrey (1986) provided an empirical example of payment vehicle bias in a contingent valuation study. Sandrey used a toll gate system as a payment vehicle, and concluded that a toll is not an acceptable means of 'collecting consumers' surplus, and that these results "very clearly shows the bias resulting from the way the question is posed and the 'vehicle' used to 'collect' payment."

Sandrey (1986, 58)

However Kerr and Cullen (1987) in a later paper contested these conclusions, suggesting that the results were the result of errors in application of the travel costs technique and of the contingent valuation technique. Kerr and Cullen did agree...
that the potential for payment vehicle bias was a real one, but they concluded that provided an acceptable, realistic and neutral method of payment was selected the potential for instrument or payment vehicle bias could be avoided.

Starting Point Bias

Starting point bias occurs when the iterative bidding technique is used. The initial bid can influence respondents. Cummings et al. (1986) identify two possible sources of starting point bias. Firstly, the starting bid may suggest (incorrectly) to the individual the approximate range of "appropriate" bids or costs. Secondly, if the subject values time highly, boredom or irritation may set in with any lengthy iterative bidding process, the subject may be unwilling to go through a lengthy process in order to arrive at a maximum willingness to pay.

Rowe et al. (1980) used starting bids of $1.00, $5.00 and $10.00 in a contingent valuation study on respondents willingness to pay for improved visibility. These values were used as independent variables in the estimation of a bid equation. The co-efficients from the independent variables were significant and positive, indicating that the starting point for bids influenced mean bids. However Brookshire et al. (1980), in an empirical application involving the valuation of the provision of wildlife-related amenities and using starting bids of $25, $75 and $200, failed to find any significant relationship between starting point and final bids.

Thayer (1981), in an empirical study which assessed environmental impacts in the Jemez Mountain Area of New Mexico, tested for the relative significance of starting point bias, using 3 tests:

1. a comparison of means bids when a $1.00, and $10.00 starting point was used;
2. estimation of a linear bid equation;
3. generalized bid equation inclusive of social and economic variables.

Thayer found no evidence of starting point bias in any of the results from the three tests.

Boyle et al. (1985), used two willingness to pay studies to test for starting point bias. The first study used the contingent valuation method to measure the value boaters and canoeists place on maintaining scenic beauty along a section of the Wisconsin River. The second study used contingent valuation and a simulated market to measure the value that hunters place on a special deer hunt at the Sandhill Wildlife Demonstration Area in Wisconsin. They found that starting point bias existed in the three contingent valuation applications of the bidding game which
they tested, but was not a problem in the simulated market. They concluded that it is possible to influence a respondent’s final bid over a substantial range, by the choice of the initial bid.

There is evidence, therefore, that starting point bias will be a problem when using the iterative bidding process. Cummings et al. (1986) explained how concern at this problem has led some researchers to consider alternative mechanisms for eliciting initial bids. For example, the payment card method, and the dichotomous choice method mentioned in section 2.5.4.

Non-Response Bias

The source of this bias lies in the fact that systematic differences can exist between respondents and non-respondents. Edwards and Anderson (1987) concluded that the potential biases associated with non-response present a serious challenge to the refinement of the contingent valuation method. The ideal situation would be to eliminate non-response bias through follow ups, but this is not always possible because of the limitations in time and in monetary resources.

Protest Bidding Bias

This is created by people who bid zero, to express dissatisfaction with the payment vehicle etc. In such cases it is necessary to discover the motives behind such bias and remove any such bids from the survey results.

Interviewer Bias

With any interviewer/respondent situation there is the possibility that the interviewer can influence the answers of the respondent. It is necessary to reduce such bias by the training of interviewers or by eliminating the possibility of bias through employing a postal survey. There are of course a number of potential biases associated with the use of a mail survey to employ the contingent valuation method; these have been outlined in the previous section.

3.9 Strengths

Considerable effort has been devoted to discussing the possibility of bias in contingent valuation studies. It has been shown that with pre-testing and careful design most if not all of these biases can be removed or significantly reduced. The reason why so much effort has been spent on improving the contingent valuation method
is because of the valuable contribution which the method can make to the problem of valuing non-market resources.

Perhaps the greatest strength of the contingent valuation method is the inherent flexibility in its application. All other methods of valuing publicly-provided goods and services require some rather direct link to actual market transactions. The travel cost method for example, uses actual expenditures for transportation and other trip related items to infer value, whereas no such link to market transactions is required for contingent valuation. In many situations, contingent valuation is the most convenient and easily applied valuation method, for example, in instances involving existence values, contingent valuation is the only known method for estimating monetary values (Bishop and Heberlein 1987).

As was identified previously, by Knetsch and Davis (1966), the appropriate value to measure when making decisions relative to resource allocation is the increase in marginal benefits. The only means presently available for assessing marginal changes is the contingent valuation method. Furthermore, the contingent valuation method provides the only flexible technique for estimating the value placed on environmental resources by both users and non users.

For these reasons hypothetical markets such as those employed in the contingent valuation method can and have been applied in a wide variety of situations, which would have proved difficult for inferential methods employed by the travel cost and hedonic methods.

3.10 Contingent Valuation Studies in New Zealand

The flexibility of the contingent valuation method can be demonstrated by considering the diverse range of areas where the technique has been applied in New Zealand. These include:

Harris (1984), who undertook a contingent valuation of water pollution control in the Waikato basin with the purpose of obtaining a valuation from the public for the improved water quality on recreational aesthetics and conservation values. The results from this study revealed that the general public were willing to pay towards water quality improvements in the Waikato Basin. Harris concluded that the contingent valuation method was a successful means of non-market valuation for New Zealand situations, suggesting that there were other possible applications relevant to the New Zealand scene where the method could play a part. These included the controversy over the drainage of wetlands, the provisions or retention of recreation sites, native forests and fisheries etc.

Kerr (1985) used the contingent valuation method to assess the aesthetic and use
values associated with the proposed Kawarau Gorge hydro-electric developments. Kerr found that very few households perceived improved use values or aesthetic values for the Kawarau Gorge on completion of the schemes, and about 70% of the households would be willing to pay something to avoid these schemes being built.

Cairns (1985) in a study that valued recreational crayfish diving at the Kaikoura Peninsula, found that the valuation of an amateur fishing resource was an expensive and time consuming process as well as being labour intensive. This was largely due to problems with estimating the size of user population. The results that were yielded were inexact in that confidence limits with a quantifiable degree of accuracy could not be placed.

Kirkland (1988) conducted a contingent valuation of the Whangamarino wetland. This study used the contingent valuation method to quantify use, option, existence and bequest values. These benefit/welfare flows from the wetland were also converted into a net value estimate of the wetland. Kirkland in summarising the results, highlighted a need for greater research into the choice between willingness to accept compensation and willingness to pay for benefit but concluded that the contingent valuation method was a useful tool for economic analysis.

Kerr (1989) used the contingent valuation method to look at the benefit of flood risk reduction. Kerr found that those respondents who perceived themselves to be at risk were willing to pay significantly more than those who felt safe. Overall people were willing to pay for flood management in proportion to the risks they perceive and the benefits they received from the protection from flooding.

Kerr (1990) again employed the contingent valuation method to evaluate the benefits of research into the biological control of Clematis Vitalba. Kerr found that New Zealanders perceived the threat to our native bush from Clematis Vitalba as a serious one and were prepared to pay for a chance of controlling the weed. In conclusion, Kerr commented that studies of this kind were new and will be further refined in the future, but they do provide a useful economic framework in which to assess the wider community’s valuation of research projects.
Methodology

4.1 Introduction

This study aims to use the contingent valuation method to estimate the benefits to be gained and lost by users and potential users of the Hollyford Valley Track if the Haast-Hollyford Tourist Road proceeds, and to determine which alternative would be of the most benefit to these users, remembering from the review of literature that use value is the value of present and expected use of a resource, and that an individual can gain use value only by travelling to the site in question, and utilising the resource directly.

What is being assessed therefore is the change in value of present and expected use of the Hollyford Valley Track if the Haast-Hollyford Tourist Road were to go ahead. This will be undertaken using the following methods.

4.2 The Survey Population

The base population for this research are those people who obtain use value from the Hollyford Valley Track. This base population can be divided into two groups:

1. actual users, those people who have actually travelled to the site in question; and

2. potential users, members of the public who either have travelled to the site in the past or may wish to travel to the site in future.
Personal interviews would be the ideal method for collecting the necessary data for this research. However, because the potential user sample population is potentially very large and very dispersed geographically, it was decided that for the purposes of this research personal interviews were impractical. Instead a questionnaire format was decided upon.

Actual users proved relatively straightforward to identify and survey. This required travelling to the Hollyford Valley Track and distributing questionnaires.

Strictly speaking all New Zealanders and overseas visitors are potential users of the Hollyford Valley Track. However this large survey population is in practice of much smaller magnitude, as the number of people who know about the Hollyford Valley Track (and therefore would be interested in travelling to the site) is likely to be much smaller. As a result, it was decided to use the population of the Southland, Otago, and Westland regions as being representative of potential users. They are the population perhaps most likely to know of the Hollyford Valley Track, if only because of their spatial proximity.

4.3 Sample Selection

In the 1986 census the combined population of the Otago, Southland and Westland regions was 307,989. This population in addition to the number of actual users was selected as the base population for the research (D.O.C sources estimates this to be approximately 2,000 per 12 months).

Snedecor and Cochrane (1964) suggest that for sampling purposes populations greater than 5,000 can be regarded as being infinite. The sample size required for an infinite population is 400, a sample of this size would allow inferential statements to be made about the user and potential user on the basis of the sample survey results.

In total 1,000 questionnaire surveys were distributed, 370 questionnaires to actual users and 630 questionnaires to potential users (the general public of Otago, Southland, and Westland); from these 1000 questionnaires it was hoped to obtain 400 valid responses. This would require an overall response rate of 40%.

Actual users of the Hollyford Valley Track consist of two groups, private or 'freedom' walkers, and guided or 'commercial' walkers. Of the 370 questionnaires distributed, 100 were allocated to the guided walkers. These were placed in the two commercial lodges on the track, Pyke Lodge and Martins Bay Lodge. The remaining 260 questionnaires were deposited equally in the Hidden Falls, Lake Alabaster, McKerrow Island, Hokuri, Demon Trail and Martins Bay Huts, and in addition 10 questionnaires were left at the Fiordland Visitors Centre in Te Anau.
All questionnaires included a covering letter and a free-post envelope with which to return the completed questionnaire.

In addition 630 potential user questionnaires were distributed by mail to individuals in the Otago, Southland and Westland regions. The use of a mail survey requires a method of respondent selection, and so names were randomly selected from electoral rolls. The nine electorates were Awarua, Invercargill, Wallace, Clutha, Otago, Dunedin North, Dunedin West, St Kilda, and West Coast. This reduced the potential user population to approximately 210,425 (at the 1st of September 1989).

The 630 names were randomly selected from these lists. This method was used because by selecting the same number of respondents from each Roll, the sample would be geographically balanced. This is because each electorate represents approximately equal numbers of voters. While this method is totally random it does create some potential problems because:

1. people might change address between the time of the publication of the Electoral Rolls and the time of the survey;
2. it discounted those who were registered on the Maori Electorate;
3. it restricted questionnaires to being sent only to those voters eligible at the time electoral rolls closed; and
4. no guarantee could be given on a balance between either sexes or age groups.

Anderson (1988)

It was therefore decided to test for the existence of such biases in the questionnaire analysis using the chi square test for independence. An explanation of this test is given in section 4.5.3.

4.4 The Questionnaire Design

In total the survey was comprised of three different questionnaires, one each for private, commercial and potential users. This was done in order to suit the different circumstances of the individual respondents. The private and commercial user questionnaires are made up of six sections while the potential user questionnaire consists of seven sections. Some of the sections are identical and will be described together while those sections which are relevant to one questionnaire only will be outlined separately. Examples of each of the three questionnaires are included in Appendix A.
4.4.1 The Private User Questionnaire

This questionnaire was designed for actual users of the Hollyford Valley Track who were in private groups or tramping alone. They carried their own food and equipment and used the facilities provided for the general public by the Department of Conservation.

Section I

Questions 1–2, enquired about current activities on the track, what they were using the area for (i.e., hunting, fishing, tramping etc) Questions 3–4 asked about previous visits to the track while Question 5 asked about the activities which the respondent took part in on those trips. These were general questions designed to elicit some basic information about the activities currently occuring on the Hollyford Valley Track.

Section II

This section sought information about the trip the respondent is currently undertaking. The respondent was asked about the number of days the trip will take, the route that has been chosen and which huts are to be used.

Section III

This section contains questions about how the respondent travelled to and from the area, and what purchases had been made in order to complete the trip. These questions are designed to highlight to the respondent what the trip has cost, and lead the respondent into the next series of questions, namely the contingent valuation questions.

The first contingent valuation question establishes the fact that the respondent has spent money to come on the trip. The reasoning behind this was that while most respondents would not have thought about paying money to use a resource such as the Hollyford Valley Track, they would be used to the idea of spending money on such trips, i.e. the respondent was asked to focus on 'willingness to spend' rather than 'willingness to pay'.

The theoretically correct measure of value to use would be willingness to pay for those who would have an improvement in use value and willingness to accept compensation for those who would suffer a loss in use value. However following closely the decision of Kerr (1985) it was decided to use the willingness to pay measure of value because of the 'increased incentive to bias results and the
decreased realism that result when a willingness to accept format is used.' This has also been found in previous studies, for example Brookshire *et al.* (1980), (see chapter 3 section 3.5.3).

The payment vehicle that was chosen was 'transport cost', and the use of this form of payment vehicle was designed to lessen the possibility for protest bids and hypothetical bias (see Chapter 3, section 3.6.3).

A dichotomous choice format was decided on, with the respondent being asked if they were prepared to spend a certain amount extra on travel costs for the trip. This was a one off question and was designed in this way to keep the length and complexity of the questionnaire to a minimum. This form of questioning had the additional advantage of being easily incorporated into the mail survey for potential users. The amount specified for additional expenditure on travel costs varied between $20.00 and $300.00. This amount was chosen after consulting the results from the pre-test which indicated that there would be very few people willing to spend more than $300.00 on additional travel costs to the Hollyford Valley Track. A recent non-market valuation study in New Zealand, Blackford (1989) was also consulted, this indicated that there was an extremely low probability of willingness to pay for flood risk reduction greater than $200.00.

If the respondents answered negatively to the dichotomous choice question they were asked to state their reasons, this was to enable protest votes to be identified and removed from later analysis.

**Section IV**

Section IV introduces the Haast - Hollyford Tourist Road proposal. The route is described (with the aid of two maps). The respondent is told of the effects the road would have on the track and surrounding area. Questions 13-17 then asked the respondent about their opinions on the proposal and the effect such a road would have on their use of the Hollyford Valley Track. These questions are a lead up to the second contingent valuation question, the idea is to get the respondent thinking about how the road would affect them personally.

The second contingent valuation question is identical in format to the first, it is designed to elicit information about the respondents willingness to spend on travel cost to the Hollyford Valley Track assuming the road link had been built. Again the amount varied between $20.00 and $300.00.
Section V

Section V consists of two questions concerned with the respondents views on the importance of natural or wilderness areas.

Section VI

Section VI consists of questions about the socio-economic characteristics of the respondent. Included are questions on sex, age, employment, nationality, place of residence, and income. Finally there is a space for the respondents to comment on the proposed road.

4.4.2 The Commercial User Questionnaire

This questionnaire is designed for Guided Users of the Hollyford Valley Track. Guided users pay money for a choice of nine different package trips. They carry only a day pack, their food and clothing is transported for them. Included in this package deal are jet boat rides and the opportunity to go fishing. They are accompanied by a guide while on the track.

Section I

Section I is very similar to the private user questionnaire. This section includes questions on the use of the area on this trip as well as on previous trips, and the number of previous trips made.

Section II

Section II enquires about which of the nine possible package trips the commercial user has chosen.

Section III – VI

(See Section III – VI of private user questionnaire)

4.4.3 The Potential User questionnaire

Potential users for the purposes of this study were chosen at random, as described, from the Otago, Southland and Westland electorates. They are people who may have in the past, or could in the future, use the Hollyford Valley Track.
Section I

Section I is designed to discover whether the respondent has visited an area which they consider to be a natural/wilderness area. The section also enquires about the respondents knowledge of the Hollyford Valley Track.

