REGIONAL ECONOMIC IMPACTS
of
FIORDLAND NATIONAL PARK

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Contents

Acknowledgements

This research was funded by the Department of Conservation, and I thank Harry Broad in particular and other staff generally for their interest and enthusiasm regarding this work and their willingness to assist with advice and information. I would also like to acknowledge the work done by members of DOC in bringing together the available information about visitor numbers in Fiordland National Park. Accurate estimates of economic impacts require accurate data about the number of users, and there is still much to be done in this area.

This kind of research can only be carried out if those in the tourism industry provide comprehensive information about their activities and who let us interview their clients, and in this regard I would like to thank particularly Real Journeys who were so helpful to the interviewers and to the numerous operators who provided financial data. I trust that this report will lead to greater public understanding of the role of Fiordland National Park in the Southland – Queenstown Lakes District economy, and that this in turn will help the industry and thus in some measure repay respondents for their assistance.

I thank Ellie Butcher and Sarah Martin for undertaking the field interviews, and their willingness to do so much traveling to get a cross section of users of the Park in different sites and seasons. Finally, I would like to thank the users themselves for answering questions about their visits and their spending in the regions.

Glossary

Economic Impact.
Economic Impact includes the direct effects (e.g. sales to visitors) and the flow-on effects (sometimes called multiplier effects, or indirect and induced effects). The common measures of impact are output, value added, household income and employment. Impact is not the same as benefit (see below).

Output:
Output is the value of sales by a business.

Value Added (income):
Value Added in a business is equivalent to output (sales) minus inputs purchased from other businesses. Value added includes household income, returns to land and capital (including interest, depreciation and profits) and taxes. It is analogous to Gross Domestic Product.

Household Income:
Household income is the part of value added that is paid to individuals for their labour. It includes wages and salaries and self-employed income.

Benefit:
Benefit is conceptually quite different from benefit. Benefit is a measure of how much better off an entity is, whether the entity is the owner of capital or land or the supplier of labour. Benefit is less than value added because to add value one must incur an opportunity cost. For example, to earn profit requires the investment of capital; to earn household income requires giving up leisure, or giving up some worse job. There is no fixed relationship between value added and benefit.

KEY POINTS

1. The existence of Fiordland National Park and it management by DOC, at an annual cost of $8.8 million, provides a range of conservation benefits for New Zealand. It also supports extensive commercial activity in the Park and surrounding region of Southland and Queenstown Lakes.

2. The Park attracts around 33,000 overnight visitors and 560,000 day visitors per year. About 80 per cent of these are from overseas. On average, day visitors to the Park say that they spend 1.3 nights more in the Queenstown Lakes District – Southland Region (including the Park) than they would in the absence of the Park. Overnight visitors to the Park spend an additional 3.8 nights in the region.

3. The spending of visitors during their additional stay in the region plus the spending by DOC in managing the Park generate direct and flow-on (multiplier) economic activity in the region. As a result of the Park, total regional economic output in 2005 increased by $196 million beyond what it would otherwise have been. Associated with this increased output was regional income (value added) of $78 million, including $55 million of household income and 1,600 jobs.

4. The park also contains Lake Manapouri and most of its catchment. Annual generation from the Manapouri power scheme is about 5,025 GWh / year, which is worth about $300 million per year.

5. Ten per cent of overseas visitors to the Park said that in the absence of the Park they would stay a shorter time in NZ and a further 12 per cent said that they would not come to New Zealand at all. Foreign overnight visitors to the Park said that they would stay an average of 2.8 nights less in New Zealand while foreign day visitors to the Park said that they would stay an average of 1.6 nights less in New Zealand.

6. The spending of visitors during their additional stay in New Zealand generates direct and flow-on (multiplier) economic activity in the region. As a result of the Park, total national economic output in 2005 increased by $228 million beyond what it would otherwise have been. Associated with this increased output was national income (value added) of $103million, including $68 million of household income and 1,755 jobs

SUMMARY OF THE PROJECT

This is the third in a series of reports on the economic impacts of the DOC estate, with earlier work covering the West Coast conservation estate, Abel Tasman National Park and Queen Charlotte Track. The Department of Conservation (DOC) administers large areas of land in New Zealand, and expends significant sums of money on providing visitor facilities in various parks and reserves. DOC would like to understand more about the economic activity which is dependent on this land and facilities, and it has asked Butcher Partners Ltd to assess the regional economic impacts which are dependent on Fiordland National Park (FNP).

This project estimates the total net economic impacts of Fiordland National Park (FNP) by combining available data on the number of people using the sites with surveys of expenditure per person using the sites, including their expenditure on concessions, and their expected changes in regional visiting patterns if the sites were not available for public use.

Note that the impact estimated here is quite different from the direct economic impact of concessions operating in the park. There are two reasons for this. First, concessions do not cover the impacts of accommodation and meals outside the park for those who make a day trip to the Park. Hence the concessions understate economic impacts. Second, the concessions may be a substitute for other visitor activities which, if the Park did not exist, people who visit would do instead. Hence concessions may overstate the net economic impact at a regional level.

