

Effect of Air Traffic Associated With Milford Aerodrome on Visitors to Fiordland National Park

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1. Introduction

Milford Aerodrome is associated with regular, high numbers of scenic flights into and around Milford Sound / Piopiotahi. Fixed wing aircraft are most common and these aircraft generally follow regular flight paths and schedules from Queenstown and to a lesser extent, Te Anau and Wanaka (DOC 2006a).

Between 1996 and 2005 there were approximately 17,000 aircraft movements (landings and take-offs) annually at Milford Aerodrome. The Fiordland weather and the nature of the tourism market mean these flights are typically spread over 200-250 days of the year and concentrated in summer. On fine days during the peak season more than 200 aircraft movements per day have been recorded (DOC 2006a). Air traffic into Milford Sound / Piopiotahi is driven to a large extent by the schedule of boat cruises which peak in activity during the middle of the day. This creates a situation where, instead of flights being spaced evenly across the day, a number of planes travel "in convoy" resulting in as many as 44 aircraft movements being recorded in the space of one hour (Ministry of Transport data for peak summer period 2001 - 2003).

Milford Sound / Piopiotahi sits within a front country visitor setting attracting a variety of different types of visitor. The majority of visitors come as part of large package tours while others seek a more intimate eco-friendly encounter within Fiordland National Park. It is established and generally accepted that there is a high level of aircraft access in comparison to other areas of the Fiordland National Park and that other visitors to Milford and the surrounding areas should expect to encounter aircraft (DOC 2006a).

Issues have arisen not only at Milford Sound / Piopiotahi but also in other locations where flight paths cross areas where visitors have higher expectations of natural quiet and solitude. Over the years a number of complaints have been received about levels of noise and aircraft activity within Milford Sound and adjacent areas. The issue generated a large number of positive and negative submissions to the Draft Fiordland National Park Management Plan and a great deal of interest from the media and stakeholders.

The number of visitors who could potentially be affected by aircraft noise is high. Over half a million people visited Milford Sound in 2005 (DOC 2006b). A number of the most popular walks and tramps in the national park are beneath the main aircraft flight paths. In the 2004/05 season the number of visitors using the Milford and Routeburn Tracks was estimated at 14,000 and 13,000 visitors respectively (based on great walk bookings, concession returns and hut book records for off season use) while over the five seasons from 2000/01 to 2005/06 track counters recorded an average 14,800 visitors on the Key Summit track. Other popular walks on the flight path include those at Lake Marian and Lake Gunn.

Away from the more popular areas of the park the Darran Mountains, an important location for remote climbing, and the Pembroke Wilderness Area on the northern side of Milford Sound are areas with low visitor numbers but where the experiences are likely to be more susceptible to aircraft noise.

In an effort to quantify the extent of the problem, five previous studies have been carried out by the department or other agencies to measure the effects of aircraft on visitors to the national park. The most recent survey, carried out in 2000, found that 51% of walkers on the Milford Track and 20% of visitors to Milford Sound were annoyed by aircraft (Tourism Resource Consultants 2000).

An earlier survey on the Milford Track carried out in the 1993/1994 season found that 69% of respondents were bothered to some degree by the impact of aircraft landing or flying overhead. (Cessford 1998a). Likewise 31% were found to be annoyed by aircraft in a study carried out at the same time on the Routeburn Track (Cessford 1998b).

In the 1998/1999 season Herlihy (1999) found that 52% of walkers on the Milford Track were annoyed by aircraft (Herlihy 1999), however this survey lacked the scientific rigour of the other studies.

In the final piece of research Hunt (1999) modelled likely noise doses based on terrain, known flight paths and typical aircraft noise levels. This information was plotted onto a map allowing predictions to be made about the areas that were more likely to receive higher doses of aircraft noise. On the track these areas generally corresponded with the higher altitude sections where walkers were physically closer to the aircraft.

In response to the aircraft noise issue the Draft Fiordland National Park Management Plan sets out a means to bring aircraft activity within acceptable levels over the life of the plan. An agreed starting point from which to monitor was identified through the draft plan process, that being, the level of use occurring in the 12 months up to 1 April 2005. The number of aircraft allowed to regularly access the Milford Aerodrome will be limited to a total of 53 fixed wing aircraft and 37 helicopters which was the level operating at that time. Similar restrictions apply to irregular and one-off landings. Further growth in the number of aircraft accessing Milford Sound / Piopiotahi is contingent on the results of an annual programme of visitor surveying to be carried out between 2006 and 2011. This research will provide further guidance on limits for aircraft concessions which will be enforced from 2011 onwards. Central to the research is a management threshold of 25% annoyance. Management action is recommended at any site where more than 25% of respondents are found to be annoyed by aircraft.

This report is a summary of the findings relating to noise and aircraft activity across the six locations monitored during the 2006/07 summer season. Detailed analysis including information on visitor demographics and perceptions of crowding for each study site will be provided in separate reports.

2. Methods

Surveying was carried out from January 10th - 1st April 2007 at six sites on the Milford Aerodrome flight path; Gertrude Valley, the Hollyford road end, Homer Hut, The Divide (for Key Summit), the Milford Sound foreshore and Sandfly Point (for the Milford Track).

Respondents were approached by DOC staff and asked to fill in a self completion questionnaire (see appendix 1-6) and return it onsite. Alternatively they were given the option of returning the form in a pre-paid postal envelope. At the Hollyford road end and Gertrude Valley car park the appropriate number of survey forms and envelopes were left on visitor's vehicles if they had not returned by the end of the day. At Homer Hut surveying was carried out in the evenings and forms and prepaid envelopes were left for visitors who were returning late or camping out. These forms were typically left with visitor's gear and the NZ Alpine Club hut wardens or other visitors assisted in making sure that the correct number of forms were left and that respondents were made aware of the surveys on their return. Surveying at all sites was carried out both on fine days and during wet or overcast conditions when aircraft were not flying.

Input into the design of the survey programme was sought from a number of Stakeholders including the Queenstown/ Milford aircraft user group (QMUG), Ministry of Transport, Environment Southland, Milford Track Guided Walks, Forest & Bird, NZ Alpine Club and other recreational users. A number of changes were made to the original surveys as a result of this consultation and following a pilot of the survey carried out in November 2006.

Information on levels of aircraft activity during the survey period was sourced from Ministry of Transport records for Milford Aerodrome, DOC biodiversity and visitor assets staff (for management flights) and from observations made at Gertrude Valley and the Divide.

3. Results

A total of 1934 visitors were surveyed across the six sites (Table 1) with response rates for visitors aged 16 years and over ranging from 64 - 85%. Postal returns were a significant contributor to the overall response rate at Homer Hut, Gertrude Valley and especially the Hollyford Track where almost half of all returns were postal returns. At the remaining three sites fewer than 10% of responses were postal returns.

TABLE 1: SURVEY SAMPLE SIZE AND RESPONSE RATES

SITE	# RESPONDENTS	RESPONSE RATE	% POSTAL RETURNS	# SURVEY DAYS
Gertrude Valley	199	80.9%	19.1%	19
Hollyford Track	153	64.0%	47.1%	19
Homer Hut	59	78.7%	13.6%	21
Key Summit	463	84.5%	3.9%	7
Milford Foreshore	671	69.0%	6.9%	9
Milford Track	389	81.4%	0.8%	12

The survey at Homer Hut had a low sample size and results from this site should be viewed as being indicative only. The response rate recorded at the Milford Foreshore site is less accurate as some potential respondents were missed during busy periods while others avoided the survey point by walking along the road. This is unlikely to have had a significant effect on the results.