Section II

Section II is for those respondents who have visited a place they consider to be a natural/wilderness area. Questions 4–5 are designed to find out how often and for what purpose the respondent uses such areas. While question six finds out whether the respondent has been to the Hollyford Valley track. Question 7–8 discovers how many trips have been made to the track and the activities that have been undertaken while on the track.

Section III

Section III is for those respondents who have not visited a place they consider to be a natural/wilderness area. This section asks for the reason why the respondent has not visited such areas and then about the likelihood of future visits to Natural/Wilderness areas.

Section IV

Section IV is very similar to section III in the private user questionnaire. However, because the questionnaire was designed for potential users the wording of some questions had to be changed.

The respondents were asked to consider how much this trip would cost them in terms of: travel to the area; food; accommodation; equipment and other miscellaneous expenses. They were then asked whether they would be willing to spend a given amount (this amount varied from $20 to $300), on a trip to the Hollyford Valley Track.

This form of questioning has been designed in the same way as the previous two questionnaires, the focus is on willingness to spend and the use of travel costs is designed to avoid payment vehicle bias. The decision to use a dichotomous choice format was made because it is simple to follow and can easily be incorporated into a mail survey.

The respondent is then introduced to the idea of the proposed road link. Respondents are given information identical to that given to the private and commercial users. Questions 13–15 enquire about the respondents opinions about the road,
namely whether they are in favour of it, and whether it would increase or decrease the likelihood of the respondent visiting the area.

The respondent is then asked to assume the road link has gone ahead and to consider the effect the road will have on their use of the Hollyford Valley track. The contingent valuation question is then asked using exactly the same format as previously.

Section V
(See Questions 15, 16, 17, and 18 in the private user questionnaire)

Section VI
(See Section V of the private user questionnaire)

Section VII
(See Section VI of the private user questionnaire)

4.4.4 Pre-testing the Questionnaires

The users survey was pre-tested in January of 1990 on the Hollyford Valley Track. As the actual users questionnaire is essentially very similar to the potential users questionnaire the two were pre-tested at the same time. As a result of the pre-test it was decided that there need be no major changes to the questionnaire, although there was a need for the rephrasing of some questions and the removal of others to avoid the duplication of answers.

4.5 Survey Administration

The Actual User surveys were conducted in two separate trips to the Hollyford Valley Track, one in early February and another in March. The response rates from the trips are presented below.

The mail survey was administered shortly after Easter, 1990. The response rate to the mail survey, along with a table, presenting the overall response rates are also shown below.

Of the 370 questionnaires distributed to actual users of the Hollyford Valley Track the overall response rate was 37 % or 140 valid responses; this was made up of two groups. The response rate for the guided or commercial users was very low
TABLE 4.1: Actual User Response Rate.

<table>
<thead>
<tr>
<th>Sent</th>
<th>Response Rate %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td></td>
</tr>
<tr>
<td>DoC Huts</td>
<td>260</td>
</tr>
<tr>
<td>Te Anau</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>270</td>
</tr>
<tr>
<td>Commercial</td>
<td>100</td>
</tr>
<tr>
<td>Total for Private and Commercial Users</td>
<td>370</td>
</tr>
</tbody>
</table>

TABLE 4.2: Potential User Response Rate.

<table>
<thead>
<tr>
<th>Sent</th>
<th>Response Rate %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Users</td>
<td>630</td>
</tr>
</tbody>
</table>

at 24 % or 24 usable questionnaires out of the 100 distributed to the Lower Pyke and Martins Bay Lodge’s. The response rate for private or freedom walkers was substantially higher at 43 % or 116 valid questionnaires from the 270 distributed to the huts on the track (See table 4.1).

Of the 630 questionnaires distributed in the mail survey to potential users the response rate was 30 % or 190 valid responses (see table 4.2). In addition to this 81 or 13 % were returned ‘gone’ or ‘no forwarding address’. This high number can be attributed to the length of time between the date electoral rolls were compiled and the date of the mail survey. The electoral role was compiled on the 1st September 1989 while the mail survey was sent out in mid April 1990. The overall response rates have been compiled in table 4.3.

The overall response rate was low at 33 %, with such a low response rate there is the possibility for non response bias. Two tests for non response bias were therefore included in the final analysis. These tests are explained fully in section 4.7 of this chapter.

51
TABLE 4.3: Total Response Rate to Surveys

<table>
<thead>
<tr>
<th>Sent</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>330</td>
</tr>
<tr>
<td></td>
<td>33%</td>
</tr>
</tbody>
</table>

4.6 Questionnaire Analysis

The three questionnaires were analysed in two groups. Group one consisted of the Private and Commercial user questionnaire, while group two consisted of the Potential user questionnaire. Analysis of the two groups was undertaken in three parts:

1. general analysis of the questionnaire;
2. the contingent valuation analysis, including the analysis of all questions concerning respondents opinions towards the Haast Hollyford road; and
3. a test for non response bias.

4.6.1 General Analysis of the Questionnaire

Analysis of the remainder of the questionnaire involved the use of frequency analysis for most questions, and where appropriate, cross-tabulation was applied.

This analysis was undertaken using the SPSSx Statistics Package. The Frequency program was used to produce histograms, percentiles and the mean and median of responses to questions. The Crosstab program was used to determine the influence of one variable upon another, and the significance of the results was tested using the chi-square distribution. Finally the multi-response program was used for questions that have more than one response to an individual question, for example questions that involve giving explanations to answers.

4.6.2 The Contingent Valuation Analysis

The Contingent Valuation data for the user and potential user groups were analysed in exactly the same manner, the description that follows is therefore the same for both groups.
Following the lead of other non-market valuation studies which have used the contingent valuation method and incorporated the dichotomous choice format, the Logit model was employed to analyse the results. Kerr (1985) and (1990), Blackford (1989) are New Zealand examples of studies which have all used the Logit model for analysis.

The Logit model is used to infer an individual's maximum willingness to pay from the pattern of acceptances to and rejections of specified sums generated by respondents to a survey. The form of the equation estimated using the maximum likelihood technique is:

\[
\log \left( \frac{\text{ProbYes}}{1 - \text{ProbYes}} \right) = \alpha + \beta X_i
\]

Where \(X_i\) is the dollar amount.

The expected willingness to pay of the individuals surveyed is equal to the area under the resulting Logit curve which may be calculated using integration between defined limits (See Figure 4.1) adapted from Loomis (1985).

The statistical significance of the estimated coefficients from the Logit model
when the maximum likelihood technique is used are tested using the chi-squared distribution.

The inference works by comparing the probabilities of saying yes or no at alternative dollar amounts. Given the user or potential user said yes to a cost of $20, what is the probability they would pay $40? In this respect the dichotomous choice model is similar to the inference of maximum willingness to pay from actual travel cost paid in the travel cost method. That is, the analyst records a 'yes would visit' at the travel cost actually paid. The analyst then infers how much more the visitor would still pay before he or she would not visit the site based on behaviour of other visitors to the site who faced higher costs. (Loomis 1988)

The first step in the analysis of the contingent valuation data is to fit the Logit model to the data, this was undertaken using the SPSSx statistical package. The second step in the analysis is to calculate the benefit accruing to the average respondent, this is known as the mean willingness to pay/spend, and is found geometrically by calculating:

$$ WTP = \sum_{i=1}^{15} [P_i - P_{i-1} \times \frac{(X_i + $X_{i-1})}{2}] $$  \hspace{1cm} (4.1)

Where $X_i =$ a particular dollar amount

$P_i =$ probability of paying $X_i$ dollars. Loomis (1988).

The third step of the analysis is to place 95% confidence intervals around the mean consumer surplus. Since there are only two possible outcomes to the dichotomous choice questions namely ‘Yes’ or ‘No’, the data are binomially distributed. The formula for 95% confidence intervals for a binomial distribution is:

$$ P \pm 1.96 \sqrt{\frac{Pq}{n}} $$  \hspace{1cm} (4.2)

where $P =$ probability of a yes

$q = (1 - P)$

$n =$ number of subjects

The contingent valuation data were contained in four separate data sets, these were:

1. actual user willingness to pay to use the Hollyford Valley Track as it is now;
2. actual user willingness to pay to use the Hollyford Valley Track after the proposed road link;
3. potential users willingness to pay to use the Hollyford Valley Track as it is now; and
4. potential users willingness to pay to use the Hollyford Valley Track after the proposed road link.

The three steps to the analysis of data, were applied to each of the four sets of data. The results from this analysis meant a comparison could be made between user and potential user mean willingness to pay to travel to the Hollyford Valley Track as it is now, and user and potential user mean willingness to pay after the proposed road link had gone ahead.

4.7 Non Response Bias

Since the response rate for the user and potential user surveys was low at 33% it was decided to include, as part of the overall analysis, the following tests for non response bias.

There are two possibilities for non response bias to occur. The first potential non response bias arises from the fact that systematic differences can exist between respondents and non respondents, or between the sample population and the base population they are supposed to be representative of. The second potential bias arises from those respondents who did not answer the contingent valuation question. It could be inferred that this non response indicates that these people have little or no interest in spending anything on travel cost or additional travel cost to visit the Hollyford Valley Track. This non response should therefore be recorded as a negative answer to the contingent valuation question. A check for the two possible non response biases was undertaken using the following methods.

4.7.1 Non Response Bias One

A test for the first type of non response bias was undertaken using the chi square test of independence. Statistical independence means that the pattern of socio economic variables should be the same for each of the user groups as with the general population group. In other words statistical independence means that the frequencies of the socio economic variables in each user group are a proportion of the general population. Using a null hypothesis of no dependence in the user groups, chi square may be used in a 'goodness of fit test'. The formula used to calculate the chi square probability value and a table of chi square critical points is included in Appendix B. The socio demographic variables included in each of the questionnaires were tested using the 5% level of significance. That is, if the chi square probability value is higher than the critical point at the 5% level we cannot reject
the null hypothesis of no dependence in the user groups. The results from this test are included in chapter 6, section 6.3.1.

4.7.2 Non Response Bias Two

To test for the second type of non response bias, the respondents who failed to answer one or both of the contingent valuation questions were recoded as a negative answer. The first two steps of the contingent valuation analysis were repeated on the new data set. That is, the Logit model was refitted on the new data set (which included non respondents), the benefits accruing to the average respondent (or mean willingness to spend) were then re-calculated. The results of the tests for non response bias are included in Chapter 6, section 6.3.2.
5

General Analysis

5.1 Actual and Potential Users of the Hollyford Valley Track

As was described in section 4.5 of the methodology, actual and potential users were analysed separately. Sections 5.1 to 5.3 of the following chapter examines actual users of the Hollyford Valley Track while Sections 5.4 to 5.5 examine potential users. Section 5.6 analyses answers to a series of questions asked of both actual and potential users, about opinions on natural/wilderness areas. Actual user responses are examined to discover what type of user visits the Hollyford Valley Track, which Route or Section of the track they use and how they travel to and from the area. Potential users are examined to discover what proportions of respondents are users of natural/wilderness areas, whether respondents know about and/or have visited the Hollyford Valley Track.

5.2 Use of the Hollyford Valley Track

Of the 140 respondents who used the Hollyford Valley Track, 96% included tramping in the activities which they were using the track for. 16% included fishing and 3% included hunting. 13% of the respondents listed other activities, these included such activities as photography, canoeing, pleasure, botany, viewing Jamestown and climbing (see Table 5.1).

For 80% of the users this was their first visit to the track, while approximately 19% had visited the track before. Of this 19%, 11% had visited twice, 2% three times, 2% four times, 1% five times, while 3% had visited the track six or more times (see Table 5.2).
TABLE 5.1: Activities for which the Respondents Used the Hollyford Valley Track.

<table>
<thead>
<tr>
<th>Activity</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tramping</td>
<td>96</td>
</tr>
<tr>
<td>Fishing</td>
<td>16</td>
</tr>
<tr>
<td>Hunting</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
</tr>
</tbody>
</table>

N=140

TABLE 5.2: Total number of visits to the Hollyford Valley Track.

<table>
<thead>
<tr>
<th>Visits</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>80</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>6+</td>
<td>4</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
</tr>
</tbody>
</table>

N=140

Of the respondents to use the track more than once, 11% had done so on one other occasion in the last 12 months, 3% on two other occasions in the last 12 months, while 2% used the track on three or previous occasions during that time.

On previous visits to the Hollyford Valley Track 97% of respondents had used

TABLE 5.3: Number of Previous Visits in the Last Twelve Months

<table>
<thead>
<tr>
<th>Visits</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>84</td>
</tr>
<tr>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3 and above</td>
<td>2</td>
</tr>
</tbody>
</table>

N=140

58
TABLE 5.4: Previous Activities on the Hollyford Valley Track.

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tramping</td>
<td>97</td>
</tr>
<tr>
<td>Fishing</td>
<td>16</td>
</tr>
<tr>
<td>Hunting</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
</tr>
</tbody>
</table>

N=29

The track for tramping, 16% had used the track for fishing while 3% had used the track for the purpose of hunting. Thirteen percent also listed other activities such as climbing, photography, sightseeing, viewing the seal colony, relaxing and pleasure (see Table 5.4).

The majority of the users who answered the questionnaire were first time visitors to the Hollyford Valley Track, the respondents were predominantly trampers, but a significant number had also come to fish.

5.3 Description of the Track Route and use of Facilities by Private Users

The mean length of stay on the track for the 140 respondents was 5.8 days, with 61% of the users staying between three and six days on the track. Table 5.5 gives a full breakdown of the length of time users chose to spend on the track.

Five percent of users were on the track for 14 or more days; this group was largely comprised of track guides who are often on the track for extended periods of time, guiding different commercial parties between the Lower Pyke Lodge and the Martins Bay Lodges, and thus cannot be considered typical users.

While on the track private users have the choice of using the huts and facilities provided by the Department of Conservation for a fee or carrying their own gear and camping for free. Of the 116 private users, 61% used the huts all of the time, 21% used the huts part of the time while 4% chose not to use the huts at all (see Table 5.6).

On the Hollyford Valley Track the Department of Conservation provides eight huts, (the position of which are shown on the map which is included at the end of section 5.3). Of the eight huts the most frequently used were the Hidden Falls and Lake Alabaster huts followed by the Demon Trail and the Martins Bay huts.
### TABLE 5.5: Time Spent on the Track

<table>
<thead>
<tr>
<th>No of Days</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 or less</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>24</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>6</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>7</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>14 or more</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

N=140

### TABLE 5.6: Use of Huts

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All the time</td>
<td>61</td>
</tr>
<tr>
<td>Part of the time</td>
<td>21</td>
</tr>
<tr>
<td>Not at all</td>
<td>4</td>
</tr>
<tr>
<td>No response</td>
<td>14</td>
</tr>
</tbody>
</table>

N=116
Table 5.7 shows what percentage of the private users stayed in each of the huts.

At each of the eight huts the Department of Conservation also provides other facilities such as toilets, water etc. Of the 116 private users, 62 % said they would use such facilities all of the time, 36 % said they would use the facilities some of the time, while 2 % would not use any of the facilities at all (see Table 5.8).

The map on the following page, shows the track and the various track routes which are possible. There are jet boats stationed at the Lower Pyke and Martins Bay Lodges which are available to both private and commercial users. There are also two airstrips, one at Martins Bay and the other at the Hollyford Road End. This allows several possible track routes, including users being flown out from Martins Bay to Milford Sound or back to the Road End, or users flying into Martins Bay and walking out. Often private and commercial users use the jet boat to remove the need to travel on the same section of track twice, while others use the jet boat to avoid some of the steeper or harder sections of the track such as the Demon Trail section of the route.
Table 5.9 lists the more popular track routes chosen by private users, the most popular of which proved to be Hollyford Road End to Martins Bay and return trip with 29% of respondents choosing this route. The next most popular was the Road End to Lake Mekerrow option and the full loop track with 10% of users, while 9% of users chose to complete the Hollyford Road End to Lake Alabaster and return trip.

In total 15% of users chose to fly into Martins Bay (8%), or out of Martins Bay (7%), while 35% of all private users included a jet boat ride in their trip. From these figures it is clear that the major destination point of over half of visitors to the Hollyford Valley Track is Martins Bay with 60% of visitors including it in their proposed route.

