

5.0 Risks to the Marine Environment

Key Objective

- Avoid where possible, remedy, or mitigate the adverse impacts of human activities on fisheries and the marine environment.

5.1 Identification of potential risks

Potential risks were identified from Figure 2, the schematic diagram of Fiordland's marine environment values and issues that could potentially downgrade these values. The following list of issues and associated causes was compiled:

- ***Bioinvasion***
 - ◆ Ballast water
 - ◆ Ships' hulls
 - ◆ Introduced pests
- ***Pollution***
 - ◆ Oil spills
 - ◆ Sewage
 - ◆ Rubbish/plastics
- ***Physical damage***
 - ◆ Structures
 - ◆ Anchoring
 - ◆ Ship's wakes
 - ◆ Land slips
- ***Altered flow/sediment dynamics***
 - ◆ Power generation (Meridian)
- ***Impact of increasing access (people) on wilderness values and expectations of visitors***
 - ◆ Kayaks
 - ◆ Private boats
 - ◆ Charter boats
 - ◆ Yachts
 - ◆ Cruise ships
 - ◆ Helicopters
 - ◆ Planes

Each potential issue was discussed to develop a better understanding of the risk it might present for Fiordland's marine environment. Clearly the management authorities and agencies are involved with these issues so current management initiatives were considered before the Guardians decided whether the issue warranted further consideration. Agreement that the issue did require attention resulted in an evaluation of what was needed and what the Guardians could contribute.

For issues involving risks to the marine environment, the Guardians' approach is to evaluate these on a case by case basis and adopt an advocacy role with the relevant agency where this could be useful. For instance, we have not dealt with the export of water from Deep Cove issue in this strategy because we have responded at the resource consent stage. Furthermore, the Group has not commented on aquaculture because it is listed as a prohibited activity for Fiordland in the draft Coastal Plan.

The Guardians have no intention of writing a resource management strategy or attempting to duplicate Environment Southland's role. Rather we intend to work with Environment Southland and hope to add value on the basis of the group's collective knowledge and experience. A number of the issues discussed below do not have a definitive answer. Issues such as these tend to evolve over time. The Guardians recognise the importance of playing an ongoing role in these issues.

5.2 Bioinvasion

Should an unwanted marine organism be introduced to the fiords, settle on the fiord walls for instance, and then aggressively predate the wall communities it would be catastrophic. So too would the type of organism that manages to settle and successfully expand, either out competing or suffocating the adjacent community. Such scenarios in Fiordland would be of major significance both nationally and internationally. The unusual nature of the fiord communities is no protection and the fiords remain just as vulnerable to bioinvasion as any other part of the coast. Of all likely threats to Fiordland's fisheries and marine environment, bioinvasion is possibly the most serious.

In fact, three species of algae have already been introduced to and become established in Fiordland, probably through early whaling and sealing operations in the late 18th and early 19th centuries.⁹ *Champia affinis*, a native of Tasmania and South Australia, was first recorded from Stewart Island in 1855 and lives in the sheltered waters of Preservation Inlet. *Polysiphonia brodiaei*, a native of Ireland and Northern Europe, is found in Dusky Sound. In contrast, *Sargassum verruculosum*, also from Tasmania and southern Australia, has a wider distribution, being found in relatively small quantities in Bligh, Thompson, Doubtful, Breaksea and Dusky Sounds as well as Chalky and Preservation Inlets.

Fortunately none of them qualifies as a serious threat to native biodiversity - unlike *Undaria pinnatifida* that could have a devastating impact on the composition of Fiordland's kelp and animal communities.

⁹ W. A. Nelson., et al. Marine Macroalgae of Fiordland, New Zealand (2002) Tuhinga 13:117-152

5.2.1 Where's the threat coming from?

As the number of people interacting with Fiordland increases so does the number and variety of potential pathways by which exotic species could be introduced. New Zealand has already received at least 150 accidentally introduced exotic marine species. These represent a wide range of organisms including algae (kelps included), sponges, jellyfish, corals, worms, molluscs, crabs and other crustaceans.

Organisms could arrive in Fiordland either directly or indirectly in a variety of ways:

- organisms could arrive *naturally* on flotsam and jetsam, on migrating animals or as planktonic forms in the currents. This is less likely than the following means;
- *fouling* (or encrusting) organisms growing on the bottoms of boats. If a boat arrives in New Zealand with fouling organisms on it, it is possible that those organisms will be knocked off, or breed in New Zealand waters, resulting in an introduction. Devastating exotic species such as the Northern Pacific sea star are fouling organisms;
- other organisms are moved around in water associated with the boat such as *ballast water*. Ballast that is pumped into a ship in one port will invariably contain organisms from that port. These can include planktonic organisms, larval stages of organisms and even whole fish. When the ballast water is discharged, those organisms are discharged and may establish in the host environment;
- transfer of organisms in equipment such as sea chests, anchor lockers, ropes, buoys and dive equipment is another known pathway.