The maintenance and use of the conservation land gives rise to considerable economic benefits and economic and social impacts in the region, but this study examines and reports on only the economic impacts as measured by value added, household income and employment. Other economic benefits associated with consumer and producer surplus related to these lands are not addressed[1].

Project Objective

The primary objective of this project is to demonstrate how significant Fiordland National Park is to the combined Southland Region and Queenstown-Lakes district. This geographic area was chosen as being the most relevant area because of the very large number of day trippers from Queenstown to Milford and back again. The objective of the research is not to find the impacts on some administratively distinct area but on the local area which is directly affected by the Park. To look at the impact solely on the Southland region would be to ignore Queenstown-Lakes district, which is very strongly affected by FNP. Looking solely at the impacts of the Park on visitor itineraries to Southland would also overstate the economic impacts on economically relevant region by failing to recognize that if FNP did not exist, much of the activity based on the Park would simply transfer to other areas which are in close proximity to the Park in an economic sense, but are outside the Southland administrative

[1] While total benefits may be much larger than the benefits associated with the commercial impacts reported here, these wider benefits have been excluded from the analysis because of the difficulty and cost of measuring them, the error margins inherent in such measurements, and the difficulty in placing the results in any meaningful context (other activities also generate consumer and producer surplus but this is not measured or reported anywhere).

region.

Sources of Impact

The direct economic impacts of the sites include the activities of DOC itself and the activities of concessionaires within the Park[2]. In principle it includes all expenditure within the park by visitors, but in fact there is effectively no expenditure other than on goods and services provided by concessionaires[3]. It has not been possible to establish with any accuracy the economic impacts of concessions because of the unwillingness of some of the concessions to provide financial data. Part of their unwillingness relates to their belief that releasing the figures will put them at a commercial disadvantage in negotiations with DOC over concessions fees.

While there is some visitor expenditure on activities within the geographical confines of the Park, a very significant proportion of their expenditure is on goods and services beyond the Park. Obvious examples include transport to Milford by bus, boats which operate on Sounds which are not part of the park, and accommodation adjacent to the Park but not actually in it. Less obvious examples are the expenditure within the region by visitors who are on their way to or from the Park. This off-site expenditure may be greater than on-site expenditure. To establish the level of total expenditure related to Park trips, we surveyed visitors to find out the significance of the Park in shaping their travel itineraries. Visitors were asked about expenditure in the 24 hours prior to arriving at the site, to establish average daily expenditure in the region, their expenditure in the Park, the expected duration of their total stay in the Park, the region and New Zealand, and the expected duration of their stay in the region and in New Zealand if they had been unable to visit the Park. Their responses were combined with data on the estimated number of total visitors to the sites and regional and national economic multipliers for industries in which visitors spend money to estimate the total regional and national economic impacts associated with Fiordland National Park.

This calculation of the national impact is the first that we know of for a New Zealand National Park. In most earlier work there has been a perception or implicit assumption that a loss of one National Park would mean visitors would change their itinerary in New Zealand but not their total stay. Because Fiordland National Park and Milford Sound in particular is such a well-visited destination by international visitors, we thought that the loss of the Park might make a difference to their stay in New Zealand. We asked questions to see if this was indeed the case.

Method of Estimating Impacts

To estimate impacts we have:

- Gathered detailed data on DOC expenditure on the Park, whether or not the expenditure was actually incurred inside the Park;
- Gathered available data on concessionaires' activity and income;
- Estimated direct employment in commercial operations related directly to the Park by

[2] This impact is based on previous work done by Butcher Partners for DOC (see Wouters, 2006 – forthcoming)

[3] Concessionaire activities and part of DOC activities are funded by visitor spending, so this part of visitor expenditure is excluded to avoid double counting of impacts.

surveying business operators who provide services to people while they are actually in the Park or traveling from their accommodation directly to the Park (e.g. Te Anau and Queenstown);

- Surveyed visitors to establish expenditure in the Park and during the preceding 24 hours for those who stayed in the park and those who were on day visits to the Park and multiplied this by the total number per year of each of these user groups;
- Obtained estimates of visitor numbers in each category and compared this to recent data gathered by URS Consulting for their analysis of the economics of the Homer Tunnel upgrading;
- Estimated an economic input – output model for the combined Southland Region and Queenstown Lakes district (the region) and estimated tourism industry multipliers for these areas. We have also incorporated DOC expenditure and employment data into the models to estimate regional multipliers for DOC operations themselves;
- We report all these impacts in terms of regional output, value added, household incomes and employment.

RESULTS AND CONCLUSIONS

1. The direct economic activity associated with DOC operations in Fiordland National Park (FNP) is output of $8.8 million, employment of 54 FTEs, and value added of $5.4 million - including payment of $3.0 million in wages and salaries. These impacts exclude a share of regional overheads. Capital expenditure is excluded from these output figures, but the figures include depreciation and capital charges, which total $2.2 per year for FNP.