The beginning of the Hollyford Track is situated 20 kilometres down the Lower Hollyford Valley. The only means of travelling to the start of the track is via the Lower Hollyford Valley or by flying to either Martins Bay or the Hollyford Road End airstrip. Table 5.10 shows how users travelled to and from the start of the track.

A large proportion of users answered 'other' to this question, this includes hitch hiking and those users who arrive at the road end via Deadman’s Track from the

<table>
<thead>
<tr>
<th>Route Description</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>The full loop track</td>
<td>10</td>
</tr>
<tr>
<td>The road end to Martins Bay &amp; return</td>
<td>29</td>
</tr>
<tr>
<td>The road end to Lake Mekerrow &amp; return</td>
<td>10</td>
</tr>
<tr>
<td>The road end to Lake Alabaster &amp; return</td>
<td>9</td>
</tr>
<tr>
<td>The road end to Pyke River &amp; return</td>
<td>7</td>
</tr>
<tr>
<td>Fly to Martins Bay &amp; walk out</td>
<td>8</td>
</tr>
<tr>
<td>The road end to Martins Bay &amp; fly out</td>
<td>7</td>
</tr>
<tr>
<td>The road end to Demon Trail/Hokuri &amp; return</td>
<td>2</td>
</tr>
<tr>
<td>Fly to Big Bay &amp; walk out</td>
<td>1</td>
</tr>
<tr>
<td>Haast to the road end</td>
<td>1</td>
</tr>
<tr>
<td>Cascade to road end</td>
<td>5</td>
</tr>
<tr>
<td>Canoe the Hollyford to Milford Sound</td>
<td>2</td>
</tr>
<tr>
<td>The road end to Hidden Falls &amp; return</td>
<td>1</td>
</tr>
<tr>
<td>Big Bay Upper Pyke, Martins Bay</td>
<td>1</td>
</tr>
<tr>
<td>No response</td>
<td>9</td>
</tr>
</tbody>
</table>

N=116
FIGURE 5.1: The Hollyford Valley Track
TABLE 5.10: How Respondents Travelled to and from the Hollyford Valley Track.

<table>
<thead>
<tr>
<th></th>
<th>% To</th>
<th>% From</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Car</td>
<td>45</td>
<td>40</td>
</tr>
<tr>
<td>Hire Car</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Bus</td>
<td>29</td>
<td>22</td>
</tr>
<tr>
<td>Air</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Other</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

Routeburn Track. Deadman’s Track drops down the side of the Lower Hollyford Valley at a point approximately six kilometres from the Road End and one kilometre past Gunns Camp (see Map 2, in Chapter 2). Such users have either walked a combined Routeburn/Hollyford Track or have found the huts on the Routeburn too full and have decided to walk the Hollyford Valley Track instead.

5.4 The Effect of the Road on the Proposed Trip Routes of Private Users

By assuming the Haast - Hollyford Tourist Road had been completed before the actual users had visited the Hollyford Valley Track it is possible to observe the effects of the proposal on current users. The list of proposed trip routes in Table 5.11 indicates that all users would be affected to some degree. For 17% of the users (or those choosing to walk routes 4, 5 and 13) the entire track route would now form part of the new road link. For the 10% of the users who wished to walk the full loop track this also could not be completed. The 10% of the users wishing to complete the Lake Mckerrow and return trip, or the users who walked to the Demon Trail and returned, this trip would now be a 6 hour return trip instead of a 3-4 day tramp. For the 46% of users who travel to Martins Bay and return, this trip would now be reduced in length by one third of its original distance (58 km), transforming a 4-5 day tramp into 2-3 days.

Such changes would obviously have a large effect on the people who visit the area. There would be positive and negative effects depending on user motivations and attitudes. How use value would be affected by such changes and their opinions and reactions to the changes are examined in chapter 6.
### TABLE 5.11: Reasons for Not Visiting a Natural/Wilderness Area

<table>
<thead>
<tr>
<th>Reason</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No spare time</td>
<td>7</td>
</tr>
<tr>
<td>No opportunity/transport</td>
<td>12</td>
</tr>
<tr>
<td>Young children</td>
<td>12</td>
</tr>
<tr>
<td>No reason</td>
<td>62</td>
</tr>
<tr>
<td>No Response</td>
<td>7</td>
</tr>
</tbody>
</table>

N=37

### TABLE 5.12: Use of Natural/Wilderness Areas

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>On a regular basis (throughout the year)</td>
<td>19</td>
</tr>
<tr>
<td>Often (at least once a year)</td>
<td>27</td>
</tr>
<tr>
<td>Occasionally (once in the last 2–3 years)</td>
<td>26</td>
</tr>
<tr>
<td>Seldom (once in the last 5 years)</td>
<td>15</td>
</tr>
<tr>
<td>Had not visited or did not respond</td>
<td>14</td>
</tr>
</tbody>
</table>

N=190

5.5 Potential Use of the Hollyford Valley

Of the 190 respondents to the potential user survey 86% had visited a place that they considered to be a natural or wilderness area, while 11% had not. Table 5.11 highlights the reasons why these respondents had not visited such areas.

The respondents who had used natural/wilderness areas were then asked to indicate how often they had done so in the past. Table 5.12 summarizes the results.

In total 86% of the respondents had visited a place they considered to be a natural or wilderness area, Table 5.13 summarizes what this 86% used such areas for (other includes such activities as; rest and picnics, climbing, skiing, orienteering).

Forty-nine potential users to visit a place they considered to be a natural/wilderness area in the past, used the area for tramping. This was considerably lower than the percentage of actual users to use the Hollyford Track for the purpose of tramping, which was 96%. The number of potential users to visit natural/wilderness areas for the purpose of hunting of fishing was higher than for actual users of the Hollyford Valley Track, 16% used such areas for hunting and 27% for fishing.
TABLE 5.13: Use of Natural/Wilderness Areas by Potential Users

<table>
<thead>
<tr>
<th>Activity</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunting</td>
<td>16</td>
</tr>
<tr>
<td>Fishing</td>
<td>27</td>
</tr>
<tr>
<td>Tramping</td>
<td>49</td>
</tr>
<tr>
<td>Short Walks</td>
<td>7</td>
</tr>
<tr>
<td>Sight Seeing</td>
<td>3</td>
</tr>
<tr>
<td>Photography</td>
<td>4</td>
</tr>
<tr>
<td>Jet boating/Sailing/Canoeing</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>22</td>
</tr>
</tbody>
</table>

N=170

compared with 3% and 16% for users of the Hollyford Valley Track.

There were also more people wishing to use natural/wilderness areas for activities other than that mentioned above. In total 41% of potential users said that they had used natural/wilderness area in the past for activities other than tramping, fishing or hunting, this compared with 13% of the actual users of the Hollyford Valley Track. Most notable was the number of potential users who had used natural/wilderness areas for short walks (7%) and sight seeing (3%). This could be of importance in the analysis to follow because this type of user may show more interest in using the Hollyford Valley Track if it were a shorter walk or a scenic drive rather than the 4-5 day tramp it is today. This particular issue is addressed in Section 6.2.1 of chapter 6.

5.6 Potential Users and the Hollyford Valley Track

Of the 190 respondents 93% had heard of the Hollyford Valley Track, Table 5.14 indicates how much the potential users knew.

Twenty percent or 37 of the 190 respondents had visited the Hollyford Valley Track previously and of the potential users to actually visit the Hollyford Valley Track, 89% travelled to the Hollyford Valley to tramp, 30% travelled to the track to fish, and 8% came to hunt. Twenty-seven percent said they visited the area for another purpose. These included; work, photography, sight-seeing and those interested in viewing the start of the track only (see Table 5.15).

This result is similar to the results from the actual user survey (see Table 5.1)
TABLE 5.14: Potential Users's Knowledge of The Hollyford Valley Track

<table>
<thead>
<tr>
<th>%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A great deal</td>
<td>4</td>
</tr>
<tr>
<td>Quite a bit</td>
<td>10</td>
</tr>
<tr>
<td>A reasonable amount</td>
<td>3</td>
</tr>
<tr>
<td>Very little</td>
<td>44</td>
</tr>
<tr>
<td>Nothing</td>
<td>10</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
</tr>
</tbody>
</table>

N=190

TABLE 5.15: Potential User's Use of the Hollyford Valley

<table>
<thead>
<tr>
<th>%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tramping</td>
<td>89</td>
</tr>
<tr>
<td>Fishing</td>
<td>30</td>
</tr>
<tr>
<td>Hunting</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>27</td>
</tr>
</tbody>
</table>

N=37

90% of potential users who had actually visited the Hollyford Valley Track did so to tramp and this result compared with 96% for the actual user survey. Thirty percent of the potential users who had used the Hollyford Valley Track did so to fish, while 8% visited the track for the purpose of hunting. This compares with the actual users' survey where 16% went to fish and 3% went to hunt. The number of potential users who visited the Hollyford Valley Track for other activities was also higher than that for actual users, 27% for potential users compared with 13% for actual users. Overall the percentage of potential users who had visited the Hollyford Valley Track with the intention of fishing, hunting or other was higher than for actual users, while the percentage to come with the intention of tramping was similar.
5.7 Actual and Potential User Opinions About Natural or Wilderness Areas

Both the Actual and Potential user groups were asked questions about their opinions on natural or wilderness areas. The questions and user group responses are recorded in tables 5.16 and 5.17.

It was originally intended to test for differences in respondents opinions empirically using the chi square test for independence, however the proportions of respondents to answer other than 'it is very important to me' or 'important to me' was too low for such a test to be possible. It was therefore decided to compare the results from the actual user and potential user surveys by means of the tables that follow.

As is shown, actual and potential users both consider the availability of natural or wilderness areas to be important, however potential users appear not to consider the availability of such resources now or in the future quite as highly as actual users do.
### TABLE 5.16: “Is the knowledge that areas you consider to be Natural or Wilderness areas exist in New Zealand...”

<table>
<thead>
<tr>
<th></th>
<th>Actual Users %</th>
<th>Potential Users %</th>
</tr>
</thead>
<tbody>
<tr>
<td>very important to you.</td>
<td>83</td>
<td>52</td>
</tr>
<tr>
<td>important to you.</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>doesn’t bother you one way or the other.</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>not important to you.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

N=140 N=190

### TABLE 5.17: “How important is it to you that Natural or Wilderness areas remain available for future generations?”

<table>
<thead>
<tr>
<th></th>
<th>Actual Users %</th>
<th>Potential Users %</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is very important to me</td>
<td>88</td>
<td>68</td>
</tr>
<tr>
<td>It is important to me</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>doesn’t bother me one way or the other.</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>not important to me at all</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

N=140 N=190
6

Analysis of the Hollyford Valley Track with Reference to the Haast Hollyford Tourist Road

6.1 Contingent Valuation of the Hollyford Valley Track

The first step in the contingent valuation analysis was to fit the logit model to the data. This model attempts to explain the proportion of respondents who would be willing to pay a nominated dollar amount. The logit model involves using the natural log of the odds ratio. In total there were four separate sets of data and the logit model was used for each. The four sets of data were:

1. Actual User willingness to pay for additional transport costs to visit the Hollyford Valley Track as it is now.

2. Actual User willingness to pay for additional transport costs to visit the Hollyford Valley Track assuming the Haast - Hollyford Tourist Road was in place.

3. Potential User willingness to pay to visit the Hollyford Valley Track as it is now.

4. Potential User willingness to pay to visit the Hollyford Valley Track assuming the Haast - Hollyford Tourist Road was in place.
6.1.1 The Fitted Model

The fitted model with Pearson goodness of fit chi square and degrees of freedom, for each of the four sets of data are presented below.

1. \( L_i = 9.639 - 2.120 \text{WTPasis}_i \)

\[ \chi^2 = 7.60, \text{D.F.} = 13 \]

Where:

\[ L_i = \left( \frac{\log(P_i/(1-P_i))}{2} + 5 \right) \]

\( P_i \) = the probability that any randomly chosen individual will be willing to spend \( \text{WTP}_i \).

NB. 5 added to the intercept and logit divided by 2 This is because in the logit procedure in SPSSx the simple logit is scaled by 2 to produce values similar to those derived from the probit transformation. Also the transformation adds 5 to make the new values uniformly positive (or nearly so).

2. \( L_i = 7.792 - 1.542 \text{WTPafter}_i \)

\[ \chi^2 = 17.792, \text{D.F.} = 13 \]

3. \( L_i = 7.998 - 1.244 \text{WTPasis}_i \)

\[ \chi^2 = 15.871, \text{D.F.} = 13 \]

4. \( L_i = 7.227 - 0.825 \text{WTPafter}_i \)

\[ \chi^2 = 5.446, \text{D.F.} = 13 \]

The chi square goodness of fit test is a test to check whether the residuals are distributed homogeneously about the regression line. A large (or significant) chi square value indicates that a different response model or predictor transformation is required.

In each of the data sets the chi square value is NOT significant at the 5% or even 1% level of significance (see Appendix B for a table of chi square critical values). The test indicates that the response model used is an appropriate one.

6.1.2 Average Willingness to Spend on a Visit

The next step in the analysis involved calculating the dollar amount that the average respondent (from each data set) was willing to spend on either additional travel costs to the Hollyford Valley Track or a trip to the Hollyford Valley Track, depending on the user type.
TABLE 6.1: Mean Willingness to Spend Before and After the Haast - Hollyford Tourist Road

<table>
<thead>
<tr>
<th></th>
<th>Mean Willingness to spend</th>
<th>95 % C.I.’s on the Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Users:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASIS</td>
<td>$110.41</td>
<td>$96.28 - $136.7</td>
</tr>
<tr>
<td>AFTER</td>
<td>$74.55</td>
<td>$41.84 - $105.61</td>
</tr>
<tr>
<td>Potential Users:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASIS</td>
<td>$72.74</td>
<td>$65.32 - $99.19</td>
</tr>
<tr>
<td>AFTER</td>
<td>$53.91</td>
<td>$53.55 - $80.18</td>
</tr>
</tbody>
</table>

This was done arithmetically using the formula explained in the methodology, section 4.6.2. This formula was used on the table of observed and expected frequencies generated from the logit model (these are included in the Appendix C). The results from these calculations are included in Table 6.1.

The average amount that actual users were willing to spend on additional travel costs to the Hollyford Valley Track as it is now was $110.41 with a 95% confidence interval of $96.28 - $136.75. If the Haast - Hollyford Tourist Road were in place the average amount that actual users would be willing to spend on additional travel costs to the Hollyford Valley Track would be $74.55 with a 95% confidence interval of $41.84 - $105.61.

Potential users were willing to spend on average $72.74 on a trip to the Hollyford Valley Track as it is now with a 95% confidence interval of $65.32 - $99.19. If the Haast - Hollyford Tourist Road was in place potential users would be willing to spend on average $53.91 with a 95% confidence interval of $53.55 - $80.18. These results show that both actual users and potential users will suffer a loss in ‘use value’ of the Hollyford Valley Track as a result of the Haast - Hollyford Tourist Road. The loss in use value is substantially greater for the actual user group.

As has been explained in the Review of Literature and Methodology sections there are many different types of value which a person can gain from a resource. What has been quantified here is ‘use value’ or the value of present and expected use of a resource (in this case the Hollyford Valley use value can only be gained by travelling to the site in question. These results tell us nothing about the magnitudes of other types of value such as Existence value, Bequest value, Option value, etc.
6.1.3 Change in Aggregate Use Value

It is possible to calculate the change in aggregate actual user use value as a result of the proposed changes to the Hollyford Valley Track, by multiplying the total number of actual users by the average change in use value for the actual user group.

In the 1989/90 season there were approximately 2000 people who used the Hollyford Valley Track (this number was provided by D.o.C and is an estimate of the total number of independent and guided users to use the track per year). The average change in use value as a result of the proposed changes is -$35.86. The estimated aggregate loss in use value for actual users of the Hollyford Valley Track as a result of the Haast Hollyford Tourist Road is therefore approximately $71,720 per year (assuming the number of users stays the same for each successive year).

The same type of figure cannot be calculated for potential users, this is because it is not known how many of the potential users who responded to the mail survey will actually visit the Hollyford Valley Track in the future. What can be stated however, is that each of the 224,973 potential users who do actually visit the Hollyford Valley Track, will on average suffer a loss in use value of $18.83 as a result of the Haast Hollyford Tourist Road.