5.2.2 What's the impact?

The full cost either to the New Zealand environment or to the New Zealand economy of exotic species is not known. However, overseas examples confirm that the impacts can be substantial. In New Zealand, algal blooms have caused the closure of some shellfish beds and been blamed for health problems in some New Zealanders. These algal blooms may have resulted from organisms brought to New Zealand in ballast water. *Undaria* has moved from port to port out competing and replacing benthic communities in associated harbours and bays. Any aggressive exotic species that invaded Fiordland could have major repercussions for the fishing and tourism economy as well as natural biodiversity.

5.2.3 Hull fouling/cleaning

Exotic marine organisms may be introduced to, or spread around, New Zealand on fouled vessels and associated structures. These organisms may be transferred from the vessel hull to the marine environment by falling off or being scraped off when, for instance, the vessel bumps against wharves. Organisms on the hulls could also be fertile and release spores, larvae or other propagules into the environment. Domestic vessels that have become fouled in one area of New Zealand and spend some time in another part of the coast may further spread exotic marine organisms. This could possibly be exacerbated if the vessels are cleaned in the other area. Hull cleaning

management control options are currently being developed by MFish and MfE to minimise the risk of fouling material cleaned from hulls being returned to coastal waters.

The most commonly known exotic marine species in New Zealand is undaria (*Undaria pinnatifida*) or Japanese kelp. This seaweed is already in Bluff and Stewart Island - Fiordland's backdoor. Undaria is a difficult organism to manage. MFish and DoC have initiated a programme aimed at slowing the spread of undaria around the mainland through awareness and education. Codes of practice are being developed to minimise the possibility of undaria being introduced to remote locations.

There are two potential risks for Fiordland associated with the proposed hull cleaning controls. First, national hull cleaning controls that are appropriate for the majority of New Zealand may not be stringent enough to protect Fiordland from fouling organisms. Second, individuals may not comply with the hull cleaning guidelines being developed and the isolation of Fiordland potentially increases this risk.

The Guardians have been concerned about undaria and other unwanted introductions from hull fouling for some time. The Group supports the adoption of the following code of practice to minimise the risk of introducing unwanted organisms from hulls into Fiordland:

➤ ***No cleaning hulls below water line and running gear within the fiords***

Whilst this is already part of the agreement with cruise ships, the policy needs to be adopted for all vessels. The current tourist vessel practice of cleaning the superstructure and hulls above water line with biodegradable cleaners is not part of this code.

➤ ***Cleaning on shore must occur above the high tide mark and ensure that no fouling material or contaminated water could re-enter the sea***

Being above the high tide mark makes this a policy for DoC's National Park Management Plan or the district plan.

➤ ***All vessels/structures intending to temporarily reside in the fiords for more than 24 hours to have their hulls inspected for Undaria and other unwanted organisms. Any detected unwanted organisms to be removed from the vessel/structure and disposed of on land***

This approach is in line with the voluntary code of practice being developed between MFish and vessels operating in the sub-Antarctic and Chatham Islands. However, the situation in Fiordland is more complex, given the variety of different types of vessels visiting and no way of identifying or tracking these.

➤ ***All vessels/structures intending to permanently moor in the fiords to be cleaned and anti fouled before being transported to the fiords***

Note: *The Deep Cove slipway is generally only used for maintenance and emergency work - not defouling.*

5.2.4 **Ballast water**

Foreign vessels

Under the Biosecurity Act, the discharge of ballast water originating in any other country is controlled by the Import Heath Standard that only permits vessels that have either exchanged ballast water on the high sea or are carrying freshwater ballast to discharge ballast water into New Zealand's territorial sea. This poses two potential problems for Fiordland:

- freshwater ballast could harbour species that may survive in the waters of Fiordland.
- mid-ocean exchange, the only widely available quarantine procedure for reducing the risk of spreading invasive species in ballast water, is not 100% effective.

As a result, the current mandatory requirements would not completely eliminate the risk of introducing foreign ballast water, and therefore foreign organisms, into Fiordland. The majority of cruise ships do not carry ballast water and therefore are not a risk from that point of view.

Domestic vessels

Currently, there are no mandatory controls on the movement of domestic ballast water around New Zealand. As well as toxic algal blooms, ballast water can potentially spread a number of existing exotic species around New Zealand (e.g. *Undaria pinnatifida* was thought to have arrived in ballast water). The discharge of domestic ballast water into the fiords could pose a significant threat of spreading existing undesirable species.

The Guardians recognise how serious a major invasion of an unwanted exotic organism would be in Fiordland and support the following actions in relation to ballast water:

- the development of a voluntary practice that no foreign ballast water - regardless of whether it has been exchanged on route to New Zealand - is to be discharged into the fiords. This practice will need to include the caveat that compliance with this practice must be consistent with the safety of the crew and the vessel.
- the development of a voluntary practice that no domestic ballast water is to be discharged into the fiords. This practice will need to include the caveat that compliance with this practice must be consistent with the safety of the crew and the vessel.

5.2.5 **Minimising the risk of bioinvasion in Fiordland**

Like many of the issues in this strategy, there is no definitive answer to preventing bioinvasion in Fiordland but there is a positive way forward. To build on the suggestions made above, a special task force is required to develop a targeted plan specifically for the Fiordland situation. Such a group would need to involve the MFish Biosecurity Group, Environment Southland and the Guardians.