2. A review of visitor survey data already generated by DOC and updating with other data suggests that in 2005 FNP attracted around 593,000 visitors annually, including 560,000 day visitors and 33,000 overnight visitors. There remains considerable uncertainty about the number of visitors, particularly the number who go for short day walks in the park without using any concessions. However, the total economic impacts of the park are so heavily driven by overnight visitors and day visitors who visit Milford as well as other commercial sites that any errors in the estimates of numbers of non-commercial users are unlikely to significantly affect the conclusions.

3. A survey was used to establish expenditure in the Park per user for the two major groups, which we defined to be those staying in the park and those on day visits to the Park. A significant number of respondents were on some sort of tour package which meant that either they could not tell us how much they had spent in the Park or in some cases could not tell us what they had spent in the preceding 24 hours. Rating up average expenditures by the number of people in each group suggests that the use of FNP generates direct annual output in Park-associated businesses of $58 million per year. We have not been able to compare this with commercial data because some of the larger players have declined to give us financial data. However, it seems reasonable in terms of the data we do have.

4. The survey of users showed that if the Park did not exist, people would stay less time in the region and a number of overseas visitors would either stay a shorter time in New Zealand (10 %) or would not come to New Zealand at all (12 per cent of overnight visitors and 6 per cent of day visitors to the park). The average stay reduction would be 2.8 nights for those overnighting in the Park and 1.6 nights for those who make day visits to the Park.

Summary Table 1 Direct Output and Total Economic Impacts on NZ Economy of Fiordland National Park Visitors

	Overnight	Day	Total
Number of Visitors	33,000	560,000	593,000
Proportion from overseas	78 %	80 %	
Average Reduction in NZ Stay (nights)	2.8	1.6	
Expenditure per 24 hours	125	127	
Loss of Expenditure to NZ ($m/ yr)	9.1	91.0	$100 million
Total Economic Impacts on NZ			
Output			$228 m/yr
Employment (FTEs)			1,755 FTEs
Value Added ($m / yr)			$103 m/yr
Household Income ($m / yr)			$68 m/yr

5. Taking into account direct and flow-on effects, the economic impacts to New Zealand of a

loss of these visitors would be a decline in annual output of $288 million, a loss of 1,755 jobs and a loss of national income of $103 million per year including wages of $68 million.

6. The reduction in stay in the region was even greater in that 34 % of overnight visitors and 20 per cent of day visitors said that they would otherwise not have come to the region and about 30 per cent of each groups said that they would have stayed a shorter time. The average reduction in stay would be 3.8 nights[4] for those staying overnight in the Park and 1.3 nights for those who make day visits to the Park.

7. When we take into account the economic impacts of DOC operations, a small amount of commercial hunting and the effects of tourism, we conclude that the Park leads to the direct generation of $130 million of output in the combined Queenstown-Lakes and Southland region. It also leads directly to 1,215 jobs and the generation of $49 million of regional income including $40 million of household income.

Table 1 Direct and Total Impacts of Fiordland National Park on Southland – Queenstown-Lakes Region

	Output ($m / yr)	Employment (FTEs)	Value Added ($m / yr)	Household Income ($m / yr)
Direct Impact in QLDC – Southland				
Tourism	120	1,165	43.3	37.1
DOC Operations	8.8	54	5.4	3.0
Commercial Deer Recovery	1.5	6	0.5	0.3
Sub-Total (rounded)	***130***	***1,215***	***49***	***40***
Flow-on Impacts in QLDC - Southland				
Tourism	60	311	26	12.8
DOC Operations	4.7	40	2.5	1.4
Commercial Deer Recovery	0.5	3	0.3	0.2
Total Impacts in Queenstown Lakes District and Southland Region (rounded)	**200**	**1,600**	**78**	**55**

8. If we take into account the flow-on effects on the rest of the economy, Fiordland National park leads to $196 million of output in the regional economy, the generation of about 1,600 jobs and $78 million of regional income including $55 million of household income. This is equivalent to approximately 1.6 % of regional value added and 2.7 % of regional employment.

9. The park also contains Lake Manapouri and most of its catchment as well as the associated electricity generation. Annual generation is about $5,025 GWh / year, which is worth about $300 million per year.

[4] In fact the average for the sample was 6.1 nights, but this was very strongly affected by 5 respondents who would alter their stay and had stayed in the region for a very long time. We decided to use the figure of 3.8 nights.

1. STUDY BACKGROUND

1.1 Public Conservation Lands and their Economic Impact

The Southland Conservancy of DOC administers Fiordland National Park at a cost of approximately $8.8 million[5] per year, with this figure including administration and management of the Park including the concessions and facilities. These figures exclude indirect overhead costs associated with running the regional offices. DOC wishes to know more about the economic contributions which the Park makes to the regional economy in which it operates.

1.2 Report Scope

Butcher Partners Ltd has been asked by DOC to estimate the economic impacts which are likely to be generated in the adjacent region by Fiordland National Park. The proposal and this report specifically excludes analysis of the total benefits of the conservation estate, which will include both consumer and producer surpluses arising from the use of the lands and from the option and existence values associated with the land. This is because of the difficulty and high cost of estimating these values, the high margin of error in such estimates, and the fact that it is difficult to place such values in context because other economic activities also generate such values to a greater or lesser extent but they are not measured and so any figures related to conservation lands can only be put into a limited context. The report also does not look at the protection and species conservation values associated with the DOC lands.