It must be remembered that for actual users what has been quantified is the change in the amount actual users are willing to spend on additional travel costs to visit the Hollyford Valley Track, while for potential users what has been quantified is the total willingness to pay to visit the Hollyford Valley Track. It is possible to calculate actual users total willingness to spend on a visit to the Hollyford Valley Track by adding the additional amount actual users are willing to pay to the amount he/she has already spent. The average amount that the 140 commercial and private users had spent on visiting the Hollyford Valley Track was $257.00. The average total amount that actual users were willing to spend on a trip to the Hollyford Valley Track as it is now is therefore $367.41, while the average total amount that actual users were willing to spend on a trip to the Hollyford Valley Track if the Haast Hollyford tourist road was in place is $331.55.

By multiplying the number of users by $311.55 we can calculate the total use value to be gained from the Hollyford Valley Track by actual users in the 1989/90 season to be $734,820. If we assume that the Haast - Hollyford Tourist Road is in place the total use value to be gained from the Hollyford Valley Track by actual users would be $662,100.

Whichever value is chosen, either the average additional amount which users are willing to spend on travel costs or the average total willingness to spend, the change in use value remains the same. It is the change in use value that is important to a resource manager, because this is a measure of the loss if the Hollyford Valley
6.1.4 Factors Affecting Willingness to Spend

Included in the questionnaire were a number of questions socio demographic factors. These characteristics plus other factors which were considered likely to affect the amount respondents were willing to spend were included in the four original data sets. The logit model was fitted to these four enlarged data sets to test whether any of the factors were major determinants of willingness to spend. Table 6.2 gives the results from the logit model.

The test showed that in all cases the major determinant of willingness to spend was, as expected, the dollar amount asked. The negative sign indicates that the more the dollar amount asked the less is the respondent's willingness to spend. The other variables were less important and not as consistent in direction. It can be concluded that these variables were minor determinants of willingness to spend.

6.2 Actual Users’ and Potential Users’ Opinion and Attitude toward the Haast - Hollyford Tourist Road

6.2.1 The Actual User Group

Actual users were asked six questions relating to their opinion about the Haast - Hollyford Tourist Road. The results from these questions are presented below.

The first question actual users were asked was “would the proposed changes affect your use of the Hollyford Valley’s Track resources” (hunting, fishing, tramping etc). Sixty-one percent of respondents said that the changes would have an enormous effect, 28 % said the changes would have a large effect, 9 % said it would have a small effect while 3 % said that the changes would not have any effect at all (see Table 6.3).

The respondents were then asked how the changes would affect their use of the Hollyford Valley Track. Table 6.4 gives a full breakdown of how the proposed changes would affect users. As can be seen 24 % said that the effect would be so large that they would not come if the road was in place, 11 % said that the route they intended to take would now be a section of the road. 16 % mentioned that the changes would result in an increase in the number of users and this would be to their detriment. Eight percent of respondents suggested that the road would ruin the natural beauty of the area, while 18 % mentioned that the new road would ruin the isolation of the track.
<table>
<thead>
<tr>
<th>Actual User</th>
<th>Characteristic</th>
<th>Regression Coefficient</th>
<th>Std Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASIS:</td>
<td>WTPasis</td>
<td>-2.420</td>
<td>0.491</td>
</tr>
<tr>
<td></td>
<td>Income</td>
<td>0.837</td>
<td>0.418</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>1.406</td>
<td>0.775</td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td>-0.465</td>
<td>0.814</td>
</tr>
<tr>
<td></td>
<td>Job</td>
<td>0.262</td>
<td>0.415</td>
</tr>
<tr>
<td>AFTER:</td>
<td>WTPafter</td>
<td>-1.69</td>
<td>0.357</td>
</tr>
<tr>
<td></td>
<td>Income</td>
<td>-0.024</td>
<td>0.390</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.496</td>
<td>0.731</td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td>0.833</td>
<td>0.785</td>
</tr>
<tr>
<td></td>
<td>Job</td>
<td>0.101</td>
<td>0.386</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\chi^2 = 102.5$</td>
<td>(D.F. = 105)</td>
</tr>
<tr>
<td>Potential User</td>
<td>ASIS:</td>
<td>WTPasis</td>
<td>-1.229</td>
</tr>
<tr>
<td></td>
<td>Income</td>
<td>0.398</td>
<td>0.295</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>-0.063</td>
<td>0.529</td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td>-0.334</td>
<td>0.645</td>
</tr>
<tr>
<td></td>
<td>Job</td>
<td>-0.176</td>
<td>0.335</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\chi^2 = 164.2$</td>
<td>(D.F. = 138)</td>
</tr>
<tr>
<td></td>
<td>AFTER:</td>
<td>WTPafter</td>
<td>-0.906</td>
</tr>
<tr>
<td></td>
<td>Income</td>
<td>-0.047</td>
<td>0.231</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.315</td>
<td>0.498</td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td>0.793</td>
<td>0.619</td>
</tr>
<tr>
<td></td>
<td>Job</td>
<td>0.281</td>
<td>0.314</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\chi^2 = 147.4$</td>
<td>(D.F. = 138)</td>
</tr>
</tbody>
</table>

NB. WTPasis and WTPafter refer to the dollar amount respondents were asked to pay. This ranged from $20–$300.
The respondents were then asked “would the proposed changes affect the route you would choose on this trip, or on future trips?” Seventy-one of the respondents answered that the changes would affect the route they proposed to take on the current trip. While 75% of respondents said that the road would affect the route they would choose in the future (see table 6.5).

Each respondent was then asked to state how the proposed changes would affect the route they would choose, table 6.6 gives a summary of their responses. When asked if the proposed changes would be to their advantage or not, the respondents answered in the following way (see Table 6.7). When asked why they answered the way they did the respondents said the following (see Table 6.8). As can be seen 67% suggested that the changes would be to their disadvantage, 6% said this was because the changes would attract too many people; 29% said the changes would reduce the remoteness of the area and cause degradation to the wilderness; 6% suggested that the changes would shorten the track and that this would disadvantage them; other answers included destroying the tramping, forest and birdlife and the effect the road would have on the environment.

Of those that thought the changes would be to their advantage 2% did not give a reason, while 2% thought development in the area was good. Five percent of respondents thought the changes would be both an advantage and a disadvantage because it would enable them to do the full loop track but at the same time it would create problems of overcrowding.

The next question involved asking respondents whether they would personally be in favour of such changes? Table 6.9 gives a breakdown of how they answered this question, while 6.10 gives a full description of the reasons respondents answered the way they did. As can be seen 74% of users were definitely not in favour of the road. There were a variety of reasons given for this: 19% of respondents thought that the isolation of the Hollyford Valley Track was their main attraction to the area; 4% said there was more to be gained by leaving the area
TABLE 6.4: How would the proposed changes affect actual users (by %).

<table>
<thead>
<tr>
<th>Proposed Route Now Read</th>
<th>Would Not Come</th>
<th>Increase in Users Would Decrease Attractiveness</th>
<th>Ruin Natural Beauty</th>
<th>Ruin Isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enormous Effect</td>
<td>17</td>
<td>5</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Large Effect</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Small Effect</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Effect At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N = 140
Other = 21%
TABLE 6.5: Would the road affect the route you would choose?

<table>
<thead>
<tr>
<th></th>
<th>On this trip</th>
<th>On future trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>71</td>
<td>75</td>
</tr>
<tr>
<td>No</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>No response</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

TABLE 6.6: How would the road affect the route you would have chosen?

<table>
<thead>
<tr>
<th>%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Would shorten track</td>
<td>14</td>
</tr>
<tr>
<td>2. Would not come if the road was in place</td>
<td>16</td>
</tr>
<tr>
<td>3. Ruin the walk in from the original road end</td>
<td>7</td>
</tr>
<tr>
<td>4. Destroy the reason for tramping in the area, the solitude, forest and birdlife</td>
<td>10</td>
</tr>
<tr>
<td>5. Enable us to do the loop track</td>
<td>9</td>
</tr>
<tr>
<td>6. Would change the route</td>
<td>12</td>
</tr>
<tr>
<td>7. Open the track up to less fit or active people</td>
<td>2</td>
</tr>
<tr>
<td>8. Other</td>
<td>10</td>
</tr>
<tr>
<td>9. No response</td>
<td>19</td>
</tr>
</tbody>
</table>

N=140

TABLE 6.7: Would the changes be ...

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>To your advantage</td>
<td>10</td>
</tr>
<tr>
<td>To your disadvantage</td>
<td>67</td>
</tr>
<tr>
<td>Neither</td>
<td>10</td>
</tr>
<tr>
<td>Both</td>
<td>10</td>
</tr>
<tr>
<td>No response</td>
<td>4</td>
</tr>
</tbody>
</table>

N=140

78
<table>
<thead>
<tr>
<th>Both</th>
<th>To Your Advantage</th>
<th>To Your Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>No Response</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Too Many People</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Reduce Remoteness/ Degradation of the Wilderness</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Effect on the Environment</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Shorten Track</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Destroy Tramping, Forest and Birdlife</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>More Development Is Good</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Would Mean Overcrowding but could do Full Loop Track</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Would Not Come Again</td>
<td></td>
</tr>
</tbody>
</table>

**Table 6.8:** Why would the proposed change be to the actual users advantage or disadvantage (by %)
TABLE 6.9: Would you personally be in favour of such changes?

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely in favour</td>
<td>6</td>
</tr>
<tr>
<td>Probably in favour</td>
<td>8</td>
</tr>
<tr>
<td>Not sure</td>
<td>2</td>
</tr>
<tr>
<td>Probably not in favour</td>
<td>7</td>
</tr>
<tr>
<td>Definitely not in favour</td>
<td>74</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
</tr>
</tbody>
</table>

N=140

the way it is; 10 % suggested that there were already too many roads in national parks; 5 % thought the changes would encourage too many people; 8 % were not in favour of the road because of the destruction it would cause to the wilderness while a further 7 % were not in favour of the road because of the effect it would have on the wildlife in the area. Five percent said they would not be in favour of the changes because of the effect it would have on the wildlife.

The respondents were asked if the changes would increase or decrease the likelihood of them visiting the Hollyford Valley Track in the future. Table 6.11 summarizes the results to this question, while Table 6.12 summarizes the reason why respondents answered this way. Nineteen Percent of respondents who said the changes would decrease the likelihood of them returning gave no reason why this was so, 15 % said the area would be less attractive with a road through it, 12 % said the changes would attract too many people. Seven percent said a shortened track would not be worth visiting, while 11 % said the area would lose much of its appeal.

Of those that said the changes would increase their likelihood of returning 2 % said the changes would mean it was now possible to walk the Lake Alabaster to Big Bay section of the Track, while 2 % said it would mean less time when travelling to the West Coast.

The last question to respondents asked whether they would be willing to spend more or less on a trip to the Hollyford Valley Track in its new form (see Table 6.13). This question was designed to see if the answers respondents gave to this question were similar to the responses to the contingent valuation question. As can be seen from the table 53 % said they would be willing to spend less in order to visit the Hollyford Valley Track in its new form. Table 6.14 describes how actual users answered the second Contingent Valuation question. This question asks respondents
<table>
<thead>
<tr>
<th></th>
<th>2</th>
<th>2</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other = 218</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 140</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I want the Area To Remain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leave for Future Generations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Reason for Road</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Track Possibilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More People More Tourism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect on Wildlife</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Destruction of Wilderness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourage Too Many People</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Already Too Many roads in National Parks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Way It Is</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More to Be Gained by Leaving the Area Isolated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolated Is the Main Attraction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Response</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 6.10: Why would actual users be in favour of the changes (df)?**
TABLE 6.11: Increase or decrease the likelihood of actual users returning.

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase</td>
<td>9</td>
</tr>
<tr>
<td>Decrease</td>
<td>71</td>
</tr>
<tr>
<td>Impossible to say</td>
<td>8</td>
</tr>
<tr>
<td>Would not alter the likelihood</td>
<td>11</td>
</tr>
</tbody>
</table>

N=140

if they were prepared to spend a certain amount on additional travel costs to the Hollyford Valley Track in its new form. In the first contingent valuation question respondents were asked if they were willing to spend the same amount on additional travel costs to the Hollyford Valley Track as it is now. A negative reply to the second contingent valuation question is therefore the same as answering less in the question in Table 6.13. The number of respondents who answered less in Table 6.13 is in proportion with those who answered negatively in Table 6.14. This indicates that user answers to the contingent valuation question are consistent with their answers to questions in this section.

6.2.2 Potential Users

Potential users could not be asked all the same questions as actual users, many of them (80%) had not been to the Hollyford Valley Track and so some questions were irrelevant. This meant that in total there were three questions that could be asked to both potential as well as actual users.

When asked if the proposed changes would increase or decrease the likelihood of them visiting the Hollyford Valley Track in the future the respondents answered in the following way (see Table 6.15). Table 6.16 gives a full breakdown of why respondents answered this way. Of the 54% of respondents who answered that the changes would increase the likelihood of them visiting the Hollyford Valley Track, 21% said that this was because the area would be more accessible and it would be less of a time constraint to visit the area, 9% said that the shorter tramps would be more appealing.

Of those that thought the changes would decrease the likelihood of them visiting the Hollyford Valley Track, 5% said that this was because the area would be less attractive with a road through it. Five percent said the shortened length of the track would not be worth visiting while 2% said the changes would mean overfishing
<table>
<thead>
<tr>
<th>Area Would Lose Much of Its Appeal</th>
<th>Changes Would Mean Overfishing or Overhunting</th>
<th>Shortened Track Not Worth Visiting</th>
<th>Bring Too Many People</th>
<th>Area Would Be Less Attractive</th>
<th>No Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>7</td>
<td>2</td>
<td>12</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>Other = 178</td>
<td>Take no difference</td>
<td>Impossible to say</td>
<td>Decrease</td>
<td>Increase</td>
<td></td>
</tr>
<tr>
<td>N = 140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 6.13: Willing to spend more or less on trip

<table>
<thead>
<tr>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>4</td>
</tr>
<tr>
<td>Less</td>
<td>53</td>
</tr>
<tr>
<td>About the same</td>
<td>26</td>
</tr>
<tr>
<td>Impossible to say</td>
<td>9</td>
</tr>
<tr>
<td>Non response</td>
<td>8</td>
</tr>
</tbody>
</table>

N=140

### TABLE 6.14: Willingness to spend on additional travel cost to the Hollyford Valley Track in its new form.

<table>
<thead>
<tr>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonresponse</td>
<td>9</td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
</tr>
<tr>
<td>No</td>
<td>61</td>
</tr>
</tbody>
</table>

N=140

### TABLE 6.15: Would the changes increase or decrease the likelihood of potential users visiting the Hollyford Valley Track in the future?

<table>
<thead>
<tr>
<th>Change</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase</td>
<td>54</td>
</tr>
<tr>
<td>Decrease</td>
<td>15</td>
</tr>
<tr>
<td>Make no difference</td>
<td>21</td>
</tr>
<tr>
<td>Impossible to say</td>
<td>10</td>
</tr>
</tbody>
</table>

N=190
<table>
<thead>
<tr>
<th>Would Go There Regardless</th>
<th>No Interest In Tramping</th>
<th>More Accessible / Less of a Time Constraint</th>
<th>Shorter Tramps More Appealing</th>
<th>Less of a Time Constraint</th>
<th>Provide a Scenic Drive / Access to the West Coast</th>
<th>Changes would Mean Overfishing or Overtramping</th>
<th>Shortened Track Not Worth Visiting</th>
<th>Area would be Less Attractive</th>
<th>No Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

**TABLE 6.16**: Why would the changes increase or decrease the likelihood of going. **Other = 1.9%**

N = 190
When asked if they thought the changes would be to their advantage or disadvantage, 47% said the changes would be to their advantage, 15% said the changes would be to their disadvantage, 23% said neither, while 12% said both (see Table 6.17). Table 6.18 lists the reasons why respondents chose to answer the way they did. As can be seen, of those who thought the changes would be to their advantage, 25% said that because they were ‘only interested in short walks’, 10% said that the changes would ‘create a beautiful scenic drive and give access to the West Coast’. Of those people who thought the changes would be to their disadvantage, 10% said they answered the way they did because the changes would ‘encourage too many people’.

The final question asked for the respondents’ personal views on the proposed Haast - Hollyford Tourist Road. It asks the respondent whether they would be in favour of the proposed changes. Table 6.19 shows how respondents answered this question.