AIRCRAFT ACTIVITY

During the period 1 January - 31 March 2007 there were a total of 3673 landings recorded at Milford Sound. This translated to 7346 aircraft movements or an average of 82.5 per day. 69% of landings at the aerodrome were made by fixed wing aircraft and 31% by helicopters (Figure 1).

Aircraft operated at Milford Sound/ Piopiotahi on all 89 days. On 3 out of 89 days during this period the daily number of landings exceeded 100 while the number of landings exceeded 50 on 42% of days. On a quarter of days during the period there were fewer than 10 landings.

On 29 occasions during the three month period twenty or more landings were recorded in a one hour period. These busy periods occurred between the hours of 1 and 2 pm and less often between 9 and 10 am. The busiest period recorded was between 1 and 2 pm on 8 March when 31 aircraft landed. 9 of the 29 instances occurred in early January prior to the start of surveying.

No information was obtained on aircraft taking off from Milford Sound but historic data shows similar peaks in activity between 3 pm and 4 pm and to a lesser extent 1 pm and 2 pm.

FIGURE 1: MONTHLY AIRCRAFT ACTIVITY AT MILFORD AIRSTRIP BY AIRCRAFT TYPE JAN - MAR 2007. THIS HAS BEEN ESTIMATED BY DOUBLING THE NUMBER OF LANDINGS.

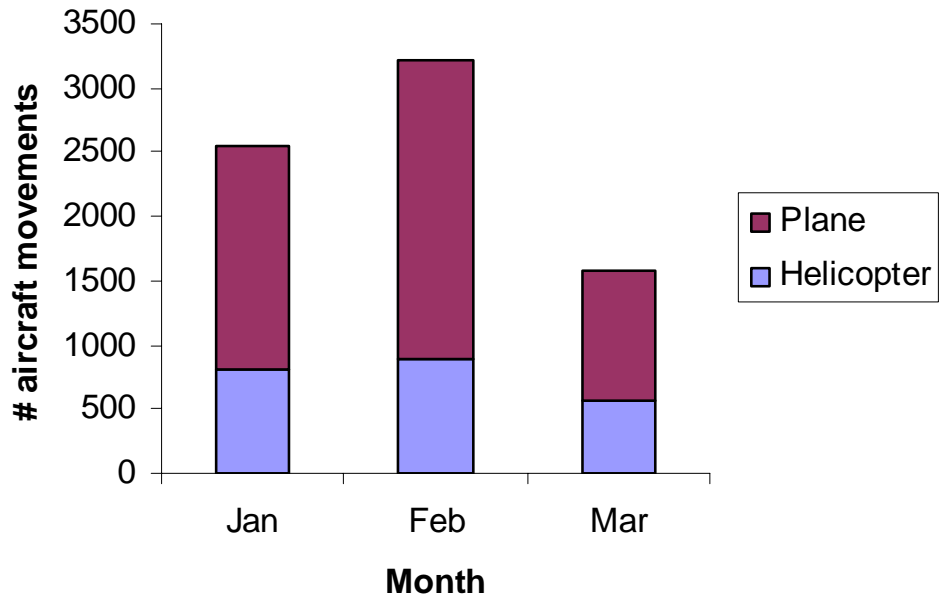
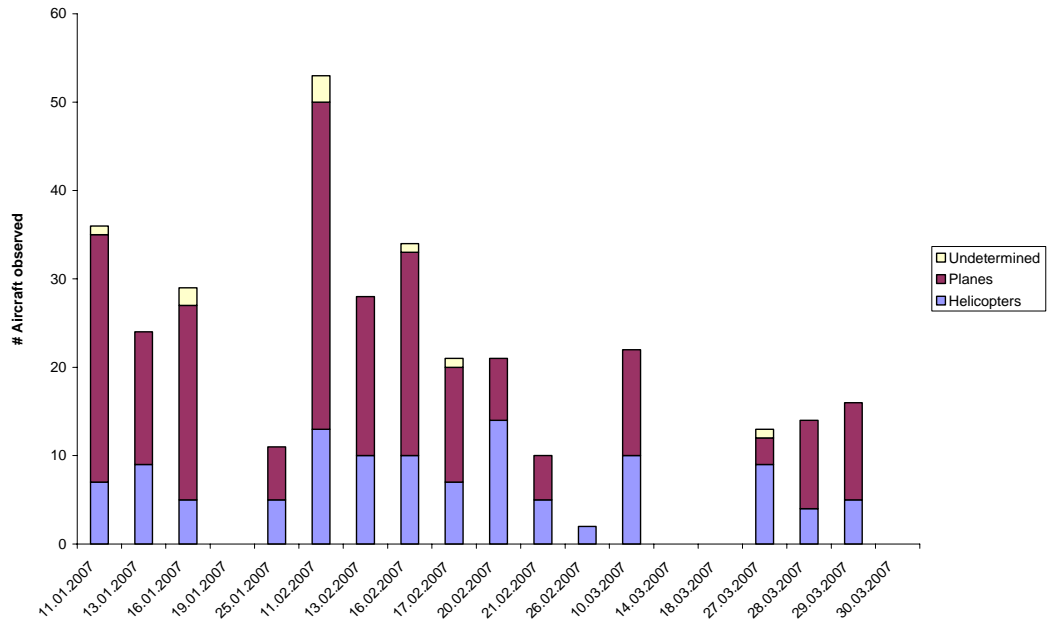


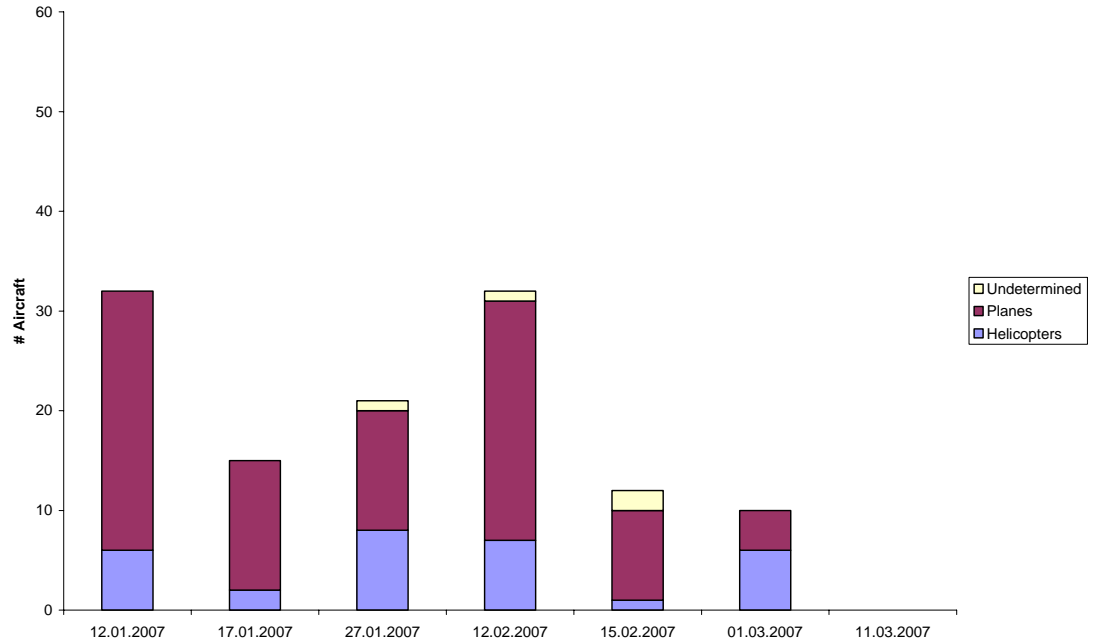
FIGURE 2: DAILY AIRCRAFT ACTIVITY OBSERVED AT GERTRUDE VALLEY



At Gertrude Valley (figure 2) there were on average 17.6 aircraft overflights observed on each day of surveying. The maximum number observed was 53 on February 11th and aircraft were absent on four of the eighteen survey days. Over the survey period 63% of overflights were made by planes, 34% by helicopters and 3% were undetermined. Helicopters landed in the vicinity of the Homer Tunnel on a number of occasions and often circled the valley and flew low over the track on take off or landing.