This is not to deny that there are potentially very high non-commercial values associated with the conservation lands, and such values certainly need to be assessed when deciding whether or not a particular piece of land should or should not be part of the conservation estate.

1.3 Structure of the Report

This report begins with a brief summary of the data sources that have been used, and comments on the strengths and weaknesses of that data. Section 3 contains descriptions of the survey work and resulting estimates of the direct and total economic impacts in Queenstown Lakes District and Southland region.

[5] Approximately 1.5 FTE staff + 0.5 FTE in admin + $25,000 in casual wages + 4,000 in operating costs + vehicle, boat and 4WD bike costs. Capital costs of $40,000 per year. Source: Conversation with Roy Grosse

2 DATA SOURCES AND RELIABILITY

2.1 DOC Operations

Estimates of direct economic impacts of DOC operations have been made on the basis of financial data supplied by DOC for FNP. These data have been incorporated into an economic model of the combined Queenstown -Lakes district and Southland region[6]. To ensure that there is no double-counting of economic impacts, we have excluded money which DOC spends on services which are then sold to visitors either directly or via concessions. The economic impact of this spending has been picked up via estimates of visitor spending.

2.2 Concessions and Water Activity

Economic impacts of concessions including those based on the sounds and lakes are based on data gathered from a number of operators regarding the number of employees they have and some information about their turnover and the proportion of their economic activity which is dependent on trips into Fiordland national park, including the Sounds which are not actually part of the park.

The overall data is of poor quality, principally because some of the major concession holders were either not willing to make information available, or provided a very limited amount of information. For this reason we have not reported the direct or total economic impact of concessions.

We have excluded the economic impacts of cruise ships because they are highly variable and because, as far as we know, there is little commercial activity flowing from them and affecting the region. Passengers who come from the ships and use other commercial activities in the Park have implicitly been included in the number of park users, which is based on such things as track counts and concession clients.

We have included the expenditure of visitors flying in to the Park and landing. A number of these were picked up in our survey of visitors, and consequently their high expenditure is reflected in the average daily expenditure of Park visitors. We have not included visitors who simply fly over the Park, partly because we do not know how many of them there are, partly because they are not legally in the Park and partly because we are of the view that they would probably fly elsewhere for sightseeing if Fiordland National Park did not exist.

We have also included the economic impact of visitors staying on boats in the Fiordland Sounds. While this is not strictly within the Park, the absence of the Park would completely change the experience to one of sailing up a coast and we do not believe this would attract many visitors at all.

We have included an allowance for approximately $1.5 million of deer recovery (based on about 5,000 deer per year at $300 per animal). This is an industry which has virtually

[6] Prepared by Butcher Partners Ltd for this project.

collapsed in recent years and the limited shooting that now goes on is semi-recreational although it also represents an attempt by some operators to retain a market presence in the hope that the industry in the region will recover.

We have not included any economic impact related to bach owners and those at camping grounds outside the park who use the lakes for recreation but do not appear in any of the use statistics provided by DOC. No data on these visitors is available, and even if there was we expect that a large part of it is undertaken by residents of the region. Expenditure by local residents is generally not included in economic impact analysis because it is a transfer. That is, if it had not taken place in the national park it would probably have taken place elsewhere in the region. In our survey we have picked up a small number of regional users of the Park, and when grossed up to the annual visitor population this represents 1,000 overnight visitors and 12,000 day users per annum.

2.4 Total Visitor Spending

The impacts arising from total visitor spending were based on surveys of visitor average daily spending during their visit to FNP and during a typical 24 hours in the region (taken to be the 24 hours preceding their visit to the Park, as well as the effect of the Park on their regional and national travel itinerary. These visitor spends were then multiplied up by estimates of the number of visitors.

The estimates of visitor numbers are not particularly reliable. DOC has an on-going problem at a national level with accurately estimating use of its facilities, and also does not know whether people use more than on track. However, by far the most significant source of economic impacts is believed to arise from those who visit Milford Sound. The Milford Development Authority has provided what should be reasonably accurate information about the number of visitors to Milford.

3. IMPACTS OF FIORDLAND NATIONAL PARK

3.1 Number of Visitors

DOC has produced estimates of the number of users of FNP.