As can be seen, half of the respondents (51%) were either definitely or probably in favour of the changes, while one third (35%) were either definitely not in favour or probably not in favour of the changes. The table that follows give a full summary of the reasons respondents gave their answers, see Table 6.20. Of those probably not or definitely not in favour of the changes, 13% answered this way because they thought the changes would ruin the isolation of the Hollyford Valley Track and this was the main attraction of the area. Nine percent were not in favour of the changes because they thought the ‘environment should not be tampered with.’ Of the respondents who were definitely or probably in favour of the changes, 26% answered this way because ‘it would give everybody a chance to see the Hollyford Valley’, 15% did not give a reason for the way they answered the question, while
<table>
<thead>
<tr>
<th>Advantage (%)</th>
<th>N = 140</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Response</td>
<td>9</td>
</tr>
<tr>
<td>Encourage Too Many People</td>
<td>10</td>
</tr>
<tr>
<td>Create a Scenic Drive / Access to the West Coast</td>
<td>11</td>
</tr>
<tr>
<td>Only Interested in Short Walks</td>
<td>2</td>
</tr>
<tr>
<td>No Interest in Tramping</td>
<td>2</td>
</tr>
<tr>
<td>Better Access but May Affect the Environment</td>
<td>3</td>
</tr>
<tr>
<td>More Likely to Walk the Track</td>
<td>52</td>
</tr>
<tr>
<td>No Intention of Walking the Track</td>
<td>52</td>
</tr>
</tbody>
</table>

**TABLE 6.18: Why would the changes be to potential users advantage or disadvantage?**
TABLE 6.19: Are potential users in favour of the proposed changes?

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely in favour</td>
<td>30</td>
</tr>
<tr>
<td>Probably in favour</td>
<td>21</td>
</tr>
<tr>
<td>Not sure</td>
<td>12</td>
</tr>
<tr>
<td>Probably not in favour</td>
<td>14</td>
</tr>
<tr>
<td>Definitely not in favour</td>
<td>21</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
</tr>
</tbody>
</table>

N=190

3% were in favour because they thought it would help the tourist trade.

6.3 Test for Non Response Bias

6.3.1 Test for Non Response Bias Type One

The first test for Non response bias was undertaken using the chi square test for independence. What is being tested is whether the general population (or the population the samples were taken from) and the two sample populations are similar. That is whether they are made up of similar socio demographic characteristics. The formula used and a table of chi square critical values are included in Appendix B. Both the actual user and potential user sample populations were tested against the general population of the Otago, Southland and Westland regions (using data from the 1986 census). In the case of the potential user sample population an additional variable is tested, 'place of residence' this was a test to see if the proportion of respondents from each region was similar to that of the general population.

A null hypothesis of no similarity was used, that is the pattern of socio demographic characteristics is not same for the general population as it is for the two sample population groups. The results from this test are presented in Table 6.21, and these results show that in the case of sex, work status and place of residence we can reject the null hypothesis at the 5% level. The age variable can be rejected at the 10% level. The test fails to establish any similarity between the proportion in each income group in the sample population and the proportions in each income group in the general population (see Appendix B for chi square table).

Table 6.22 presents the results from the chi square test on the actual user survey. In this case we can reject the Null hypothesis at the 5% level for sex and work
**TABLE 6.20:** Why potential users would or would not be in favour of the changes (by %)?

<table>
<thead>
<tr>
<th></th>
<th>No Response</th>
<th>Isolation is the main Attraction</th>
<th>Give Everybody a Chance to see the Hollywood Valley</th>
<th>Help the Tourist Trade</th>
<th>Environment should not be tampered with</th>
<th>Never been too hard to decide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definitely in Favour</strong></td>
<td>7</td>
<td>15</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Probably in Favour</strong></td>
<td>7</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not Sure</strong></td>
<td>4</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Probably not in Favour</strong></td>
<td>4</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Definitely not in Favour</strong></td>
<td>9</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>N = 190</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other 31%</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
status, but fail to reject the Null hypothesis at the 5% (or even 10%) level for age and income.

This result is similar to that of previous studies which have looked at natural resource users and their socio demographic profiles. Murphy (1979) in a forest recreation study in Auckland, reported that forest users tend to be younger and have a higher income than non users. This kind of finding is also found in similar overseas studies. However the extremely high chi square value in both the actual and potential user groups suggests that a large dissimilarity exist between the income pattern of the two sample population groups and the income pattern of the general population.

The chi square test for independence shows that in three out of the four variables tested the actual and potential user groups can be said to be representative of the general population.

### 6.3.2 Test for Non Response Bias type Two

In both the actual and potential surveys a number of respondents did not answer either or both of the contingent valuation questions. In the analysis of data this was treated as a non response. It is possible however that by not answering the
question the respondents were in fact rejecting the dollar amount asked. As a test for this bias the logit model was refitted with the non response coded as a rejection of the dollar amount asked (where as previously they had been excluded from the analysis). Table 6.23 gives the results of this test.

As can be seen in all cases the mean willingness to pay (W.T.P) are very similar. The treatment of non responses therefore makes little difference to mean willingness to pay.

<table>
<thead>
<tr>
<th>Actual users:</th>
<th>Initial mean W.T.P</th>
<th>Mean W.T.P including non response's</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASIS</td>
<td>$110.39</td>
<td>$113.39</td>
</tr>
<tr>
<td>AFTER</td>
<td>$74.55</td>
<td>$71.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential users:</th>
<th>Initial mean W.T.P</th>
<th>Mean W.T.P including non response's</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASIS</td>
<td>$72.74</td>
<td>$63.44</td>
</tr>
<tr>
<td>AFTER</td>
<td>$53.91</td>
<td>$53.75</td>
</tr>
</tbody>
</table>

TABLE 6.23: Mean willingness to pay if non respondents are included as a rejection of the dollar amount asked.
7

Summary and Conclusion

This Chapter will first summarize the results from Chapters 5 and 6, highlighting points of interest and explaining how such results should be interpreted. Secondly, the issues that were introduced in the Review of Literature are re-introduced with the intention of explaining how this particular study dealt with potential biases. The relative strengths and weaknesses of the contingent valuation method with specific reference to this application are also discussed. Finally the implications for future research are introduced followed by some concluding comments.

7.1 The Results, Points of Interest and their Meaning.

The aims of the study were presented in Chapter 3, they were to:

'assess the benefits to be gained and lost by users and potential users of the Hollyford Valley Track, from the completion of the Haast-Hollyford Tourist Road.'

As was explained in the Methodology section 4.1, what is being assessed is the 'use value' of the Hollyford Valley Track. There are wider implications concerning the road proposal that need to be considered; however such implications are outside the scope of the contingent valuation method as it has been applied to this particular research problem. When the results from this study are being considered, it should be noted, that it is explicitly the 'use value' of the Hollyford Valley Track which is being quantified, not the overall value of the Hollyford Valley Track nor whether the Haast-Hollyford Tourist Road should go ahead. This study aims to establish whether users and potential users would gain or lose use value from the Hollyford Valley Track if the road link were to go ahead as proposed. The results which
were presented in full in Chapter 6 and which are summarised in the following section present this information in both objective and subjective form. It has proved possible to show who would suffer a loss in use value and who would gain use value as a result of the proposed changes. It has also proved possible to explain why this would happen.

7.1.1 The Results

The results, to a great degree, reflect the issues outlined in the introductory chapter, that is members of the public, depending on their circumstances and preferences, will lose or gain benefit from the Haast-Hollyford Tourist Road. The results which were quantified using the contingent valuation method provided useful information about the specific change in use value of the Hollyford Valley Track. They did not, however, provide any information about what type of user would gain use value and what type of user would lose use value. Included in each questionnaire was a series of subjective questions, the answers to which complement the contingent valuation results in that they do provide information of this kind.

This type of information could not have been provided solely through the application of the contingent valuation method, highlighting the need to include both forms of question in the survey. What follows therefore, is a summation of both the actual and potential user results, included in the results is information produced from both the contingent valuation analysis and the general analysis of each questionnaire.

Actual Users

At the end of each questionnaire respondents were asked to comment in general terms on the proposed changes to the Hollyford Valley Track. The comments listed by actual users are presented in Table 7.1. As can be seen 27% of the respondents stated that they hoped the road did not go ahead, 15% felt the degradation to the Hollyford Valley was not justified, while 12% suggested that the remoteness of the Hollyford Valley Track is its major attraction.

These feelings are also recurrent in Chapter 6, where 74% of actual users were not in favour of the proposed changes, with 19% of respondents stating that they held this view because they thought the isolation of the Hollyford Valley Track is the major attraction to the area and this will be ruined if the Haast Hollyford tourist road goes ahead.

This result is matched in the contingent valuation analysis where the individual actual user suffered a loss in use value as a result of the Haast-Hollyford Tourist
TABLE 7.1: Actual Users: general comments.

<table>
<thead>
<tr>
<th>Comment</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hope the road doesn’t go ahead</td>
<td>2</td>
</tr>
<tr>
<td>Degradation to the Hollyford Valley not justified</td>
<td>15</td>
</tr>
<tr>
<td>Remoteness is the major attraction</td>
<td>12</td>
</tr>
<tr>
<td>Should upgrade what already exists</td>
<td>9</td>
</tr>
<tr>
<td>Will cost too much to build and maintain</td>
<td>8</td>
</tr>
<tr>
<td>Attracted to the area because it is beautiful and untouched country</td>
<td>6</td>
</tr>
<tr>
<td>Appreciate the good and bad points</td>
<td>6</td>
</tr>
<tr>
<td>N.Z has enough scenic roads</td>
<td>5</td>
</tr>
<tr>
<td>People who visit the area prefer to walk</td>
<td>5</td>
</tr>
<tr>
<td>Leave for future generations</td>
<td>4</td>
</tr>
<tr>
<td>Road only for those who don’t wish get out of their car.</td>
<td>4</td>
</tr>
</tbody>
</table>

Road of $35.86 per trip. The specific dollar value is important, but what is of more importance is the fact that the loss in use value by actual users is significant and large. That is actual users would suffer a substantial loss of benefit, if the Haast-Hollyford Tourist Road were to go ahead.

Potential Users

The potential user results are not as straightforward to interpret, as Table 7.2 illustrates.

In their general comments about the proposed changes to the area 16% of the respondents felt that road shouldn’t go ahead, while 12% of respondents commented that either they they were in favour of the road or that the idea of a road was a good one.

In previous sections of the potential user questionnaire, (see table 6.19 and 6.20 in Chapter 6), the respondents were asked if they were in favour of the proposed changes. Fifty-one percent were either definitely in favour or probably in favour of the changes, while 35% were either definitely not in favour or probably not in favour of the road. The reasons given by the respondents for not being in favour of the changes were: 13% were not in favour because they thought the changes would ruin the isolation of the Hollyford Valley Track and this is the main attraction of the area; while 6% were not in favour because they thought the environment should not be tampered with. Of the respondents to be in favour of the road, 26% answered
this way because the road would improve the access to the area and 'the change would give everybody a chance to see the Hollyford Valley'.

Such results indicate that respondents' opinions are split as to whether they would gain or lose benefit from the road proposal. However when the results are quantified, using the contingent valuation method, the amount of increased use value potential users would gain from the Hollyford Valley Track if the Haast - Hollyford Tourist Road were to go ahead, was not as much as the amount of use value that potential users were going to lose. That is, there are some users who would have gained benefit and other users who would have lost benefit from the proposed changes, but in 'net terms' potential users would also suffer a loss of use value as a result of the Haast - Hollyford Tourist Road.

7.1.2 The Total Proportions For and Against the Haast Hollyford Tourist Road.

The actual and potential user groups were both asked 'would you personally be in favour of the Haast - Hollyford Tourist Road'. Table 7.3 presents a comparison between the total proportion who are for and against the road.

As can be seen, potential user opinions about the road are more divided than are actual user opinions. There is a total of 51 % of potential users who are in favour of the road while 35 % are against it, where as 14 % of actual users are in favour of the road while 81 % are against it.
TABLE 7.3: Total proportions for and against the road.

<table>
<thead>
<tr>
<th></th>
<th>Actual Users %</th>
<th>Potential Users %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely in favour</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Probably in favour</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>Not sure</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Probably not in favour</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Definitely not in favour</td>
<td>74</td>
<td>21</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Untouched country</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

7.1.3 The Overall Results

The overall results therefore suggest that both the actual users and potential users would suffer a loss in use value of the Hollyford Valley Track if the Haast - Hollyford Tourist Road were to go ahead. This loss in use value has been quantified using the contingent valuation method and has also been expressed in the attitudes and opinions of respondents to the proposed road.

7.2 Methodological Strengths and Weaknesses

A literature search and the review that followed in Chapter 3 section 3.6, indicated that there were a number of issues that required attention in order to remove the potential for bias. The final questionnaires required careful design and pre-testing. In particular, attention was paid to the design of the contingent valuation section of the questionnaire.

The contingent valuation instruments were designed in such a way to reduce the possibility for strategic behaviour. This was achieved using the dichotomous choice method for bidding and by using travel cost as the payment vehicle. The end result was a situation where it was not likely that respondents would influence the result of the survey by their overstating willingness to sell or underestimating their willingness to pay, thereby eliminating the possibility for strategic bias. A credible simulated market was also required to minimize the chance of hypothetical bias, while the use of the dichotomous choice method solved the problem of starting point bias. Finally tests were included in each of the questionnaires for payment vehicle bias and non response bias.
No indication of payment vehicle bias was detected in the final analysis, and the test for non response bias revealed that this did not affect the results from the contingent valuation analysis. However the overall response rate was very low for a study of this kind, and while the chi square tests for non response bias did not appear to affect results, a larger sample population would be required before any definite statements could be made about the accuracy of the findings. This low response rate is therefore a weakness of this particular study.

It was not possible to test for the effect of information bias, however the high number of questionnaires which were returned fully completed and answered in the correct manner indicated that respondents had sufficient information with which to complete the questionnaire. It was felt that if too much information was provided the final questionnaire would prove difficult for respondents to absorb. A thorough test for information was possible by examining the structural role of the survey instruments in the valuing process. This was not done for this particular study and in hindsight this is a weakness in the study methodology, checks should have been constructed within the pre-test to test for this type of bias. Most of the potential weaknesses that were highlighted in the Literature Review method were therefore dealt with in the design and pre-testing stages of this study.

The strengths of the contingent valuation method were also outlined in Chapter 3 the Review of Literature. It highlights the inherent flexibility in applying the contingent valuation method as its greatest strength. In section 3.7 there are outlined several different techniques that could be employed when applying the method. This flexibility meant that a particular way of applying the contingent valuation method could be tailored to suit the requirements of this particular study. It is also the technique that can extract both user and non-user estimates in any rigid theoretical framework.

7.3 Implication for Future Research

The results of this study, show that with careful design and pre-testing the contingent valuation method can be applied successfully to a wide range of topic areas including use values of natural resources such as the Hollyford Valley Track.

When this research project was initiated there was concern over whether New Zealanders would be willing to answer questions relating to their willingness to pay to use natural resources. Researchers in the past have been confronted with methodological problems because of this, see Chapter 3, section 3.6.3. However with careful design and possibly the fact that many New Zealanders are now more familiar with the concept of user-pays because of the increased use of the user-pays
principles in other sectors of the economy, problems with vehicle bias were avoided. This indicates that this type of valuation exercise can be used successfully in New Zealand in future studies.

It would therefore seem that real and meaningful results have been gained from this research. However the results should be interpreted carefully and the context and constraints under which they were obtained should be spelt out when these results are presented. It is very important to highlight the limitations of the contingent valuation method so that the results can be used in an informative manner. If this is not done it is likely that the general public could misinterpret the results of such valuation exercises and the benefit to be gained would be lost. For example, it needs to be clarified why dollars are used to measure the change in value of the resource in this particular study.

This study has quantified the change in use value, for users of the Hollyford Valley Track as a result of the Haast - Hollyford Tourist Road. The figures that have been computed indicate the magnitude and direction of this change in use value. This is important because as Clough (1990) notes, an economic analysis is incomplete if it does not acknowledge intangibles such as wilderness values. This highlights one of the big advantages of employing a non-market benefit assessment technique that quantifies information in this way, that is the fact that the information generated can be included directly into the final analysis of the project concerned.

A major implication from this research should therefore be that intangibles such as use values of the wilderness can be quantified, and provided that the limitations of the methods used are acknowledged, such results can and should be included in the economic appraisal of projects.