At the Divide (figure 3), on average 17.4 aircraft were observed each day. The maximum number observed was 32 aircraft on January 12th and February 12th. No flights were observed on March 11th. 72% of overflights during the survey period were made by fixed wing aircraft, 25% by helicopters and on 3% of occasions the type of aircraft was unrecorded.

FIGURE 3: DAILY AIRCRAFT ACTIVITY OBSERVED AT THE DIVIDE.



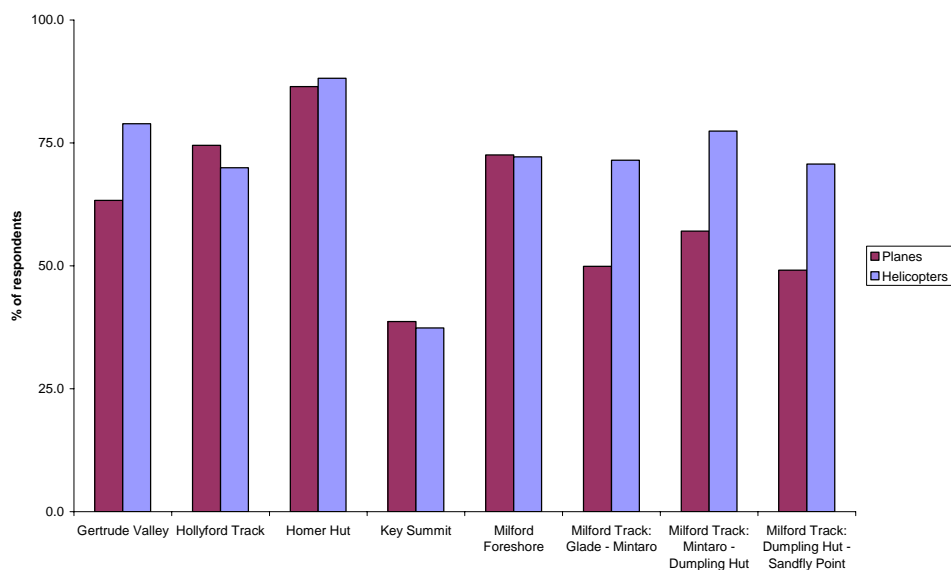
Neither site was ideal for observing aircraft. A greater number of aircraft would have been apparent to visitors further along the tracks especially on the Key Summit Track and the noise and distraction from traffic and visitor activity at The Divide meant that some quieter overflights could have been missed.

The number of aircraft movements recorded at Milford Sound was substantially higher than the number recorded by observers at the survey sites on any given day. This indicates that other additional flight paths are being used that were not apparent to the observers (e.g. westward from Milford Sound and along the coast).

SURVEY RESPONSES

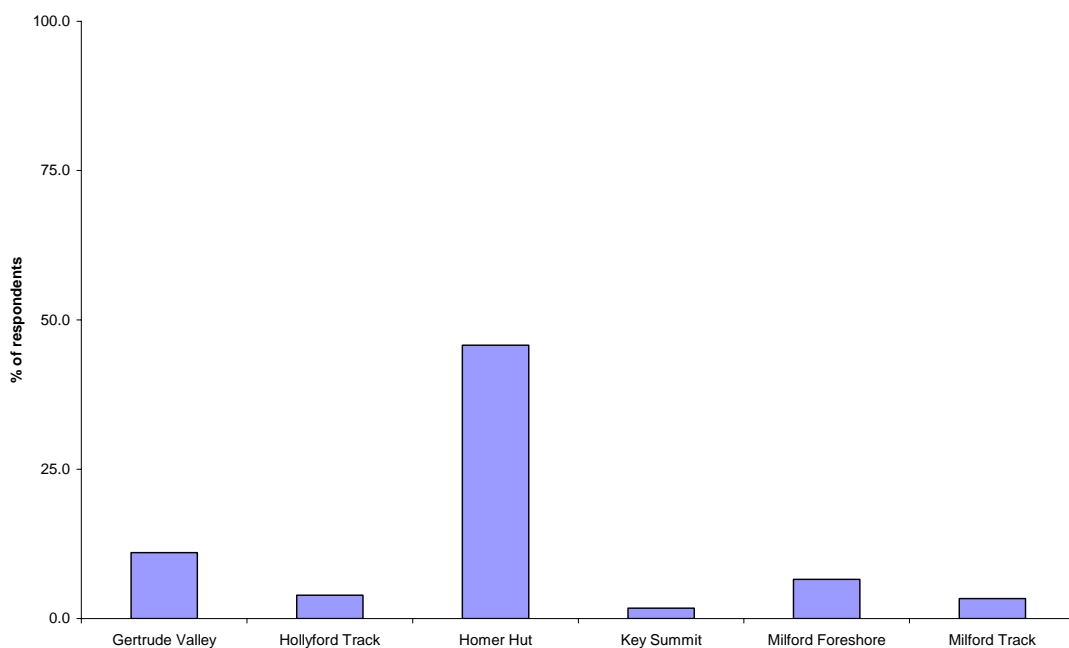
With the exception of Key Summit the majority of visitors to the six survey sites noticed aircraft during their visit (figure 4). At Gertrude Valley and on the Milford Track visitors were more likely to have reported seeing helicopters than planes when compared to other sites. 19% of respondents on the Hollyford Track and 6% at the Milford Foreshore had themselves, travelled by aircraft.

FIGURE 4: PERCENTAGE OF VISITORS WHO NOTICED AIRCRAFT



Visitor comments

FIGURE 5: PERCENTAGE OF RESPONDENTS WHO INDICATED THAT AIRCRAFT WAS THE ASPECT OF THEIR VISIT THEY LIKED THE LEAST.



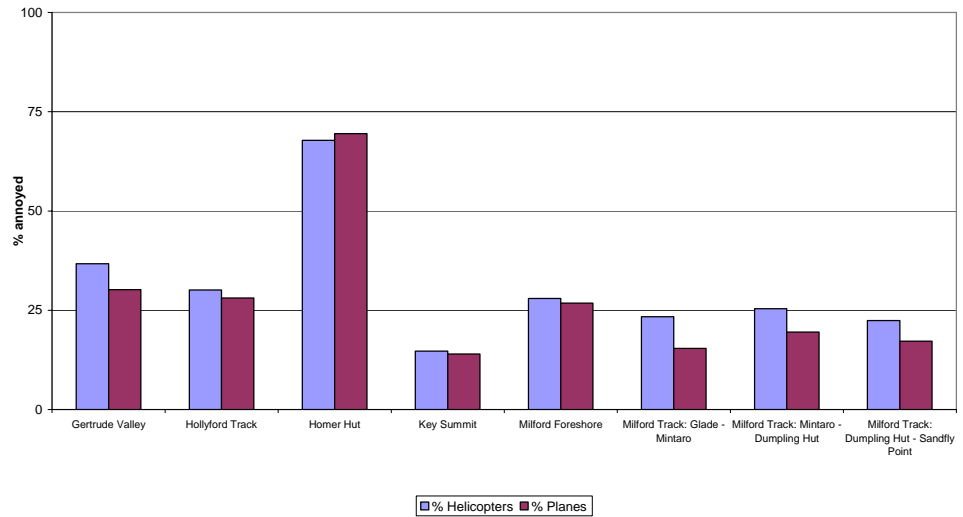
Respondents were first asked what they “liked least” about their visit before being prompted to answer specific questions about aircraft and other potential sources of annoyance. Aircraft were mentioned at all six sites (figure 5) and were a significant source of dissatisfaction at Homer Hut where 46% of respondents specifically mentioned them and also at Gertrude Valley where they were mentioned by 11% of respondents.