Visits of those staying overnight (excludes Te Anau township, which is outside FNP)

Kepler Track:	10,400
Routeburn Track	13,000
Hump Track	5,400
Milford Track	14,700
Other overnight	5,000
Total	49,000

Day Trips

Doubtful Sound:	65,000
Te Ana-au Caves	55,000
Milford day visitors using boats	450,000
Milford day visitors not using boats	45,000 (including kayaks etc etc,)
Te Anau visitors - day walks.	10,000
	625,000 – 725,000 (using URS figures)

Recent work by URS (Dave Blackmore) has focussed on improving analysis of the Transit New Zealand road counter data. The URS work has been accepted by Traffic Design Group as being the best available estimate of annual traffic flows through Homer Tunnel[7]. It is now estimated that in 2004 there were 630 vehicles per day, or 315 in each direction on average through the year. Occupancy survey data suggest that the average vehicle has 5.9[8] occupants. This is a much higher number than average and is a function of the high proportion of traffic which is buses. On the basis of these numbers, and allowing for 100 - 200 people per day being non-visitors (including drivers and those working at Milford) it is estimated that there were 605,000 - 640,000 visitors to Milford in 2004. This is a considerably larger number than has previously been assumed and larger than the number included in the above figures of 495,000. The URS figures would be consistent with data from Milford Development Authority only if it was assumed that 75 % of all visitors to Milford go on cruises on the Sound as opposed to the 75 % which has been assumed by DOC in their recent analysis[9].

Only 4 of the 305 people we surveyed in Milford did not go on the launches on Milford Sound, although our sample was biased by the fact that approximately three quarters of our interviews at Milford were on the launches and the balance were at the terminal and at Milford lodge. We did not interview at other sites such as the kayak launching site. This suggests to us that the 90

[7] Based on 95 % of the traffic at Falls Creek going through Homer Tunnel. D Blackmore. pers. comm..

[8] A recent DOC survey suggests that there are only 4.8 persons per vehicle.

[9] We understand that this is on the basis of Milford Development Authority advice,

% level is appropriate and that either there are now more people going on the launches than MDA reports or that the URS estimate is not correct. We have chosen to use the data based on the MDA reports, because we believe that these are more likely to be accurate as they are based presumably based on tickets sales. It is possible that there is under-reporting by MDA, but we are not able to make any comment on this.

3.2 Double Counting

We recognise that there may be double counting of visitor numbers on the basis of the above activity counts. For example, visitors may walk the Routeburn, Milford and Kepler tracks and may fly into or out of the Park as one leg of their journey. For this reason we asked visitors which activities they had undertaken and estimated the adjusted number of users once double-counting was taken into account. For those staying overnight in the park, the average number of activities was 2.0 including 1.5 overnight activities and 0.5 day activities. This included 13 respondents who did not undertake any activities on the above list.

It is much more difficult to adjust for double-counting of day trips. Sample sizes are smaller and in many cases are biased by location site. Of the 57 day visitors who said they were going on Lake Manapouri, most of whom were going to Doubtful Sound, 70 % said that they would also go on Milford Sound. Advice from operators is that this proportion probably overstates the actual outcome, and so we have used a figure of only 50 per cent. We also suspect that many of the people going to Te Ana-au caves also go to Milford on day trips or stay overnight in the Park, but we did not gather information on whether people went on this activity. However, we note that of the 84 day visitors we interviewed at Te Anau, only 15 % were not going on either Milford Sound or Lake Manapouri (which generally means to Doubtful Sound), which suggests that the proportion of people who go to Te Ana-au caves is a relatively small proportion of total visitors. This is consistent with data in the table above. Nonetheless, it seems likely that some portion of people going to Te Ana-au caves are probably doing one of the other activities and hence have already been counted in the other statistics. For that reason we have chosen to reduce the Te Ana-au cave visitors by one third.

The adjusted figures are shown below. In summary, we think that there are around 33,000 people who visit the park and stay overnight, a significant number of whom do more than one of the great walks. We think that there are a further 560,000 day visitors to the Park. Several of them may make more than one day visit (e.g. Milford one day, Doubtful Sound the next day), but our analysis of impacts of Fiordland National Park on visitor itineraries is based on the number of visitors and takes account of the fact that some of them may make more than one visit and / or make visits to the Park on different days.

We also believe that our figures are conservative in that some recent data suggests there may be considerably more day visitors to Milford than has previously been assumed.

Table 2

	Overnight	Day Visitors
Original	49,000	625,000
Less double-counting of overnighters	-16,000	- 16,000
Less double-counting of day visitors to Doubtful Sound		- 33,000
Less double-counting of day visitors to Te Ana-au caves		- 14,000
Adjusted Number	33,000	560,000

Check on number of Campers

Of the 111 respondents who went on a boat on Te Anau and stayed overnight in the Park, 31 did not walk the Milford track and 80 did. Of the 31 who did not walk the track, 17 did not undertake any activity included in the above DOC table other than camping, but did stay elsewhere in the Park. On this basis, we estimate that 3,100 people[10] who went on a Lake Te Anau boat trip camped in the Park but did not appear in the above table anywhere else. There will be others who camped in the Park and did not go on Lake Te Anau either. Hence the figure of 5,000 "other" overnight campers seems reasonable, although possibly on the low side.