Furthermore the methods and techniques use to employ the contingent valuation method in this study, can be noted along with the other contingent valuation studies in New Zealand in recent years. This type of valuation exercise is relatively new in New Zealand and so the lessons learnt in the application of this study can be passed on to help further refine the use and application of the contingent valuation method in the future.

7.4 Final Comments

The contingent valuation exercise quantified respondents' answers and produced a net or average result. What this did not highlight was the fact there is conflict between two different types of users. One group use the Hollyford Valley Track because it is remote and isolated, to these users this is the major attraction. They suggest that there are other areas with similar wilderness qualities but none possess
the feeling of remoteness which the Hollyford Valley Track holds. On the other hand there is a large group of potential users who are not interested in a 4 or 5 day tramp; they are more interested in shorter walks. The increased access that the proposed road would provide would therefore be to their benefit.

This conflict highlights some of the wider implications of the road that need to be considered. In the analysis of the effect that the Haast - Hollyford Tourist Road would have on users and potential users of the Hollyford Valley Track, it should be recognised that there are factors outside the scope of an economic technique such as the contingent valuation method. For example, factors such as the availability of alternative short walks of similar quality to that of the Hollyford Valley Track need to be considered. This should not be interpreted as a weakness of the Contingent Valuation method, but rather it should serve as an excellent example of why the limitations of such a technique should be spelt out together with the results of any such study.

Finally, the results of this research highlight two of the major strengths of the contingent valuation method: first the method provides a useful economic tool with which to assess the effects of proposals such as the Haast - Hollyford Tourist Road on intangibles such as use values of the wilderness; and secondly the fact that the method can be used to process conflicting subjective information and quantify the results into hard data in such a form that can be included in the wider framework of a project appraisal.
Bibliography


and Methods. Centre for Resource Management: Lincoln College and Canterbury University, N.Z.


Appendix A

Questionnaires

A.1 Actual User Questionnaires
A.1.1 Private User Questionnaire
Dear Sir/Madam,

The following is a Questionnaire concerned with the possibility of road development on the Hollyford Valley Track.

We are interested in what you think about the proposal to make such changes to this area. Your viewpoint is important to this research, and by taking the small amount of time that is necessary to complete the following Questionnaire, you will be providing valuable information.

All information is STRICTLY CONFIDENTIAL.

The completed Questionnaire should be either dropped in at the Visitors Centre in Te Anau, or returned in the FREEPOST envelope provided, NO STAMP IS NECESSARY.

Thank you for your help

Stuart Kane
Geography Department
University of Otago
Dunedin
SECTION I

1. What type of activity are you using the Hollyford Valley Track for at the moment? (tick the appropriate answer(s))
   - Tramping [ ]
   - Fishing [ ]
   - Hunting [ ]
   - Other (please state) [ ]
   - Other (please state) [ ]

2. Have you been on the Hollyford Valley Track before? Yes/No
   If your answer to question 2 was No, please go to SECTION II

3. What is the total number of trips you have made on the Hollyford Valley Track (including this one)? ______

4. How many trips have you made on the Hollyford Valley Track, in the last 12 months? ______

5. On previous trips, what activities have you taken part in? (complete the following table)

<table>
<thead>
<tr>
<th>Activity</th>
<th>No. of times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tramping</td>
<td>_____</td>
</tr>
<tr>
<td>Fishing</td>
<td>_____</td>
</tr>
<tr>
<td>Hunting</td>
<td>_____</td>
</tr>
<tr>
<td>Other (name)</td>
<td>_____</td>
</tr>
<tr>
<td>Other (name)</td>
<td>_____</td>
</tr>
</tbody>
</table>

109
SECTION II

In this section the answers required are about the trip on the Hollyford Valley Track that you have just completed or are about to complete.

6. What is the total number of days you have stayed/intend to stay on the Hollyford Valley Track?

   No of days =

7. Do you intend using the Huts provided?
   (circle the appropriate choice)

   (a) All the time
       which huts? _______________________

   (b) Part of the time
       which huts? _______________________

   (c) Not at all

8. Do you intend using the other facilities provided, such as toilets, water etc.
   (circle the appropriate choice)

   (a) All the time

   (b) Part of the time

   (c) Not at all

9. Is the route you propose to take, or have just completed:
   (circle the appropriate choice)

   (a) The full loop track; including Lake McKerrow, Martins Bay, Big Bay, and Lake Alabaster

   (b) Hollyford Roadend to Martins Bay and return

   (c) Hollyford Roadend to Lake McKerrow and return

   (d) Hollyford Roadend to Lake Alabaster and return

   (e) Pyke River - Big Bay Track and return

   (d) Other. Please state _______________________

110
The following set of questions is about the trip you are currently undertaking or are about to start. The questions are designed to find out something about the value you place on your trip on the Hollyford Valley Track.

10. How are you travelling to and from the Hollyford Valley Track? (tick appropriate answer)

<table>
<thead>
<tr>
<th></th>
<th>To</th>
<th>From</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Car</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(No of people in car? ___)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Hire Car</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(No of people in car? ___)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Tour Bus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduled Bus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other, (Please specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[ ] [ ]

[ ] [ ]

[ ] [ ]

[ ] [ ]

[ ] [ ]

[ ] [ ]

[ ] [ ]

[ ] [ ]
You may have heard of the proposal to develop a road to link Highway 94 (the current Te Anau - Milford road), with Highway 6 (the main West Coast road). This new section of road would include part of the existing Hollyford Valley track. (See map over page)

The route currently favoured for this development would mean the Lower Hollyford Road would be extended to the point where the Pyke and Hollyford Rivers meet. The road would then follow Lake Alabaster to Olivine Hut from which point the road would link up with Highway 6 via the Cascade River or around the coast from Big Bay.

The main argument for such a road is to link Milford Sound to the West Coast, creating a scenic drive and avoiding the need to make a return trip to Milford Sound from Queenstown.

The new road link would have a big impact on the Hollyford Valley Track and surrounding area. It would be possible to drive to the shoreline of Lake Alabaster, and Lake McKerrow would only be 3 hours walk from the new road. At present it takes 7 hours to walk to Lake Alabaster, and 10 hours to walk to Lake McKerrow. Much of the upper Pyke and lower Hollyford Rivers would also be accessible by car.

This would reduce the length of the full Hollyford loop track by approximately one third. The track would start at the the present site of the Lake Alabaster Hut, and would finish at either Big Bay or the Olivine Hut, depending on the final route of the road.

In addition to this, the start/finish section of the Hollyford River (which extends from the end of the Lower Hollyford Road to the point where the Pyke and Hollyford Rivers join) would now be included as part of the new road, while the track to Martins Bay would be unaffected.

MAP 1 shows the Hollyford Valley track in its present form, while MAP 2 shows what the track would look like after the proposed road link (The solid black line is the road route most likely to be chosen.)
THE HOLLYFORD TRACK

To Haast via Awara Point or Cascade River

Awara Point

Big Bay

Martins Bay Hut

Martins Bay Loge

Hokuri Hut

Omon Trail Hut

Lake McKerraw

Lake McKerraw Hut

Lake Willmot

Lake Alabaster

Lake Alabaster Hut

Hidden Falls Hut

Sunshine Hut

Honey Falls Hut

Honeyford Track

100 km to Te Anau

REFERENCE

Huts   FNP △

Doc  △

HTG △

Track

River

Road

Milford

Lake Adelaide

Honeyford River

Honeyford Track

Milford Sound

Lake McKerraw

Lake McKerraw Hut

Lake Alabaster

Lake Alabaster Hut

Hidden Falls Hut

Sunshine Hut

Honey Falls Hut

Honeyford Track

100 km to Te Anau
11. We would like to know how much (to the nearest dollar) you have spent and expect to spend on this trip on the Hollyford Valley Track. This will help identify the needs of the different types of visitors to the Hollyford Valley Track.

In your estimate of the cost of your trip please include any costs that you have incurred during the time spent travelling from either your home, or from your last major Tourist/ Recreation stop.

(please complete the following list)

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation/ Hut Fees etc</td>
<td>$_____</td>
</tr>
<tr>
<td>Meals</td>
<td>$_____</td>
</tr>
<tr>
<td>Other Food and Drink</td>
<td>$_____</td>
</tr>
<tr>
<td>Gifts and Souvenirs</td>
<td>$_____</td>
</tr>
<tr>
<td>YOUR SHARE OF...</td>
<td></td>
</tr>
<tr>
<td>Petrol and Vehicle Costs</td>
<td>$_____</td>
</tr>
<tr>
<td>Jet Boating</td>
<td>$_____</td>
</tr>
<tr>
<td>Aeroplane Flights</td>
<td>$_____</td>
</tr>
<tr>
<td>Helicopter Flights</td>
<td>$_____</td>
</tr>
<tr>
<td>Bus Trips</td>
<td>$_____</td>
</tr>
<tr>
<td>Other, Please specify:</td>
<td>$_____</td>
</tr>
</tbody>
</table>

When considering your answer to the next question please think about what this trip has cost you in terms of: travel to the area; food; accommodation; equipment and other miscellaneous expenses.

12. Suppose transport costs increased before you left on this trip so that your share of this trip would have cost you an additional $250. Would you still have made the trip?

(tick appropriate answer)

YES [ ]
NO [ ]

If not, why not? ____________________________________________________________
Assume the road has gone ahead when answering this section.

13. Would the proposed changes affect your use of the Hollyford Valley Track resources (hunting, fishing, tramping etc)? (circle the appropriate choice)

(a) The changes would have an enormous effect
(b) The changes would have a large effect
(c) The changes would have a small effect
(d) The changes would have no effect at all

How would they affect your use of the Hollyford Valley Track?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

14. Would the proposed changes affect the route you would choose, when using the Hollyford Valley track. (circle the appropriate choice)

(a) On this trip? Yes [ ]
No [ ]

(b) On future trips? Yes [ ]
No [ ]

How?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
15. Would the proposed changes be: (circle the appropriate choice)

(a) To your advantage?
(b) To your disadvantage?
(c) Neither?
(e) Both?

How?

16. Would you personally be in favour of such changes? (circle the appropriate choice)

(a) Definitely in favour
(b) Probably in favour
(c) Not sure
(d) Probably not in favour
(e) Definitely not in favour

Why?
17. Would such changes increase or decrease the likelihood of you visiting the Hollyford Valley Track in the future?

(a) Increase
(b) Decrease
(c) Impossible to say
(d) Would not alter the likelihood

Why?

Assume the road link has gone ahead when you are considering your answers to the next question.

Please think about the likely effects that such a road would have on you when on the Hollyford Valley Track as well as the cost of travel to the area, food, accommodation, equipment and other miscellaneous expenses.

18. Suppose transport costs increased before you left on this trip so that your share of this trip would have cost you an additional $160. Would you still have made the trip?

YES [ ]
NO [ ]

If not, why not?

19. Would you be willing to spend more or less on a trip to the Hollyford Valley Track in its new form?

(a) More
(b) Less
(c) About the same
(d) Impossible to say
SECTION V

The following questions are about New Zealand in general and not specifically the Hollyford Valley.

20. Is the knowledge that areas you consider to be Natural or Wilderness exist in New Zealand ... (circle the appropriate choice)
(a) Very important to you?
(b) Important to you?
(c) Doesn’t bother you one way or the other?
(d) Not important to you?
(e) Other?

21. How important is it to you that Natural or Wilderness areas remain available for future generations? (circle the appropriate choice)
(a) It is very important to me
(b) It is important to me
(c) Does not bother me one way or the other
(d) Not important to me at all
(e) Other
The questions you are about to answer are about yourself. All information is STRICTLY CONFIDENTIAL. The information is required only to enable us to identify groups or trends in the information. The answers that you give cannot be traced back to you.

22. Are you male or female? (circle the appropriate choice)
   (a) Female
   (b) Male

23. What is your present age? (circle the appropriate choice)
   (a) under 18 years
   (b) 18 - 24
   (c) 25 - 40
   (d) 41 - 59
   (e) over 60

24. What is your main occupation? (circle one only)
   (a) Paid Employment (state occupation)
   (b) Self Employment (state occupation)
   (c) Unpaid house duties
   (d) Voluntary work
   (e) Study
   (f) Retired
   (g) Unemployed
   (h) Other (please state)

25. What is your Nationality?

26. Do you live in New Zealand? Yes [ ] No [ ]

If your answer to Question 26 was Yes, please answer only Question 27a.

If your answer to Question 26 was No, please answer only Question 27b.

27a. Where in New Zealand do you live? (name of City, Town, Local district)?

27b. Where did you spend your last night (nearest town) before travelling to the Hollyford Valley Track?
28. What is your annual income?  
   (circle the appropriate choice)  

(a) $0 - $9,999  
(b) $10,000 - $19,999  
(c) $20,000 - $29,999  
(d) $30,000 - $39,999  
(e) $40,000 or more  

Is there anything else about the proposed changes to the Hollyford Valley Track that you would like to comment on?  

________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________
A.1.2 Commercial User Questionnaire
Dear Sir/Madam,

The following is a Questionnaire concerned with the possibility of road development on the Hollyford Valley Track.

We are interested in what you think about the proposal to make such changes to this area. Your viewpoint is important to this research, and by taking the small amount of time that is necessary to complete the following Questionnaire, you will be providing valuable information.

All information is STRICTLY CONFIDENTIAL.

The completed Questionnaire should be either dropped in at the Visitors Centre in Te Anau, or returned in the FREEPOST envelope provided. NO STAMP IS NECESSARY.

Thank you for your help

Stuart Kane
Geography Department
University of Otago
Dunedin
SECTION I

1. What type of activity are you using the Hollyford Valley Track for at the moment?
   (tick the appropriate answer(s))
   
   Tramping [ ]
   Fishing [ ]
   Hunting [ ]
   Other (please state) [ ]
   Other (please state) [ ]

2. Have you been on the Hollyford Valley Track before? Yes/No
   If your answer to question 2 was No, please go to SECTION II

3. What is the total number of trips you have made on the Hollyford Valley Track (including this one.)

4. How many trips have you made to the Hollyford Valley Track, in the last 12 months?

5. On previous trips, what activities have you taken part in?
   (complete the following table)

   Activity                      No. of times
   Tramping                      [ ]
   Fishing                       [ ]
   Hunting                       [ ]
   Other (name)                  [ ]
   Other (name)                  [ ]
SECTION II

In this section the answers required are about the trip on the Hollyford Valley Track that you have just completed or are about to complete.

6. What is the total number of days you have stayed/intend to stay on the Hollyford Valley Track?
   No of days =

7. Is the tour you are undertaking the...
   (circle the appropriate choice)
   3 Day Fly Out:
   (a) Commencing Marion corner, finish Milford.
   (b) Commencing Te Anau, finish Milford.
   (c) Commencing Queenstown, finish Milford.

   4 Day Fly Out:
   (a) Commencing Marion corner, finish Milford.
   (b) Commencing Te Anau, finish Milford.
   (c) Commencing Queenstown, finish Milford.

   5 Day Walk Out:
   (a) Commencing Marion corner, finish Marion corner.
   (b) Commencing Te Anau, finish Marion corner.
   (c) Commencing Queenstown, finish Marion corner.
The following set of questions is about the trip you are currently undertaking or are about to start. The questions are designed to find out something about the value you place on your trip on the Hollyford Valley Track.

8. How are you travelling to and from the Start and Finish points of your Tour Package?

(tick appropriate answer)

<table>
<thead>
<tr>
<th></th>
<th>To</th>
<th>From</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private car</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>(No of people in car? ___)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Hire car</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>(No of people in car? ___)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Tour bus</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Scheduled bus</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Scheduled air</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Other, please specify _______</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
9. We would like to know how much (to the nearest dollar) you have spent and expect to spend on this trip, apart from the actual price you paid for the Tour package.

In your estimate of the cost of your trip please include any costs incurred during the time spent travelling from either your home, or from your last major Tourist/Recreation stop.

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation</td>
<td>$____</td>
</tr>
<tr>
<td>Food and Drink</td>
<td>$____</td>
</tr>
<tr>
<td>Gifts and Souvenirs</td>
<td>$____</td>
</tr>
</tbody>
</table>

Transport Costs (outside of the transport services provided with your tour package)

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>YOUR SHARE OF ...</td>
<td></td>
</tr>
<tr>
<td>Petrol and Vehicle costs</td>
<td>$____</td>
</tr>
<tr>
<td>Bus travel</td>
<td>$____</td>
</tr>
<tr>
<td>Air travel</td>
<td>$____</td>
</tr>
<tr>
<td>Other,</td>
<td>$____</td>
</tr>
<tr>
<td>please specify</td>
<td></td>
</tr>
</tbody>
</table>

When considering your answer to the next question please think about what this trip has cost you in terms of the initial cost of the Tour Package plus the additional costs of: travel to the area; food; accommodation; equipment and other miscellaneous expenses.