The non response rate (i.e. visitors leaving it blank, writing a dash or n/a etc.) for this question was higher than for other questions in the surveys. Non response rates for this question were higher at the three day walk or day visitor sites (20.6 - 35.2%)

than at the three sites where users were engaged in climbing or overnight tramping (5.7 - 11.2%).

Annoyance with aircraft

FIGURE 6: ANNOYANCE WITH AIRCRAFT



Annoyance with helicopter activity (figure 6) exceeded the 25% management threshold at five locations - Gertrude Valley (36.7%), Hollyford Track (30.1%), Homer Hut (67.8%), Milford Foreshore (28%) and the Mintaro Hut to Dumppling Hut section of the Milford Track (25.4%) which includes the Mckinnon Pass and Sutherland Falls.

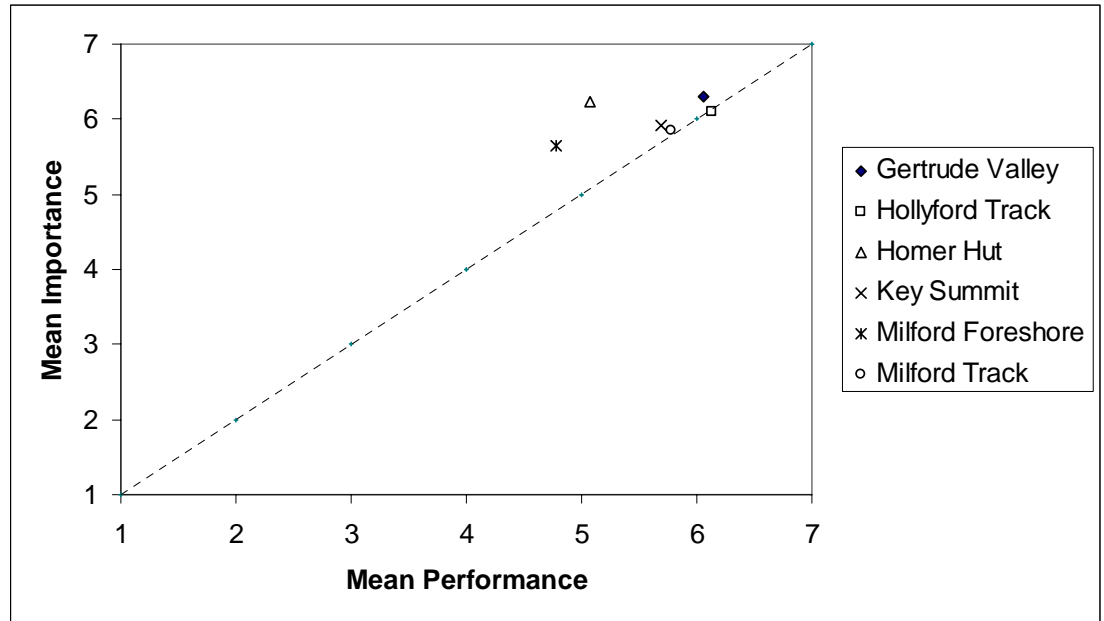
The level of annoyance with fixed wing aircraft (figure 6) exceeded the threshold at four sites - Gertrude Valley (30.2%), Hollyford Track (28.1%), Homer Hut (69.5%) and the Milford Foreshore (26.8%).

Aircraft were the most significant source of annoyance (out of the options presented) at all sites except for the Milford Foreshore where the presence of large groups annoyed a greater percentage of respondents.

The non response rates for the two questions ranged from 1.7 - 6.3%.

Importance performance analysis

FIGURE 7: VISITORS' ASSESSMENT OF "NATURAL PEACE AND QUIET."



Importance-performance analysis showed that although visitors attached a high degree of importance to natural peace and quiet at all six sites, at the Milford Foreshore and Homer Hut the actual experience failed to measure up. This is illustrated in figure 7. The dotted line indicates where visitors' experience of peace and quiet matches the degree of importance attached to it. At sites that are above the line, the experience of natural peace and quiet has failed to meet visitors' needs and the greater the distance from the line the greater the shortfall in the visitor experience.

In total, 21% of visitors to the Milford Foreshore and 19% of visitors to Homer Hut disagreed that they were able to experience natural peace and quiet. Solitude was also an issue for respondents at Homer Hut. 17% said that they had been unable to experience it during their visit. Other aspects of the visitor experience that are considered susceptible to disruption by noise or the presence of aircraft were found to be meeting or exceeding visitors' requirements at all six sites.

The non response rate for this question ranged from 1 - 1.8% for the question relating to importance and from 1.3 - 7.9% for performance.

4. Discussion

Results at Key Summit and the majority of the Milford Track show that impacts from aircraft are within acceptable limits. At Key Summit the level of annoyance was well below the threshold and fewer than 40% of respondents noticed aircraft despite the fact that aircraft were recorded on six of the seven survey days. Interestingly helicopters (14.7%) caused a similar degree of annoyance to planes (14%) despite there being almost three times as many overflights by planes as helicopters over the period of the survey.

On the Milford Track levels of annoyance were surprisingly low when viewed in the context of earlier studies. Despite a management perception that planes were a problem on the Milford Track and especially over the Arthur Valley, planes were noticed by fewer visitors on the track and caused a much lower degree of annoyance than helicopters.

Helicopters on the section between Mintaro and Dumpling huts were the only instance where the 25% annoyance threshold was exceeded on the Milford Track although they were close to the threshold on the other two sections. This is the highest section of track and is where visitors are likely to receive the largest noise dose as they are physically closer to the aircraft. Aircraft are also more noticeable because much of the track is above the bush line and aircraft are easier to see.

Aircraft travelling to and from Milford Sound/ Piopiotahi are unlikely to be the sole source of annoyance on this and other sections of the Milford Track. There are a number of helicopter operators who operate flights to the area around Lake Quill and Sutherland Falls. As of May 2007 eight operators are permitted to make landings at Lake Quill. Six of the operators are permitted up to three landings per day within the wider Eastern Poplar Zone that includes Lake Quill, one is allowed one landing per day and the remaining company operates under an older concession that has no limit (S. Dowie pers. comm.). There may also be operators who fly above the area but who do not land and who are therefore operating outside of the department's jurisdiction. Under the Draft Fiordland National Park Management Plan it is proposed to limit the opportunity to 200 landings per year with no more than 10 landings per day. In addition a voluntary flight path would be negotiated with the department to avoid operators flying over the Milford Track (DOC 2006a).