Coverage of Day Trippers

Of the 84 respondents who went on a day trip on Lake Te Anau, all but 5 undertook some activity which was included in the above DOC table. Of the 415 day visitors we surveyed, 376 went on Milford Sound. This reflects in part the fact that 307 of the 415 day visitor surveys were undertaken at Milford. Nonetheless, we also interviewed 73 at Lake Te Anau township and 11 on the boat on Lake Te Anau and some at Manapouri. Of the 73 who were interviewed in Lake Te Anau township, 54 intended to go on Milford Sound, 7 intended to take some other activity covered by the DOC figures (mostly flying) and only 12 did not intend to undertake any activity covered by the DOC statistics on park use. On the basis of this information we anticipate that the number of day visitors not included in DOC's list of day visitors is small in the context of total users of the Park. We also expect that their expenditure is likely to be low. Exclusion of them from the economic impact estimates will lead to understatement of economic impacts, and inclusion of their expenditure in our surveys and calculations of average expenditure will possibly lower the average expenditure and may also lead to some understatement of economic impacts. For this reason we believe our estimates of economic impact are conservative.

3.3 Park User Survey – Description of Procedure

The visitor survey was undertaken over the first two weeks of January, the first two weeks of February and the first two weeks of April 2006. It was a random intercept undertaken at eight locations including the waterfront at Lake Manapouri, the waterfront and outside the DOC area office in Te Anau, the Southern end of the Routeburn track, the launch terminal at Milford

[10] 17/80 x 14,700 people walking the Milford. This assumes that all people walking the Milford take a boat up Lake Te Anau.

Sound, and on boats on Lake Te Anau, Lake Manapouri and Milford Sound. The interviews covered 810 respondents, selected randomly as being the next person to walk past the interviewer. A total of 793 useable returns were gathered from 378 people on day trips to the park and 415 people who were staying one or more nights in the Park. Where respondents were part of a group, answers to questions on expenditure were often provided for the group and were then converted to a per-person basis. Hence the expenditure questions are based on a sample of between 900 and1500 respondents. However, 20 per cent of day trip respondents were not able to tell us what they had spent in the park and 23 per cent could not tell us what they had spent in the last 24 hours because part of all of their expenditure was included in a package and they did not know what proportion of the package referred to each location. For those staying overnight, 13 % could not tell us what they had spent in the park and 8 per cent could not tell us what they had spent in the preceding 24 hours.

The only non-random element of the sampling was that respondents who could not speak English were not surveyed. The sample was stratified and surveyors were instructed to get approximately equal numbers of those staying overnight and those who were in the Park for the day. This was because we expected the two groups to have different average responses to some key questions and we wanted a large enough sample of each group to abstract some statistically reliable results.

The results do not present a truly random cross sample of total park users because seasonal patterns of use and expenditure are expected to differ and because the proportion of interviews undertaken at each site are not equivalent to the proportion of people using that site (for example, the Routeburn is probably under-represented, although much of that track is outside the national park anyway). However, the strategy of surveying over three different periods should have reduced any seasonal bias.

Table 3 Survey Points

	Number	Proportion
Te Anau – Land	162	20
Te Anau Lake	105	13
Manapouri – land	21	3
Manapouri – Lake	50	6
Milford – Sound	250	32
Milford – terminal and lodge	118	15
Routeburn Track end	76	10
Not-identified	11	1
	793	100 %

3.4 Survey Results

3.4.1 Descriptions of Respondents

Details of respondents are given in the following tables. In general terms there were equal numbers of each sex and about eighty per cent of respondents were from overseas. One third of these had previously visited New Zealand. In some cases we have produced results showing both domestic and overseas visitors separately so that some indication of likely differences is made available. However, we have not used a weighted average of spend or effect on average stay for New Zealanders and foreigners to estimate total impacts for two reasons. First, we have no data on the mix of origins, other than that which arises from our survey, so we have no alternative weights to use. Second, the sample size of the New Zealand resident category was too small to provide reliable results anyway.

Table 4 Number, Age and Sex of respondents by Origin

	n	Local Region (%)	Other NZ (%)	International		Total (%)
				Previously Visited NZ (%)	Not previously visited NZ (%)	
Overnight	378	3	19	26	52	100
Day Trippers	415	2	18	26	54	100

Table 5 Sex and Age of those interviewed

	Male %	Female %	< 20 yrs %	20-39 yrs %	40-60 yrs %	>60 yrs %
Overnight *	47	53	4	52	34	10
Day Trippers **	47	53	3	43	33	21

Table 6 Number and Composition of those interviewed, including other members of group

	Number Interviewed	Adults in Group		Children in Group		Total in Group	
		Number	%	Number	%	Number	%
Overnight	378	968	94 %	58	6 %	1026	100 %
Day Trippers	415	1063	90 %	112	10 %	1175	100 %

3.4.3 Duration of Stay in Park and Region

Of those staying in the park, the average person had, at the time of interview, spent 2.1 nights of an expected 4.7 night stay in the Park and 5.8 nights of an expected 11.6 night stay in the region. The results were, however, significantly affected by a few long stayers and the median stay was 3.0 nights in the Park and 7.6 nights in the region. Day visitors to the park were expecting to stay 5.0 nights in the region, although the median expected stay was 4.0 nights.