10. Suppose that transport costs increased before you left on this trip, so that your share of this trip would have cost you an additional $_____. Would you still have made the trip?

   YES [ ]
   NO [ ]

If not why not? __________________________________________________________
You may have heard of the proposal to develop a road to link Highway 94 (the current Te Anau - Milford road), with Highway 6 (the main West Coast road). This new section of road would include part of the existing Hollyford Valley track. (see map over page)

The route currently favoured for this development would mean the Lower Hollyford Road would be extended to the point where the Pyke and Hollyford Rivers meet. The road would then follow Lake Alabaster to Olivine Hut, from which point the road would link up with Highway 6 via the Cascade River or around the coast from Big Bay.

The main argument for such a road is to link Milford Sound to the West Coast, creating a scenic drive and avoiding the need to make a return trip to Milford Sound from Queenstown.

The new road link would have a big impact on the Hollyford Valley Track and surrounding area. It would be possible to drive to the shoreline of Lake Alabaster, and Lake McKerrow would only be 3 hours walk from the new road. At present it takes 7 hours to walk to Lake Alabaster, and 10 hours to walk to Lake McKerrow. Much of the upper Pyke and lower Hollyford Rivers would also be accessible by car.

This would reduce the length of the full Hollyford loop track by approximately one third. The track would start at the the present site of the Lake Alabaster Hut, and would finish at either Big Bay or the Olivine Hut, depending on the final route of the road.

In addition to this, the start/finish section of the Hollyford River (which extends from the end of the Lower Hollyford Road to the point where the Pyke and Hollyford Rivers join) would now be included as part of the new road, while the track to Martins Bay would be unaffected.

MAP 1 shows the Hollyford Valley track in its present form, while MAP 2 shows what the track would look like after the proposed road link (The solid black line is the road route most likely to be chosen.)
Assume the road has gone ahead when answering this section.

11. Would the proposed changes affect your use of the Hollyford Valley's Track resources (hunting, fishing, tramping etc)?
   (circle the appropriate choice)
   
   (a) The changes would have an enormous effect
   (b) The changes would have a large effect
   (c) The changes would have a small effect
   (d) The changes would have no effect at all

How would they affect your use of the Hollyford Valley Track?
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

12. Would the proposed changes affect the route you would choose, when using the Hollyford Valley track.
   (circle the appropriate choice)
   
   (a) On this trip?  Yes [  ]  No [  ]
   (b) On future trips?  Yes [  ]  No [  ]

How?
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
13. Would the proposed changes be: (circle the appropriate choice)

(a) To your advantage

(b) To your disadvantage

(c) Neither

(e) Both

How?

14. Would you personally be in favour of such changes? (circle the appropriate choice)

(a) Definitely in favour

(b) Probably in favour

(c) Not sure

(d) Probably not in favour

(e) Definitely not in favour

Why?
15. Would such changes increase or decrease the likelihood of you visiting the Hollyford Valley Track in the future? (circle the appropriate choice)

(a) Increase
(b) Decrease
(c) Impossible to say
(d) Would not alter the likelihood

Why?

------------------

Assume the road link has gone ahead when you are considering your answer to the next question.

Please think about the likely effects that such a road would have on you when on the Hollyford Valley Track as well as the cost of the initial Tour package plus the additional costs of: travel to the area, food, accommodation, equipment and other miscellaneous expenses.

16. Suppose that transport costs increased before you left on this trip, so your share of that this trip would have cost you an additional $_____. Would you still have made the trip?

YES [ ]

NO [ ]

If not why not?__________________________________________

------------------

17. Would you be willing to spend more or less on a trip on the Hollyford Valley Track in its new form? (circle the appropriate choice)

(a) More
(b) Less
(c) About the same
(d) Impossible to say
7. How many trips have you made on the Hollyford Valley Track?
   ....... trips

8. On these trips what activities have you taken part in?
   (complete the following table)

<table>
<thead>
<tr>
<th>Activity</th>
<th>No. of times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tramping</td>
<td>.........</td>
</tr>
<tr>
<td>Fishing</td>
<td>........</td>
</tr>
<tr>
<td>Hunting</td>
<td>........</td>
</tr>
<tr>
<td>Other (name)</td>
<td>.........</td>
</tr>
<tr>
<td>Other (name)</td>
<td>.........</td>
</tr>
</tbody>
</table>

Please go to SECTION IV
SECTION III

9. Is there any particular reason why you have not visited Natural / Wilderness Areas in the past?  Yes / No

If Yes, what are these reasons?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

10. Do you think that you will visit a Natural / Wilderness area in the future?

(circle the appropriate choice)

(a) Very likely
(b) Quite likely
(c) Quite unlikely
(d) Very unlikely
(e) Don't know

SECTION IV

The following set of Questions is designed to find out the value you would place on a trip to the Hollyford Valley Track.

When considering your answer please think about what this trip would cost you in terms of: travel to the area; food; accommodation; equipment and other miscellaneous expenses.

11. Would you personally, be willing to spend $____ on a trip to the Hollyford valley Track.

(tick appropriate answer)

Yes [ ]
No [ ]

If not why not
________________________________________________________________________
________________________________________________________________________

12. If you were going to use the Hollyford Valley Track would you be ...

(circle the appropriate choice)

(a) In a private group?
(b) Part of a guided tour?
(c) Other? (please state)
SECTION V

You may have heard of the proposal to develop a road to link Highway 94 (the current Te Anau - Milford road), with Highway 6 (the main West Coast road). This new section of road would include part of the existing Hollyford Valley track. (see map over page)

The route currently favoured for this development would mean the Lower Hollyford Road would be extended to the point where the Pyke and Hollyford Rivers meet. The road would then follow the Lake Alabaster to Olivine Hut, from which point the road would link up with Highway 6 via the Cascade River or around the coast from Big Bay.

The main argument for such a road is to link Milford Sound to the West Coast, creating a scenic drive and avoiding the need to make a return trip to Milford Sound from Queenstown.

The new road link would have a big impact on the Hollyford Valley Track and surrounding area. It would be possible to drive to the shoreline of Lake Alabaster. Lake McKerrow would only be 3 hours walk from the new road. At present it takes 7 hours to walk to Lake Alabaster, and 10 hours to walk to Lake McKerrow. Much of the upper Pyke and lower Hollyford Rivers would also be accessible by car.

This would reduce the length of the full Hollyford loop track by approximately one third. The track would start at the present site of the Lake Alabaster Hut, and would finish at either Big Bay or the Olivine Hut, depending on the final route of the road.

In addition to this, the start / finish section of the Hollyford River (which extends from the end of the Lower Hollyford Road to the point where the Pyke and Hollyford Rivers join) would now be included as part of the new road, while the track to Martins Bay would be unaffected.

MAP 1 shows the Hollyford Valley track in its present form, while MAP 2 shows what the track would look like after the proposed road link (The solid black line is the road route most likely to be chosen.)
THE HOLLYFORD TRACK

To Haast via Awarua Point or Cascade River

Awarua Point

Big Bay

Big Bay Hut

Martins Bay Hut

Martins Bay Lodge

Hokuri Hut

Demon Trail Hut

Demon Trail

McKerrow Island Hut

McKerrow Island

Lake McKerrow

Lake McKerrow Hut

Lake Wilmot

Olivine Hut

Lake Alabaster

Lake Alabaster Hut

Pyke Lodge

Hidcan Falls Hut

Sunshine Hut

Hollyford Track

Milford Sound

Huts FNP A

Ocean A

NTO A

Track

River

Road

REFERENCE

Homer Tunnel

100 km to Te Anau

Lake Adelphi

Milford
13. Would such changes increase or decrease the likelihood of you visiting the Hollyford Valley Track in the future?
   (circle the appropriate choice)
   (a) Increase
   (b) Decrease
   (c) Make no difference
   (d) Impossible to say

   Why?

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

14. Would the proposed changes be:
   (circle the appropriate choice)
   (a) To your advantage?
   (b) To your disadvantage?
   (c) Neither?
   (d) Both?

   Please explain

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

145
15. Would you personally be in favour of such changes?
   (circle the appropriate choice)
   (a) Definitely in favour
   (b) Probably in favour
   (c) Not sure
   (d) Probably not in favour
   (e) Definitely not in favour

   Why? ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   Assume the road link has gone ahead when you are considering your answers to
   the next question.

   The following set of Questions is designed to find out the value you would
   place on a trip to the Hollyford Valley Track in its new form.

   When considering your answer please think about what this trip would
   cost you in terms of: travel to the area; food; accommodation; equipment and
   other miscellaneous expenses.

   16. Considering the effect that the road would have on your use of the
   Hollyford Valley Track. Would you now be willing to spend $______ on a trip to
   the Hollyford Valley Track?
       (tick appropriate answer)
       Yes [ ]
       No [ ]

   If not why not? ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

   17. If you were going to use the shortened Hollyford Valley Track would
   you be ...
       (circle the appropriate choice)
       (a) In a private group?
       (b) Part of a guided tour?
       (c) Other? (please state) ____________________________________________

   146
18. Is the knowledge that areas you consider to be Natural or Wilderness exist in New Zealand ...  
  (circle the appropriate choice)
  (a) Very important to you?
  (b) Important to you?
  (c) Doesn't bother you one way or the other?
  (d) Not important to you?
  (e) Other? ______________________

19. How important is it to you that Natural or Wilderness areas remain available for future generations?  
  (circle the appropriate choice)
  (a) It is very important to me
  (b) It is important to me
  (c) Does not bother me one way or the other
  (d) Not important to me at all
  (e) Other_________________________
The Questions you are about to answer are about yourself. All information is STRICTLY CONFIDENTIAL. The information is required to enable us to identify groups or trends in the information. The answers that you give cannot be traced back to you.

20. Are you male or female?
   (circle the appropriate choice)
   (a) Female
   (b) Male

21. What is your present age?
   (circle the appropriate choice)
   (a) under 18 years
   (b) 18 - 24
   (c) 25 - 40
   (d) 41 - 59
   (e) over 60

22. What is your main occupation?
   (circle one only)
   (a) Paid Employment (state occupation)
   (b) Self Employment (state occupation)
   (c) Unpaid house duties
   (d) Voluntary work
   (e) Study
   (f) Retired
   (g) Unemployed
   (h) Other (please state)

23. What is your Nationality?

24. Where in New Zealand do you live (name of City, Town, Local district)?
25. What is your annual income?
    (circle the appropriate choice)

(a) 0 - $9,999
(b) $10,000 - $19,999
(c) $20,000 - $29,999
(d) $30,000 - $39,999
(e) $40,000 or more

Is there anything else about the proposed changes to the Hollyford Valley Track that you would like to comment on?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Thank you very much for your help.
Appendix B

$\chi^2$ Formula and Table

B.1 Formula for $\chi^2$ Values and Degree of Freedom.

Chisquare =

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Degree of Freedom = $(C - 1) \times (R - 1)$

Where:

- $O$ = observed frequency
- $E$ = expected frequency

- $C = \text{No of columns}$
- $R = \text{No of rows}$
### B.2 The $\chi^2$ Table

<table>
<thead>
<tr>
<th>Degrees of freedom</th>
<th>0.1</th>
<th>0.05</th>
<th>0.01</th>
<th>0.005</th>
<th>0.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.71</td>
<td>3.84</td>
<td>6.64</td>
<td>7.88</td>
<td>10.83</td>
</tr>
<tr>
<td>2</td>
<td>4.60</td>
<td>5.99</td>
<td>9.21</td>
<td>10.60</td>
<td>13.82</td>
</tr>
<tr>
<td>3</td>
<td>6.25</td>
<td>7.82</td>
<td>11.34</td>
<td>12.84</td>
<td>16.27</td>
</tr>
<tr>
<td>4</td>
<td>7.78</td>
<td>9.49</td>
<td>13.28</td>
<td>14.86</td>
<td>18.46</td>
</tr>
<tr>
<td>5</td>
<td>9.24</td>
<td>11.07</td>
<td>15.09</td>
<td>16.75</td>
<td>20.52</td>
</tr>
<tr>
<td>6</td>
<td>10.64</td>
<td>12.59</td>
<td>16.81</td>
<td>18.55</td>
<td>22.46</td>
</tr>
<tr>
<td>7</td>
<td>12.02</td>
<td>14.07</td>
<td>18.48</td>
<td>20.28</td>
<td>24.32</td>
</tr>
<tr>
<td>9</td>
<td>14.68</td>
<td>16.92</td>
<td>21.67</td>
<td>23.59</td>
<td>27.88</td>
</tr>
<tr>
<td>10</td>
<td>15.99</td>
<td>18.31</td>
<td>23.21</td>
<td>25.19</td>
<td>29.59</td>
</tr>
<tr>
<td>11</td>
<td>17.28</td>
<td>19.68</td>
<td>24.72</td>
<td>26.76</td>
<td>31.26</td>
</tr>
<tr>
<td>12</td>
<td>18.55</td>
<td>21.03</td>
<td>26.22</td>
<td>28.30</td>
<td>32.91</td>
</tr>
<tr>
<td>13</td>
<td>19.81</td>
<td>22.36</td>
<td>27.69</td>
<td>30.82</td>
<td>34.53</td>
</tr>
<tr>
<td>14</td>
<td>21.06</td>
<td>23.68</td>
<td>29.14</td>
<td>31.32</td>
<td>36.12</td>
</tr>
<tr>
<td>15</td>
<td>22.31</td>
<td>25.00</td>
<td>30.58</td>
<td>32.80</td>
<td>37.70</td>
</tr>
<tr>
<td>16</td>
<td>23.54</td>
<td>26.30</td>
<td>32.00</td>
<td>34.27</td>
<td>39.29</td>
</tr>
<tr>
<td>17</td>
<td>24.77</td>
<td>27.59</td>
<td>33.41</td>
<td>35.72</td>
<td>40.75</td>
</tr>
<tr>
<td>18</td>
<td>25.99</td>
<td>28.87</td>
<td>34.80</td>
<td>37.16</td>
<td>42.31</td>
</tr>
<tr>
<td>19</td>
<td>27.20</td>
<td>30.14</td>
<td>36.19</td>
<td>38.58</td>
<td>43.82</td>
</tr>
<tr>
<td>20</td>
<td>28.41</td>
<td>31.41</td>
<td>37.57</td>
<td>40.00</td>
<td>45.32</td>
</tr>
<tr>
<td>21</td>
<td>29.62</td>
<td>32.67</td>
<td>38.93</td>
<td>41.40</td>
<td>46.80</td>
</tr>
<tr>
<td>22</td>
<td>30.81</td>
<td>33.92</td>
<td>40.29</td>
<td>42.80</td>
<td>48.27</td>
</tr>
<tr>
<td>23</td>
<td>32.01</td>
<td>35.17</td>
<td>41.64</td>
<td>44.18</td>
<td>49.73</td>
</tr>
<tr>
<td>24</td>
<td>33.20</td>
<td>36.42</td>
<td>42.98</td>
<td>45.56</td>
<td>51.18</td>
</tr>
<tr>
<td>25</td>
<td>34.38</td>
<td>37.65</td>
<td>44.31</td>
<td>46.93</td>
<td>52.62</td>
</tr>
<tr>
<td>26</td>
<td>35.56</td>
<td>38.88</td>
<td>45.64</td>
<td>48.29</td>
<td>54.05</td>
</tr>
<tr>
<td>27</td>
<td>36.74</td>
<td>40.11</td>
<td>46.96</td>
<td>49.65</td>
<td>55.48</td>
</tr>
<tr>
<td>28</td>
<td>37.92</td>
<td>41.34</td>
<td>48.28</td>
<td>50.99</td>
<td>56.91</td>
</tr>
<tr>
<td>29</td>
<td>39.09</td>
<td>42.56</td>
<td>49.59</td>
<td>52.34</td>
<td>58.30</td>
</tr>
<tr>
<td>30</td>
<td>40.26</td>
<td>43.77</td>
<td>50.89</td>
<td>53.67</td>
<td>59.70</td>
</tr>
<tr>
<td>40</td>
<td>51.81</td>
<td>55.76</td>
<td>63.69</td>
<td>66.77</td>
<td>73.40</td>
</tr>
<tr>
<td>50</td>
<td>63.17</td>
<td>67.51</td>
<td>76.13</td>
<td>79.49</td>
<td>86.66</td>
</tr>
<tr>
<td>60</td>
<td>74.49</td>
<td>79.08</td>
<td>88.38</td>
<td>91.95</td>
<td>99.61</td>
</tr>
<tr>
<td>70</td>
<td>85.53</td>
<td>90.53</td>
<td>100.43</td>
<td>104.22</td>
<td>112.32</td>
</tr>
<tr>
<td>80</td>
<td>96.58</td>
<td>101.88</td>
<td>112.33</td>
<td>116.32</td>
<td>124.84</td>
</tr>
<tr>
<td>90</td>
<td>107.57</td>
<td>113.15</td>
<td>124.12</td>
<td>128.30</td>
<td>137.21</td>
</tr>
<tr>
<td>100</td>
<td>118.50</td>
<td>124.34</td>
<td>135.81</td>
<td>140.17</td>
<td>149.45</td>
</tr>
</tbody>
</table>