Management flights are also likely to be contributing to the level of annoyance on the Milford Track. On the section between Glade Wharf and Mintaro Hut 23.4% of visitors were annoyed by helicopters however helicopter activity in this section is almost exclusively made up of flights by Milford Track Guided Walks and management flights by DOC.

It is likely that levels of annoyance were influenced by management flights elsewhere as well. From 16 - 18 January the three DOC huts were serviced which required 5-6 flights for each hut to replenish stores of gas, coal, food and other supplies and to remove sewage. On 16, 17 & 19 January gravelling work was undertaken on the Milford Track near Quintin Hut which required a total of 18 flights over three days (P Dalley pers. comm.). Visitors who completed the track on January 18 experienced helicopter activity associated with both the track maintenance work and the re-supply of Mintaro and Dumpling Huts. Of the 34

walkers who were surveyed that day, 50% were reported being annoyed by helicopters on the track section between Mintaro and Dumpling Huts compared to 25.4% for all survey respondents across the 12 survey days.

This level of intensive use of helicopters by the department is likely to be a fairly isolated event however it must be considered. Total helicopter use for servicing of facilities, track management (other than one off capital works), control and management of avalanches and severe weather evacuations is conservatively estimated at 30 hours per year (R Kerr pers. comm.). Helicopters are also used by biodiversity staff for possum and stoat control and for work associated with managing blue duck in areas around the Milford Track. This is estimated at approximately 39 hours per year (M. Willans pers. comm.).

Use of helicopters by Milford Track Guided Walks is more extensive because of the higher level of service provided at their facilities. Milford Track Guided Walks' clients were not included in the survey however they make up approximately 50% of the overnight users of the track and therefore efforts should be made to include them in future surveys.

While levels of aircraft activity were acceptable or close to the threshold at Key Summit and on the Milford Track, impacts reached unacceptable levels at the remaining four sites. Homer Hut recorded over 60% annoyance with both planes and helicopters and 43% indicated that they disliked aircraft when asked what they had liked the least about their visit. It was also evident that although natural peace and quiet and solitude were both important aspects of the visitors' experience the actual experience did not measure up. This indicates a serious problem with aircraft but there are reasons not to take this result at face value. The sample size of 59 at Homer Hut was quite small. More importantly an article explaining the survey was published in a climbing magazine (The climber 2006) resulting in Homer Hut being the only site where respondents may have known about the survey and its intentions before arriving. It could also be argued that climbers are closer to the aircraft flight path so are likely to receive a higher dose of noise. This response fits with what is expected from the literature in terms of the setting, the type of visitors and the experience that they are seeking. More intensive monitoring at this site in the 2007/08 summer will confirm the extent of noise impacts at this site.

Results for Homer Hut are also supported by those for the adjacent day walk at Gertrude Valley which recorded the next highest level of annoyance of the six sites. At Gertrude Valley 36.7% of respondents were annoyed by helicopters and 30.2% by planes. When asked what they liked the least about their visit, 11% of visitors gave aircraft as a response.

Like Key Summit, helicopters at Gertrude Valley caused a degree of annoyance that was disproportionate to the number of overflights. The number of respondents who were annoyed by helicopters was 22% greater than those annoyed by planes despite the fact that there were almost twice as many overflights by planes as helicopters. This could be in part due to the nature of the helicopter flights that are occurring in the area. A number of helicopters were observed landing at a site further up the valley towards the Homer Tunnel. In doing so these aircraft would often slowly circle the valley and fly low over the track. These flights are likely to be more annoying to visitors than higher altitude flights heading to or from Milford Sound / Piopiotahi. Consideration should be given to limiting helicopter activity in this area instead of or in addition to any changes in aircraft numbers at Milford Aerodrome.

Limiting helicopter activity and behaviour around Gertrude Valley and the Homer Tunnel will be more effective in reducing annoyance and fairer on operators at Milford Sound / Piopiotahi who are not the sole contributors to the problem.

Aircraft were also a problem on the Hollyford Track. 30.1% of visitors were annoyed by helicopters during their visit and 28.1% by planes. Only 3.9% indicated that aircraft were something that they liked the least about their visit as other issues such as weather, sandflies and especially conflict with other visitors were more prominent. Survey respondents were not asked to indicate where problems with aircraft occurred so detailed guidance on appropriate flight paths around the Hollyford track cannot be provided. A complicating factor is that there are multiple sources of potential aircraft overflights on this track. In addition to air traffic associated with Milford Sound / Piopiotahi, there are airstrips located at Martins Bay and near the Hollyford Road end. Ascertaining where the problem areas are with respect to aircraft should be a priority for future monitoring. The inclusion of guided walkers in the survey should also be considered. Guided walkers were not surveyed in this case because they depart the track at Martins Bay rather than the Hollyford road end where the survey was carried out.

Finally annoyance with aircraft also reached unacceptable levels on the Milford Foreshore. 28% of respondents said that they were annoyed by helicopters at Milford and 26.8% by planes. However, the Milford Foreshore was the only site where aircraft were not the most the annoying of the potential impacts that were listed. The presence of large groups annoyed a greater percentage of respondents. Motorised vehicles and commercial groups were also significant sources of annoyance. Only 6.6% of visitors indicated that aircraft were something they liked least about their visit. This result is more likely to reflect the variety of negative impacts affecting visitors to Milford rather than the absence of a problem with aircraft. The importance-performance analysis showed that although natural peace and quiet was important to visitors at Milford Sound their experience did not match this. This is unlikely to be solely because of aircraft noise but is most likely the result of a combination of noise from aircraft, vehicles (especially buses) and boats.

The results for the Milford Foreshore may be understated as some respondents were surveyed early on in their visit and may not have had much exposure to aircraft up to that point. Given the success of the postal return option generally it may be better to make greater use of this at Milford Sound / Piopiotahi allowing visitors to have full exposure to the range of positive and negative influences on their visit before responding to the survey.

Overall the questionnaires performed well at the six sites. Some overseas visitors were not familiar with the word "solitude" in the questions used for importance-performance analysis and some clarification may be needed in future surveys. The questions about "spending time with friends and family" were also difficult to answer for the large number of visitors who were travelling by themselves and the results were of limited value. This question could be omitted or replaced in future.

One reviewer of the survey questioned whether visitors would be able to tell the difference between planes and helicopters and suggested that they may not be able to properly answer the questions relating to annoyance. Non response rates for this question were low and ranged from 1.7 - 6.3% indicating that the majority of visitors were able to form an opinion. There were a small number of cases where observers counting aircraft overflights at Gertrude Saddle and the Divide were

unable to ascertain the type, despite actively looking for aircraft. However, given the high number of overflights that visitors are typically exposed to it is likely that visitors can correctly identify enough of each type of aircraft to form a valid opinion. Furthermore visitors are most likely to either fail to identify or mistakenly identify aircraft when the aircraft are distant, quiet or behind cloud. These aircraft are also the ones that are least likely to be the cause of any annoyance. Visitors are more likely to be annoyed by the effects of the loudest and most obvious aircraft.

If the survey were to be used in areas with less frequent overflights consideration could be given to including a single question relating to the effects of aircraft rather than separate questions for planes and helicopters. This is not desirable in the case of Milford as this study has found that the effects of helicopters and planes are different. The information provided by the separate questions provides better information for the department to target any management response.

There was the perception among some stakeholders that a previous survey used by the department to monitor aircraft was biased. One suggested solution was that an open ended question such as “what did you dislike about your visit” could be used as an alternative. A similar question was included in the surveys as a means to pick up issues that were not covered in the questions that were specific to aircraft. The results of this question showed a substantially lower level of concern with aircraft. Further explanation of this follows.