Table 7 Mean and Median Stay in Fiordland National Park and in Region

	FNP		Region	
	So far	Expected total	So far	Expected total
Overnight - mean	2.1 nights	4.7 nights	5.8 nights	11.6 nights
- median		3.0 Nights		7.6 nights
Day Trippers - mean	2.8 hrs	8.1 hrs	3.0 nights	5.0 nights
- median		8.0 hrs		4.0 nights

3.4.4 Park User Expenditure

Users were asked about their total expenditure (actual or expected) while in the Park (including direct transport from Queenstown or Te Anau to Milford) and in the 24 hours prior to entering the park. The results are shown in Table 8. Of those who did provide expenditure data[11], the average person spent $389 or $151 per night, which implies that those who provided data stayed only 2.6 nights rather than the 3.0 nights for the sample as a whole (excluding those staying more than 1 month). They spent $120 per person in the 24 hours prior to entering the Park, and this is probably a typical spend with 47 % saying this was typical of their daily spend in the region, 22 % saying that they usually spent more and 31 % saying that they usually spent less.

Day visitors to the park spent an average of $103 in the park (including any coach travel involved in a day trip package) and $120 in the 24 hours prior to going to the Park, with 48 % saying this was typical of their daily spend in the region, 31 % saying that they usually spent more and 22 % saying that they usually spent less.

By applying the average spend in the park to the estimates of visitor numbers, we estimate that overnight visitors to the park spend approximately $11 million while day visitors spend approximately $58 million per annum in the park. However, we believe that our estimates of spending by those staying overnight are on the low side. Our survey picked up only 60 respondents doing guided overnight walks compared to 160 respondents doing unguided overnight walks, whereas we believe the guided walks to be a much higher proportion of total overnight walks. Moreover, a number of the guided walkers had purchased a package of which their time in FNP was only a part and they did not know what their expenditure in the park was. We believe that total direct expenditure in the Park by overnight visitors is likely to

[11] The results may be biased if those who are on packages of which a trip to FNP is just a part spend differing amounts to those who are not on packages. We are not able to say whether this bias is significant, or even whether the bias is up or down.

be closer to $20 million.

Table 8 Average Park User Expenditure by visitor origin and type ($ / person)

	Overnight Visitors - Total			Day Visitors		
	NZ residents	Over-seas	**Total**	NZ residents	Over-seas	**Total**
Spend in Park						
Accommodation	146	210	196			
Activity	147	199	188	78	105	99
Other inc. food	8	4	6	3	5	4
Total in Park	**301**	**413**	**389**	**80**	**110**	**103**
Average per night	**107**	**163**	**151**			
Spend in prior 24 hours						
Accommodation	31	39	37	35	44	42
Fuel	14	11	12	18	15	15
All other transport	5	3	3	1	4	3
Restaurants etc	21	21	21	22	21	21
Retail	26	33	31	18	26	25
Entertainment	6	17	15	6	20	17
Miscellaneous	0	4	3	0	0	0
Total in prior 24 hours	102	125	120	96	127	120

Note that the expenditure on DOC huts could represent double counting if it was included in DOC expenditure as well as visitor expenditure. For that reason we have included in the DOC expenditure only their net expenditure on huts (i.e. expenditure less revenue). Direct output was not reported in Wouters *et al* because of confidentiality restrictions.

It is not possible to apply typical average economic ratios[12] to these figures because the operations in FNP of, for example, accommodation, are so different to those for New Zealand as a whole. The Wouters report suggests total direct employment (excluding DOC staff) equivalent to 320 FTE jobs, Value Added of $21 million and household income of $10 million, but these estimates apply to Southland District only and exclude employment in Queenstown Lakes District.

[12] In the case of water transport the ratios were based on surveys of relevant businesses.

3.5 Impact of Track on International Visitor Itinerary and NZ Economic Impact of Fiordland National Park

In order to estimate the total economic impact associated with FNP we asked users about their total time in the Park and in the region, and then asked them how long they would have stayed in total in the region if FNP did not exist. We also asked overseas visitors whether they would have altered the length of their stay in New Zealand in the absence of the Park.

Their answers (see Table 9 and Table 10) reveal that in the absence of the park 12 % of overnight visitors would no longer come to New Zealand and 10 % would change the duration of their stay. The average change in stay would be a decline of 2.8 nights.

A surprisingly high 6 per cent of day visitors to the Park said that they would not come to New Zealand in the absence of the Park and a further 6 per cent said that they would reduce their stay. The average decline in stay was 2.1 days, although this falls to 1.6 days with the exclusion of one day visitor to FNP who said that in the absence of the Park he or she would not have come on a six month trip to New Zealand...

Table 9 Would you have come to New Zealand in the absence of FNP ? (percentage of all respondents)

	n	Median Stay (nights)	Average Stay (nights)	Yes %	No %	Not sure
Overnight	250	17	69*	86 %	12 %	2 %
Day Trippers	330	14	45	93 %	6 %	1 %

Table 10 Would you have come to New Zealand in the absence of FNP ? (percentage of respondents with an opinion

	N	Would still come to NZ			Would not come to NZ	Total
		No Change in stay	Change in stay	Sub-total		
Overnight	234	79 %	9 %	88 %	12 %	100 %
Ave Change (nights)		0	- 9.96	-1.02	-14.94	-2.8
Day Trippers	310	84 %	10 %	94 %	6 %	100 %
Ave Change (nights)		0	-4.69	-0.58	-23.33	1.6 (-2.1)

If we combine the effects on the stay in New Zealand with the average daily spend and multiply this by the number of Park visitors and the proportion who are foreigners, we estimate that a loss of Fiordland National Park would lead to a decline in total New Zealand international visitor income of $100 million per year. If we apply relevant industry multipliers to this visitor spending, the total economic impact of Fiordland National Park is estimated to be output of $228 million per year, 1,760 jobs per year and value added of $103 million per year, including household income of $68 million per year.