Reject $H_0$ if calculated value of chi square is greater than the critical value at the chosen significance level.
Appendix C

Tables of Observed and Expected Frequencies

C.1 ACTUAL USERS ASIS

Observed and Expected Frequencies

<table>
<thead>
<tr>
<th>WTPASIS $</th>
<th>Number of Subjects</th>
<th>Observed Responses</th>
<th>Expected Responses</th>
<th>Residual</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10.0</td>
<td>10.0</td>
<td>9.773</td>
<td>.227</td>
<td>.97727</td>
</tr>
<tr>
<td>40</td>
<td>11.0</td>
<td>9.0</td>
<td>10.154</td>
<td>-1.154</td>
<td>.92305</td>
</tr>
<tr>
<td>60</td>
<td>6.0</td>
<td>5.0</td>
<td>5.102</td>
<td>-.102</td>
<td>.85041</td>
</tr>
<tr>
<td>80</td>
<td>7.0</td>
<td>6.0</td>
<td>5.390</td>
<td>.610</td>
<td>.76995</td>
</tr>
<tr>
<td>100</td>
<td>12.0</td>
<td>10.0</td>
<td>8.272</td>
<td>1.728</td>
<td>.68936</td>
</tr>
<tr>
<td>120</td>
<td>11.0</td>
<td>7.0</td>
<td>6.747</td>
<td>.253</td>
<td>.61333</td>
</tr>
<tr>
<td>140</td>
<td>8.0</td>
<td>4.0</td>
<td>4.354</td>
<td>-.354</td>
<td>.54425</td>
</tr>
<tr>
<td>160</td>
<td>9.0</td>
<td>4.0</td>
<td>4.346</td>
<td>-.346</td>
<td>.48289</td>
</tr>
<tr>
<td>180</td>
<td>3.0</td>
<td>0</td>
<td>1.287</td>
<td>-1.287</td>
<td>.42914</td>
</tr>
<tr>
<td>200</td>
<td>7.0</td>
<td>3.0</td>
<td>2.677</td>
<td>.323</td>
<td>.38240</td>
</tr>
<tr>
<td>220</td>
<td>10.0</td>
<td>3.0</td>
<td>3.419</td>
<td>-.419</td>
<td>.34188</td>
</tr>
<tr>
<td>240</td>
<td>8.0</td>
<td>2.0</td>
<td>2.454</td>
<td>-.454</td>
<td>.30679</td>
</tr>
<tr>
<td>260</td>
<td>8.0</td>
<td>3.0</td>
<td>2.211</td>
<td>.789</td>
<td>.27637</td>
</tr>
<tr>
<td>280</td>
<td>8.0</td>
<td>3.0</td>
<td>1.999</td>
<td>1.001</td>
<td>.24992</td>
</tr>
<tr>
<td>300</td>
<td>8.0</td>
<td>1.0</td>
<td>1.815</td>
<td>-.815</td>
<td>.22687</td>
</tr>
</tbody>
</table>

152
### C.2 ACTUAL USERS AFTER

**Observed and Expected Frequencies**

<table>
<thead>
<tr>
<th>WTPAFTER $</th>
<th>Subjects</th>
<th>Responses</th>
<th>Responses</th>
<th>Residual</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10.0</td>
<td>6.0</td>
<td>8.279</td>
<td>-2.279</td>
<td>.82789</td>
</tr>
<tr>
<td>40</td>
<td>11.0</td>
<td>8.0</td>
<td>7.208</td>
<td>.792</td>
<td>.65529</td>
</tr>
<tr>
<td>60</td>
<td>6.0</td>
<td>4.0</td>
<td>3.149</td>
<td>.851</td>
<td>.52481</td>
</tr>
<tr>
<td>80</td>
<td>7.0</td>
<td>3.0</td>
<td>3.003</td>
<td>-.003</td>
<td>.42899</td>
</tr>
<tr>
<td>100</td>
<td>12.0</td>
<td>5.0</td>
<td>4.294</td>
<td>.706</td>
<td>.35782</td>
</tr>
<tr>
<td>120</td>
<td>11.0</td>
<td>4.0</td>
<td>3.342</td>
<td>.658</td>
<td>.30385</td>
</tr>
<tr>
<td>140</td>
<td>8.0</td>
<td>4.0</td>
<td>2.096</td>
<td>1.904</td>
<td>.26202</td>
</tr>
<tr>
<td>160</td>
<td>9.0</td>
<td>3.0</td>
<td>2.060</td>
<td>.940</td>
<td>.22893</td>
</tr>
<tr>
<td>180</td>
<td>3.0</td>
<td>0.0</td>
<td>.607</td>
<td>-.607</td>
<td>.20228</td>
</tr>
<tr>
<td>200</td>
<td>6.0</td>
<td>3.0</td>
<td>1.083</td>
<td>1.917</td>
<td>.18046</td>
</tr>
<tr>
<td>220</td>
<td>10.0</td>
<td>1.0</td>
<td>1.623</td>
<td>-.623</td>
<td>.16235</td>
</tr>
<tr>
<td>240</td>
<td>8.0</td>
<td>0.0</td>
<td>1.177</td>
<td>1.177</td>
<td>.14711</td>
</tr>
<tr>
<td>260</td>
<td>8.0</td>
<td>0.0</td>
<td>1.073</td>
<td>-1.073</td>
<td>.13417</td>
</tr>
<tr>
<td>280</td>
<td>8.0</td>
<td>0.0</td>
<td>.984</td>
<td>-1.984</td>
<td>.12305</td>
</tr>
<tr>
<td>300</td>
<td>9.0</td>
<td>0.0</td>
<td>1.021</td>
<td>-1.021</td>
<td>.11342</td>
</tr>
</tbody>
</table>
### C.3 POTENTIAL USERS ASIS

**Observed and Expected Frequencies**

<table>
<thead>
<tr>
<th>WTPA SIS $</th>
<th>Number of Subjects</th>
<th>Observed Responses</th>
<th>Expected Responses</th>
<th>Residual</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>12.0</td>
<td>10.0</td>
<td>11.284</td>
<td>-1.284</td>
<td>.94037</td>
</tr>
<tr>
<td>40</td>
<td>10.0</td>
<td>8.0</td>
<td>8.817</td>
<td>-.817</td>
<td>.88174</td>
</tr>
<tr>
<td>60</td>
<td>10.0</td>
<td>10.0</td>
<td>8.279</td>
<td>1.721</td>
<td>.82791</td>
</tr>
<tr>
<td>80</td>
<td>10.0</td>
<td>7.0</td>
<td>7.790</td>
<td>-.790</td>
<td>.77903</td>
</tr>
<tr>
<td>100</td>
<td>14.0</td>
<td>12.0</td>
<td>10.287</td>
<td>1.713</td>
<td>.73476</td>
</tr>
<tr>
<td>120</td>
<td>14.0</td>
<td>12.0</td>
<td>9.725</td>
<td>2.275</td>
<td>.69463</td>
</tr>
<tr>
<td>140</td>
<td>13.0</td>
<td>7.0</td>
<td>8.557</td>
<td>-1.557</td>
<td>.65820</td>
</tr>
<tr>
<td>160</td>
<td>11.0</td>
<td>8.0</td>
<td>6.875</td>
<td>1.125</td>
<td>.62504</td>
</tr>
<tr>
<td>180</td>
<td>18.0</td>
<td>11.0</td>
<td>10.706</td>
<td>.294</td>
<td>.59477</td>
</tr>
<tr>
<td>200</td>
<td>12.0</td>
<td>9.0</td>
<td>6.805</td>
<td>2.195</td>
<td>.56706</td>
</tr>
<tr>
<td>220</td>
<td>11.0</td>
<td>5.0</td>
<td>5.958</td>
<td>-.958</td>
<td>.54162</td>
</tr>
<tr>
<td>240</td>
<td>11.0</td>
<td>3.0</td>
<td>5.700</td>
<td>-2.700</td>
<td>.51821</td>
</tr>
<tr>
<td>260</td>
<td>8.0</td>
<td>3.0</td>
<td>3.973</td>
<td>-.973</td>
<td>.49659</td>
</tr>
<tr>
<td>280</td>
<td>9.0</td>
<td>3.0</td>
<td>4.289</td>
<td>-1.289</td>
<td>.47659</td>
</tr>
<tr>
<td>300</td>
<td>13.0</td>
<td>7.0</td>
<td>5.954</td>
<td>1.046</td>
<td>.45803</td>
</tr>
</tbody>
</table>
### C.4 POTENTIAL USERS AFTER

**Observed and Expected Frequencies**

<table>
<thead>
<tr>
<th>WTPAFTER $</th>
<th>Number of Subjects</th>
<th>Observed Responses</th>
<th>Expected Responses</th>
<th>Residual</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>11.0</td>
<td>9.0</td>
<td>9.566</td>
<td>-.566</td>
<td>.86962</td>
</tr>
<tr>
<td>40</td>
<td>10.0</td>
<td>9.0</td>
<td>8.023</td>
<td>.977</td>
<td>.80228</td>
</tr>
<tr>
<td>60</td>
<td>10.0</td>
<td>8.0</td>
<td>7.521</td>
<td>.479</td>
<td>.75211</td>
</tr>
<tr>
<td>80</td>
<td>10.0</td>
<td>6.0</td>
<td>7.117</td>
<td>-1.117</td>
<td>.71170</td>
</tr>
<tr>
<td>100</td>
<td>13.0</td>
<td>9.0</td>
<td>8.811</td>
<td>.189</td>
<td>.67780</td>
</tr>
<tr>
<td>120</td>
<td>15.0</td>
<td>11.0</td>
<td>9.729</td>
<td>1.271</td>
<td>.64862</td>
</tr>
<tr>
<td>140</td>
<td>13.0</td>
<td>8.0</td>
<td>8.099</td>
<td>-.099</td>
<td>.62303</td>
</tr>
<tr>
<td>160</td>
<td>11.0</td>
<td>6.0</td>
<td>6.603</td>
<td>-.603</td>
<td>.60030</td>
</tr>
<tr>
<td>180</td>
<td>18.0</td>
<td>10.0</td>
<td>10.438</td>
<td>-.438</td>
<td>.57987</td>
</tr>
<tr>
<td>200</td>
<td>13.0</td>
<td>8.0</td>
<td>7.298</td>
<td>.702</td>
<td>.56137</td>
</tr>
<tr>
<td>220</td>
<td>11.0</td>
<td>4.0</td>
<td>5.989</td>
<td>-1.989</td>
<td>.54448</td>
</tr>
<tr>
<td>240</td>
<td>11.0</td>
<td>5.0</td>
<td>5.819</td>
<td>-.819</td>
<td>.52897</td>
</tr>
<tr>
<td>260</td>
<td>8.0</td>
<td>5.0</td>
<td>4.117</td>
<td>.883</td>
<td>.51465</td>
</tr>
<tr>
<td>280</td>
<td>9.0</td>
<td>4.0</td>
<td>4.512</td>
<td>-.512</td>
<td>.50137</td>
</tr>
<tr>
<td>300</td>
<td>13.0</td>
<td>8.0</td>
<td>6.357</td>
<td>1.643</td>
<td>.48900</td>
</tr>
</tbody>
</table>

155
The following questions are about New Zealand in general and not specifically the Hollyford Valley.

18. Is the knowledge that areas you consider to be Natural or Wilderness areas exist in New Zealand? 

(circle the appropriate choice)

(a) Very important to you?
(b) Important to you?
(c) Doesn't bother you one way or the other?
(d) Not important to you?
(e) Other? ________________

19. How important is it to you that Natural or Wilderness areas remain available for future generations? 

(circle the appropriate choice)

(a) It is very important to me
(b) It is important to me
(c) Does not bother me one way or the other
(d) Not important to me at all
(e) Other_________________________
The questions you are about to answer are about yourself. All information is STRICTLY CONFIDENTIAL. The information is required only to enable us to identify groups or trends in the information. The answers that you give cannot be traced back to you.

20. Are you male or female? (circle the appropriate choice)
   (a) Female
   (b) Male

21. What is your present age? (circle the appropriate choice)
   (a) under 18 years
   (b) 18 - 24
   (c) 25 - 40
   (d) 41 - 59
   (e) over 60

22. What is your main occupation? (circle one only)
   (a) Paid Employment (state occupation)
   (b) Self Employment (state occupation)
   (c) Unpaid house duties
   (d) Voluntary work
   (e) Study
   (f) Retired
   (g) Unemployed
   (h) Other (please state)

23. What is your Nationality?

24. Do you live in New Zealand? Yes [ ] No [ ]

If your answer to Question 24 was Yes, please answer only Question 25a.

If your answer to Question 24 was No, please answer only Question 25b.

25a. Where in New Zealand do you live (name of City, Town, Local district)?

25b. Where did you spend your last night (nearest town) before arriving at the Hollyford Valley Track?
26. What is your annual income?
    (circle the appropriate choice)

(a) $0 - $9,999
(b) $10,000 - $19,999
(c) $20,000 - $29,999
(d) $30,000 - $39,999
(e) $40,000 or more

Is there anything else about the proposed changes to the Hollyford Valley Track that you would like to comment on?

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Thank you very much for your help.
A.2 Potential User Questionnaire
Dear Sir/Madam:

You have been chosen at random to participate in a Survey about Natural/Wilderness areas and in particular the Hollyford Valley Track.

We are interested in what you think. Even if you have no interest in Natural/Wilderness areas your viewpoint is still important. By taking the small amount of time that it is necessary to complete this questionnaire you will be providing valuable information.

All information is STRICTLY CONFIDENTIAL.

The completed Questionnaire should be returned in the FREEPOST envelope provided, NO STAMP IS NECESSARY.

Thank you for your help

[Signature]

Stuart Kane
Geography Department
University of Otago
SECTION I

1. Have you ever visited a place that you consider to be a Natural or Wilderness Area?
   Yes / No

2. Had you heard of the Hollyford Valley Track before receiving this Questionnaire?
   Yes / No

3. How much do you know about the Hollyford Valley Track?
   (circle the appropriate choice)
   (a) A great deal
   (b) Quite a bit
   (c) A reasonable amount
   (d) Very little
   (e) Nothing

If your answer to question 1 was No, please go to SECTION III

If your answer to question 1 was Yes, please go to SECTION II

SECTION II

4. How often have you used Natural or Wilderness Areas?
   (circle the appropriate choice)
   (a) On a regular basis (throughout the year).
   (b) Often (at least once a year).
   (c) Occasionally (once in the last 2 - 3 years).
   (d) Seldom (once in the last 5 years).
   (e) Never

5. What did you do in these areas?

<table>
<thead>
<tr>
<th>Activity</th>
<th>No of times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunting</td>
<td></td>
</tr>
<tr>
<td>Fishing</td>
<td></td>
</tr>
<tr>
<td>Tramping</td>
<td></td>
</tr>
<tr>
<td>Other (please name)</td>
<td></td>
</tr>
<tr>
<td>Other (please name)</td>
<td></td>
</tr>
</tbody>
</table>

6. Have you been to the Hollyford Valley Track? Yes/No

If your answer to question 6 was No, please go to SECTION IV

If your answer was Yes, please continue.