Open ended questions which require a respondent to write a response are more difficult to answer and are more likely to be skipped by respondents than closed questions which for example require the respondent to tick a box (Hall & Roggenbuck 2002). In this study the non response rate was much higher for the open ended dissatisfaction question than for the closed questions. This was especially the case in the three surveys of day visitors (Milford Foreshore, Gertrude Valley and Key Summit) where the non response rate ranged from 20.6 - 35.2%. A higher non response rate results in a lower percentage score for any given source of dissatisfaction.

The response to aircraft is only one part of the visitor's satisfaction with their visit and only one factor that affects their overall enjoyment. A wide range of responses is therefore likely to any question about general dissatisfaction.” (Booth, Jones & Devlin 1999). It is likely that this would result in a lower percentage for any one impact.

The question in this survey “what did you like the least about your visit” asks for only the most important issues rather than an exhaustive list. If other sources of dissatisfaction such as weather, sandflies or crowding were greater inconveniences than aircraft, aircraft may not be mentioned even though they may have affected the visitor's overall enjoyment. By not prompting the visitor to consider any particular issue in detail the response may be more superficial in that it may reflect more recent events or events that were on the respondent's mind at the time that they were surveyed.

Finally there are reasons why an open ended question may not be a suitable indicator compared to a closed question. The analysis of open questions and qualitative data requires a degree of interpretation that could vary depending on who carries out the analysis. This is generally not the case with closed questions. The US national park service has also suggested that people evaluate their responses

to an event much more reliably if they are questioned specifically about the event (National Park Service 1994).

Overall the current questionnaire design is sound and substantial changes to it should be avoided as this can reduce the validity of comparisons between years. Guidance for setting limits for aircraft at sites where annoyance thresholds have been exceeded should be sought by including a further question to ask for visitors' maximum tolerance for aircraft overflights.

The assistance of Kerry Wray, Kate Roughan, and Sally Chesterfield in administering the surveys is gratefully acknowledged.

5. Recommendations

1. No further quota of landings should be issued for Milford Aerodrome until impacts at Milford and on the flight path are within acceptable limits.
2. The department should cap the number of helicopter landings in the vicinity of the Gertrude Valley at current levels and aim to reduce the number in the long term until the level of annoyance with helicopter activity falls within acceptable limits.
3. Further monitoring on the Hollyford Track should determine the areas where aircraft impacts are occurring to provide further information to manage this issue.
4. Monitoring at Milford Sound / Piopiotahi should be expanded to include bus/cruise passengers as these visitors generally represent a different group to those on the foreshore and make up the majority of visitors to the area. Boat cruises occur outside the boundaries of the park so this work would need to be carried out with the cooperation Environment Southland. To reduce the risk of stakeholder fatigue and visitors being targeted by multiple surveys during their visit, consideration should be given to integrating surveying at Milford Sound / Piopiotahi with work being carried out for other projects such as the Fiordland Integrated Management Programme and the Fiordland Marine Area Survey.
5. Future surveys on the Milford and Hollyford Tracks should be expanded to include guided as well as independent walkers.
6. Based on the findings of this research and in consultation with the New Zealand Alpine Club, Federated Mountains Club and other interested parties QMUG should work together to choose voluntary flight paths that avoid areas where aircraft impacts are currently unacceptably high or where aircraft are likely to detract significantly from the visitor experience.
7. The department should consider the potential impact on visitors of flights undertaken for management purposes within Fiordland National Park, especially on the Milford Track, and seek to minimise this activity where appropriate.
8. The department should work with Milford Track Guided Walks to reduce their number of management flights or seek other mitigation methods such as changing the timing of flights.
9. Further surveying should take place at the following sites in the summer of 2007/08
 - a. Gertrude Valley
 - b. Hollyford Track
 - c. Homer Hut
 - d. Lake Marion Track
 - e. Milford Sound
 - f. Milford Track
10. Future surveys at sites where aircraft activity has exceeded the management threshold should include a further question to assess visitors' maximum tolerance for aircraft overflights.

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Now we'd like you to tell us about your experiences on the track

8. How long was your visit to the Gertrude Valley? (Tick one box)

- Less than 1 hour
 1-2 hours
 3-5 hours
 More than 5 hours

9. What have you liked the **most** about your visit to the Gertrude Valley?

10. What have you liked the **least** about your visit to the Gertrude Valley?

11. How much do you agree or disagree that...?	Strongly disagree							Strongly agree
	1	2	3	4	5	6	7	
a) I was able to experience natural peace and quiet	1	2	3	4	5	6	7	
b) I was able to enjoy nature and scenery	1	2	3	4	5	6	7	
c) I was able to experience solitude	1	2	3	4	5	6	7	
d) I was able to relax and reduce stress.	1	2	3	4	5	6	7	
e) I was able to enjoy the experience with friends and family	1	2	3	4	5	6	7	

12. How did the activities of other visitors affect your visit?

	Did not notice this	Noticed this but it didn't annoy me	Annoyed me a little	Annoyed me a lot
• Behaviour of other visitors				
• Hearing or seeing helicopters				
• Hearing or seeing planes				
• Meeting commercial/ guided groups				
• Meeting large groups				

Comment:

13. Did you feel crowded at all at during your visit to the Gertrude Valley?
(circle one number)

1	2	3	4	5	6	7	8	9
Not at all crowded		Slightly Crowded			Moderately Crowded			Extremely Crowded

Comment:

14.a) Would you recommend the Gertrude Valley to other people?

Yes No

b) What things would you tell them about it?

Thank you for your time!

If you have any feedback about this survey please contact Michael Harbrow, Southland Conservancy, Department of Conservation, PO Box 743, Invercargill. Ph. 03-211-2400. Email: mharbrow@doc.govt.nz

Now we'd like you to tell us about your experiences on the track

9. What have you liked the **most** about your visit to the Hollyford Track?

10. What have you liked the **least** about your visit to the Hollyford Track?

11. How much do you agree or disagree that...?	Strongly disagree							Strongly agree
	1	2	3	4	5	6	7	
a) I was able to experience natural peace and quiet	1	2	3	4	5	6	7	
b) I was able to enjoy nature and scenery	1	2	3	4	5	6	7	
c) I was able to experience solitude	1	2	3	4	5	6	7	
d) I was able to relax and reduce stress.	1	2	3	4	5	6	7	
e) I was able to enjoy the experience with friends and family	1	2	3	4	5	6	7	

12. How did the activities of other visitors affect your visit?

	Did not notice this	Noticed this but it didn't annoy me	Noticed this and it annoyed me a little	Noticed this and it annoyed me a lot
• Behaviour of other visitors				
• Hearing or seeing helicopters				
• Hearing or seeing motorised boats				
• Hearing or seeing planes				
• Meeting day visitors				
• Meeting guided/ commercial overnight visitors				
• Meeting large groups				

Comment:

13. Did you feel crowded at all during your visit to the Hollyford Track?

a) On the track

1	2	3	4	5	6	7	8	9
Not at all crowded		Slightly Crowded			Moderately Crowded		Extremely Crowded	

b) In the huts

1	2	3	4	5	6	7	8	9
Not at all crowded		Slightly Crowded			Moderately Crowded		Extremely Crowded	

Comment:

14. a) Did you travel by jet boat during your visit to the Hollyford Track?