Table 11 Direct Output and Total Economic Impacts on NZ Economy of Fiordland National Park Visitors

	Overnight	Day	Total
Number of Visitors	33,000	560,000	
Proportion from overseas	78 %	80 %	
Average Reduction in Stay (nights)	2.8	1.6	
Expenditure per 24 hours	125	127	
Loss of Expenditure to NZ ($m/ yr)	9.1	91.0	$100 million
Total Economic Impacts on NZ			
Output			$228 m/yr
Employment (FTEs)			1,755 FTEs
Value Added ($m / yr)			$103 m/yr
Household Income ($m / yr)			$68 m/yr

3.5 Impact of Park on User Itinerary and Regional Economic Impact

Of all overnight visitors, 33 per cent said that in the absence of the Park they would not come to the region, while a further 32 per cent that they would change the duration of their stay. The average reduction in stay was 6.1 nights, although this was significantly affected by 5 long-staying respondents. Removing them from the sample reduced the decline in stay to 3.8 nights.

Twenty per cent of day visitors to the Park said that they would not come to the region in the absence of the Park and a further 27 per cent said that they would reduce their stay. The average decline in stay was 1.5 days.

Table 12 Would you come to the Southland and Queenstown-Lakes Region in the absence of Fiordland National Park ? (of entire survey population)

	n	Median Stay (nights)	Average Stay (nights)	Yes %	No %	Not sure
Overnight	375	7.0	11.8*	63 %	33 %	5 %
Day Trippers	413	4.0	5.0	79 %	19 %	2 %

Table 13 Would you come to Southland – Queenstown Lakes Region in the absence of Fiordland National Park ? (of those who have an opinion)

	N	Would still come to Region			Would not come to region	Total
		No Change in stay	Change in stay	Sub-total		
Overnight Ave Change (nights) Ave excluding 5 long stayers	329	33 % 0	32 % - 8.2 - 4.0	66 % -3.9 - 2.6	34 % -10.2 - 7.4	100 % - 6.1 -3.8
Day Trippers Ave Change (nights)	415	53 % 0	27 % -2.04	80 % -0.56	20 % -3.97	100 % -1.33

* Falls to only 3.7 nights if we exclude the 5 respondents whose stay would be reduced by more than 30 days.

Table 14 Effect on Regional Economy of Fiordland National Park

	Overnight	Day	Total
Number of Visitors	33,000	560,000	593,000
Average Reduction in Stay (nights)	6.1	1.5	
Expenditure per 24 hours	120	120	
Loss of Expenditure to Region ($m / yr)	$21	101	$122 million

3.6 DOC Expenditure and Impacts

The direct economic activity associated with DOC operations in FNP is around $8.8 million of expenditure per year, and employment of around 54 FTEs. These figures exclude a share of regional and local office overheads. Capital expenditure is excluded from these output figures, but the figures include depreciation and capital charges, which are $2.2 million per year

3.7 Multiplier Effects and Total Regional Impacts

We have calculated economic multipliers for the combined Queenstown-Lakes District and Southland region for DOC spending and for the various elements of visitor spending. Combination of these multipliers with the direct impacts both on visitor spending and DOC spending suggests that total employment in the region which is dependent on Fiordland National Park[13] could be of the order of 1,580 jobs, while associated annual financial impacts are estimated to be $196 million output, $78 million of value added and $55 million of gross household income (see

[13] i.e. The amount which would be lost if the track closed

Table 15).

Table 15 Total Economic Impacts of Fiordland National Park on combined Southland and Queenstown-Lakes Region

	Output ($m / yr)	Employment (FTEs)	Value Added ($m / yr)	Household Income ($m / yr)
Direct Impact in QLDC – Southland				
Tourism	120	1,165	43.3	37.1
DOC Operations	8.8	54	5.4	3.0
Commercial Deer Recovery	1.5	6	0.5	0.3
Flow-on Impacts in QLDC - Southland				
Tourism	60	311	26	12.8
DOC Operations	4.7	40	2.5	1.4
Commercial Deer Recovery	0.5	3	0.3	0.2
Total Impacts in Queenstown Lakes District and Southland Region	**196**	**1,580**	**78**	**55**

3.8 Electricity Generation

The other very significant economic activity that takes place in Fiordland National Park is generation of hydro electricity from water in Lake Manapouri, the vast majority of whose water comes from catchments within Fiordland National Park. Approximate generation is 5.025 GWh / year which has a market value of approximately $300 million /per year.