Yes No

b) Did you travel by aircraft during your visit to the Hollyford Track?

Yes No

15. Where did you **stay the night** on the Hollyford Track? (Indicate number of nights)

	Number of nights		Number of nights
1. Hidden Falls Hut		6. Martins Bay Hut	
2. Alabaster Hut		7. Pyke Lodge	
3. McKerrow Island Hut		8. Martins Bay Lodge	
4. Demon Trail Hut		9. Olivine hut	
5. Hokuri Hut		10. Big Bay Hut	

16. a) Did you camp during your visit to the Hollyford Track?

Yes No

b) Where did you camp? _____

17a. What did you think about the services and facilities provided on the Hollyford Track?
 (circle one number on each line)

	Very poor							Excellent	Did not use/ see
	1	2	3	4	5	6	7		
• Huts	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Hut wardens	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Maps and brochures	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Signs and information panels	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Toilets	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Tracks	1	2	3	4	5	6	7	<input type="checkbox"/>	

17b. If you circled **1, 2 or 3**, for anything above, please tell us why...

18. a) Would you recommend the Hollyford Track to other people?

Yes No

b) What things would you tell them about it?

Thank you for your time!

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 Southland Conservancy, Department of Conservation, PO Box 743,
 Invercargill. Ph. 03-211-2400. Email: mharbrow@doc.govt.nz*

8. What were you looking for during your visit to the Darran Mountains?
(circle one number on each line)

How important was?	Not at all important						Very important
a) Natural peace and quiet	1	2	3	4	5	6	7
b) Nature and scenery	1	2	3	4	5	6	7
c) Solitude	1	2	3	4	5	6	7
d) Rest and relaxation	1	2	3	4	5	6	7
e) Spending time with friends & family	1	2	3	4	5	6	7

Now we'd like you to tell us about your experiences during your visit

9. a) How many nights have you stayed at Homer Hut during this visit? ____
b) How many nights have you camped or bivvied during this visit? ____

10. What have you liked the **most** about your visit to the Darran Mountains?

11. What have you liked the **least** about your visit to the Darran Mountains?

12. How much do you agree or disagree that...?	Strongly disagree						Strongly agree
a) I was able to experience natural peace and quiet	1	2	3	4	5	6	7
b) I was able to enjoy nature and scenery	1	2	3	4	5	6	7
c) I was able to experience solitude	1	2	3	4	5	6	7
d) I was able to relax and reduce stress.	1	2	3	4	5	6	7
e) I was able to enjoy the experience with friends and family	1	2	3	4	5	6	7

13 How did the activities of other visitors affect your visit?

	Did not notice this	Noticed this but it didn't annoy me	Annoyed me a little	Annoyed me a lot
• Behaviour of other visitors				
• Hearing or seeing helicopters				
• Hearing or seeing planes				
• Meeting commercial/ guided groups				
• Meeting large groups				

Comment:

14. Did you feel crowded at all at during your visit to the Darran Mountains?

(circle one number)

1	2	3	4	5	6	7	8	9
Not at all crowded		Slightly Crowded			Moderately Crowded			Extremely Crowded

Comment:

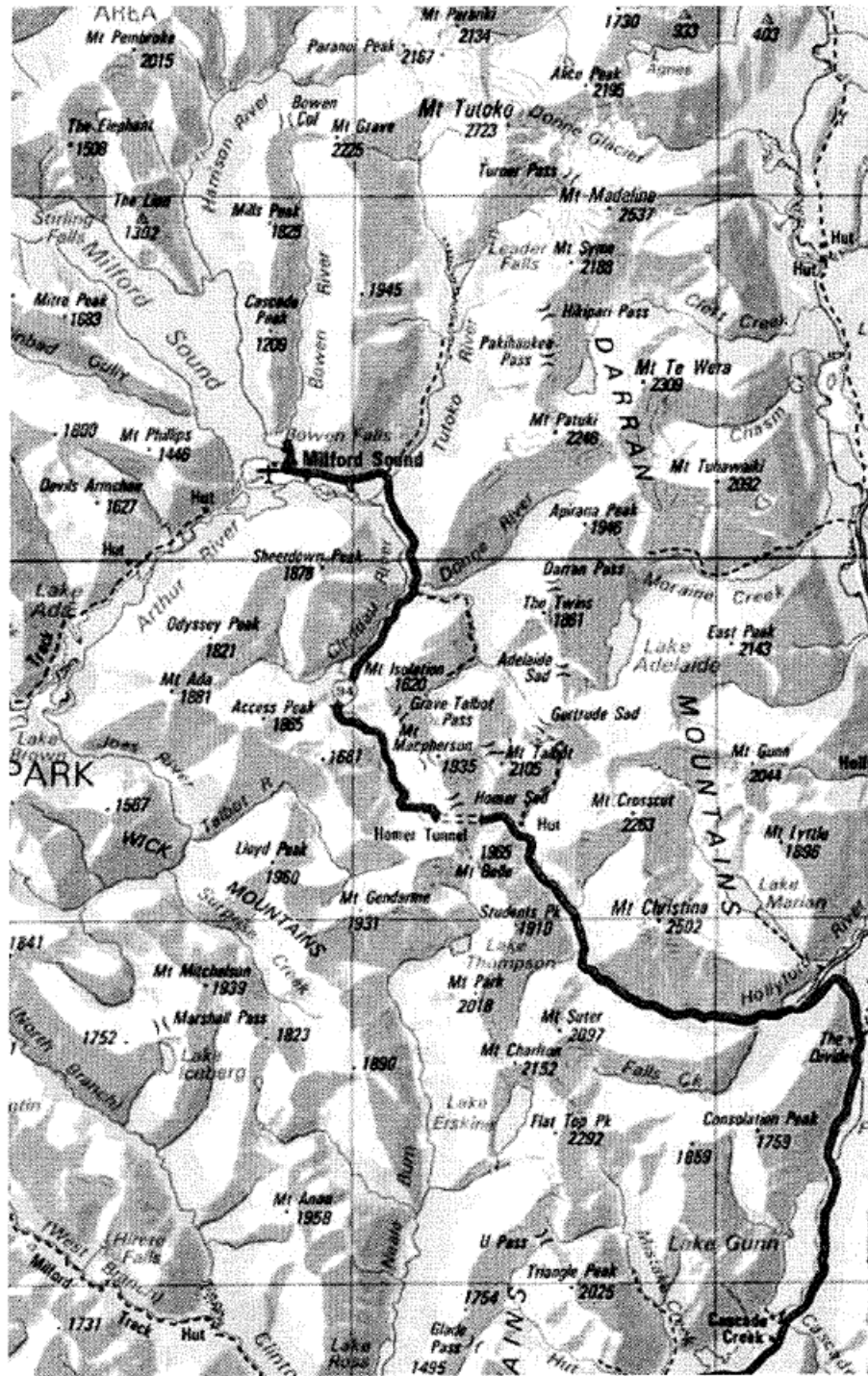
15.a) Would you recommend the area to other people?

Yes

No

b) What things would you tell them about it?

16. Please draw lines on this map to show where you went during this visit. If you camped please draw a cross (X) to show where.



Thank you for your time!

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Now we'd like you to tell us about your experiences on the track

8. How long was your visit to Key Summit and the track today? (Tick one box)

- Less than 1 hour
 1-2 hours
 3-5 hours
 More than 5 hours

9. Did you visit Howden Hut during your walk today?

- Yes
 No

10. What have you liked the **most** about your walk to Key Summit?

11. What have you liked the **least** about your walk to Key Summit?

12. How much do you agree or disagree that...?	Strongly disagree							Strongly agree
a) I was able to experience natural peace and quiet	1	2	3	4	5	6	7	
b) I was able to enjoy nature and scenery	1	2	3	4	5	6	7	
c) I was able to experience solitude	1	2	3	4	5	6	7	
d) I was able to relax and reduce stress.	1	2	3	4	5	6	7	
e) I was able to enjoy the experience with friends and family	1	2	3	4	5	6	7	

13. How did the activities of other visitors affect your visit?

	Did not notice this activity	Noticed this but it didn't annoy me	Noticed this and it annoyed me a little	Noticed this and it annoyed me a lot
• Behaviour of other visitors				
• Hearing or seeing helicopters				
• Hearing or seeing planes.				
• Meeting commercial/ guided groups				
• Meeting large groups				

Comment:

14. Did you feel crowded at all during your visit today?
(circle one number)

a) On the track

1	2	3	4	5	6	7	8	9
Not at all crowded		Slightly Crowded			Moderately Crowded		Extremely Crowded	

b) At Key summit

1	2	3	4	5	6	7	8	9
Not at all crowded		Slightly Crowded			Moderately Crowded		Extremely Crowded	

Comment:

15. a) Would you recommend Key Summit to other people?

- Yes No

b) What things would you tell them about it?

Thank you for your time!

If you have any feedback about this survey please contact Michael Harbrow, Southland Conservancy, Department of Conservation, PO Box 743, Invercargill. Ph. 03-211-2400. Email: mharbrow@doc.govt.nz

Now we'd like you to tell us about your experiences at Milford Sound

8. How long have you spent at Milford Sound? (Tick one box)

- | | | | |
|-------------------------------------------|------------------------------------|------------------------------------|----------------------------------------|
| <input type="checkbox"/> Less than 1 hour | <input type="checkbox"/> 1-2 hours | <input type="checkbox"/> 3-5 hours | <input type="checkbox"/> Full day trip |
| <input type="checkbox"/> 1 night | <input type="checkbox"/> 2 nights | <input type="checkbox"/> 3 nights | <input type="checkbox"/> 4 nights + |

9. a) How did you travel to Milford Sound? (Tick one box)

- | | | |
|------------------------------------|-------------------------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> Aircraft | <input type="checkbox"/> Arrived on the Milford Track | <input type="checkbox"/> Bus/ commercial transport |
| <input type="checkbox"/> Campervan | <input type="checkbox"/> Car | <input type="checkbox"/> Cruise ship |
| <input type="checkbox"/> Other | _____ | |

b) How will you leave Milford Sound? (Tick one box)

- | | | |
|-----------------------------------|----------------------------------------------------|------------------------------------|
| <input type="checkbox"/> Aircraft | <input type="checkbox"/> Bus/ commercial transport | <input type="checkbox"/> Campervan |
| <input type="checkbox"/> Car | <input type="checkbox"/> Cruise ship | |
| <input type="checkbox"/> Other | _____ | |

10. Will you go for a boat cruise on Milford Sound during this visit?

- Yes No

11. What have you liked the **most** about Milford Sound?

12. What have you liked the **least** about Milford Sound?

13. How much do you agree or disagree that...?	Strongly disagree Strongly agree						
a) I was able to experience natural peace and quiet	1	2	3	4	5	6	7
b) I was able to enjoy nature and scenery	1	2	3	4	5	6	7
c) I was able to experience solitude	1	2	3	4	5	6	7
d) I was able to relax and reduce stress.	1	2	3	4	5	6	7
e) I was able to enjoy the experience with friends and family	1	2	3	4	5	6	7

14. How did the activities of other visitors affect your visit?

	Did not notice this	Noticed this but it didn't annoy me	Annoyed me a little	Annoyed me a lot
• Behaviour of other visitors				
• Hearing or seeing boats				
• Hearing or seeing helicopters				
• Hearing or seeing motorised vehicles.				
• Hearing or seeing planes				
• Meeting commercial/ guided groups				
• Meeting large groups				

Comment:

15. Did you feel crowded at all at Milford Sound?

(circle one number)

1	2	3	4	5	6	7	8	9
Not at all crowded		Slightly Crowded			Moderately Crowded		Extremely Crowded	

Comment:

16. a) Would you recommend Milford Sound to other people?

Yes No

b) What things would you tell them about it?

Thank you for your time!

If you have any feedback about this survey please contact Michael Harbrow, Southland Conservancy, Department of Conservation, PO Box 743, Invercargill. Ph. 03-211-2400. Email: mharbrow@doc.govt.nz

Now we'd like you to tell us about your experiences on the track

9. What were the **best** things about your visit to the Milford Track?

10. What were the **worst** things about your visit to the Milford Track?

11a. What did you think about the services and facilities provided on the Milford Track?

(circle one number on each line)

	Very poor							Excellent	Did not use/ see
• Booking system	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Huts	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Hut wardens	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Maps and brochures	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Shelters	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Signs and information panels	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Toilets	1	2	3	4	5	6	7	<input type="checkbox"/>	
• Tracks	1	2	3	4	5	6	7	<input type="checkbox"/>	

11b. If you circled 1, 2 or 3, for anything, please tell us why...

12. How much do you agree or disagree that...?	Strongly disagree							Strongly agree
a) I was able to experience natural peace and quiet	1	2	3	4	5	6	7	
b) I was able to enjoy nature and scenery	1	2	3	4	5	6	7	
c) I was able to experience solitude	1	2	3	4	5	6	7	
d) I was able to relax and reduce stress.	1	2	3	4	5	6	7	
e) I was able to enjoy the experience with friends and family	1	2	3	4	5	6	7	

13. Did you feel crowded at all during your visit to the Milford Track?

(circle one number on each line)

a) On the track

1	2	3	4	5	6	7	8	9
Not at all crowded		Slightly Crowded			Moderately Crowded			Extremely Crowded

b) In the huts

1	2	3	4	5	6	7	8	9
Not at all crowded		Slightly Crowded			Moderately Crowded			Extremely Crowded

Comment:

14. How did the activities of other visitors affect your visit? (please answer for each day of your trip).

a) Day 1 and 2 from Glade Wharf to Mintaro Hut

	Did not notice this	Noticed this but it didn't annoy me	Annoyed me a little	Annoyed me a lot.
• Hearing or seeing helicopters.				
• Hearing or seeing planes				
• Meeting day visitors				
• Meeting guided/ commercial overnight visitors				

b) Day 3 from Mintaro Hut over McKinnon Pass to Dumppling Hut.

	Did not notice this	Noticed this but it didn't annoy me	Annoyed me a little	Annoyed me a lot
• Hearing or seeing helicopters				
• Hearing or seeing planes				
• Meeting guided/ commercial overnight visitors				

c) Day 4 from Dumpling Hut to Sandfly point.

	Did not notice this	Noticed this but it didn't annoy me	Annoyed me a little	Annoyed me a lot
• Hearing or seeing helicopters				
• Hearing or seeing motorised boats				
• Hearing or seeing planes				
• Meeting day visitors				
• Meeting guided/ commercial overnight visitors				

Comment:

15.a) Would you recommend the Milford Track to other people?

Yes No

b) What would you tell them?

Thank you for your time!

If you have any feedback about this survey please contact Michael Harbrow, Southland Conservancy, Department of Conservation, PO Box 743, Invercargill. Ph. 03-211-2400. Email: mharbrow@doc.govt.nz