5.2.6 *Risk surveillance*

Irrespective of what a taskforce might develop, surveillance to detect unwanted visitors should not be delayed. The importance of detecting and responding to unwanted organisms has resulted in MFish establishing a surveillance programme that relies heavily on people who are informed about the issue and work or recreate in the marine area. Isolated areas such as Fiordland are difficult for management agencies to access on a regular basis. Therefore the Guardians and their associated groups have a vital role to play in detecting new exotic marine organisms in Fiordland.

The Guardians are keen to participate in the public surveillance network for exotic marine pests. To carry out this role effectively, educational and identification material will be needed from MFish's Biosecurity Group and this can be distributed to members.

5.2.7 *Action on detection*

Responding to the presence of an exotic marine pest is difficult for the responsible agencies in an isolated location such as Fiordland. The expertise and advice of those with local knowledge will prove invaluable for devising the most effective approach. Preparing a ready reaction response plan is fundamental to being properly prepared.

In the event of an exotic marine organism being located in Fiordland, the Guardians recognise that they have a responsibility to work cooperatively with the Ministry of Fisheries and Environment Southland to ensure the best possible outcome for the Fiordland's fisheries and marine environment.

5.3 *Pollution*

5.3.1 *Oil spills*

Spills of heavy oil that cause damage to wildlife and the marine environment may be unlikely but cannot be ruled out in Fiordland at this time. Some large vessels, such as cruise ships, still use heavy fuels whereas others operate on medium fuels. In the case of a spill, Environment Southland and Maritime Safety Authority (MSA) have comprehensive Oil Spill Response Management Plans for dealing with this threat. Generally Environment Southland will respond in the first instance, but in the case of large spills the response will be escalated and the MSA will manage the response. MSA and Environment Southland are currently developing an Oil Spill Contingency Plan for the Fiordland region and the Guardians' strategy is being used to provide relevant information about Fiordland's marine environment.

The Guardians also raised concerns about the possible impact of using certain oil dispersants in the fiords, particularly around the china shops. Because of the freshwater layer there is apparently only one dispersant that could be used. Depending on the circumstances, the group could provide logistical support and advice to either the Regional or National On Scene Commander depending on how serious the spill is.

5.3.2 *Sewage*

Given the exposed nature of the environment along the outer coast, sewage will be broken down in a relatively short period. However, the same will not be true for the inside fiord environment. If wall communities do depend on filtering out material from the forest, exposure to enriched material such as sewage may cause changes to both the habitat and those communities.

More than 12 nautical miles from the coast, sewage treatment and disposal systems used by large ocean going vessels and cruise ships must meet international MARPOL standards. Inside 12 nautical miles cruise ships have agreed not to dispose of sewage. Otherwise sewage disposal is managed according to the Resource Management Act (Marine Pollution Regulations). Although a national set of rules governing the discharge of raw or treated sewage are contained in these regulations, the special nature of Fiordland is acknowledged and Environment Southland has been able to adopt more stringent controls for sewage disposal in its Coastal Plan. For instance, the discharge of sewage (black water) from large ocean-going vessels cannot take place inside 12 nautical miles. For smaller boats, black water from tanks cannot be discharged within 500 m of the shore either within the fiords or along outer coast.

Through resource consent requirements Environment Southland has input about the sewage disposal methods used by charter vessels. However no such controls exist for private boats or yachts. Informing this group particularly, about ways to minimise the impact of discharging sewage into the fiord environment needs to be a high priority.

On national park land adjoining the fiords, sewage disposal ranges from sophisticated systems to a shovel at some kayakers' camps. Future plans for managing sewage treatment and disposal from land adjoining the fiords needs to be documented in the Fiordland National Park Management Plan.

5.3.3 *Rubbish*

Rubbish is just about the last thing that comes to mind when imagining Fiordland's marine environment. The "take it in - bring it out" philosophy for rubbish disposal is widely promoted and appreciated. However, accounts of rubbish left around huts, the Blanket Bay incinerator full of non-flammable rubbish and rubbish thrown overboard indicate that rubbish disposal is an issue.

Commercial fishers who are now very conscious of bringing out their rubbish, regularly report transporting rubbish (half a tonne at a time) discarded by others, to facilities on shore. The group discussed the infrastructure and facilities for rubbish disposal at access points. Waste disposal containers at the wharves in Milford are managed by the Milford Sound Development Authority and DoC and disposed of to the Southland District Council transfer station at Milford. In contrast, Deep Cove has no such facilities and the closest rubbish containers are at Manapouri. Given the tendency of some to leave rubbish at Deep Cove, notices and educational material promoting the removal of rubbish must be worthwhile. Onshore facilities for rubbish disposal in the national park require DoC approval.

Accounts of cans, bottles and plastics being found in quantities on the seabed is indeed disappointing. One charter operator proposed a novel way of cleaning up such rubbish by offering cost-only recreational diving trips where two of the three dives are to clear rubbish from the bottom.

This suggestion has evolved into a full scale high profile clean up initiative being project managed by Environment Southland. There are two components to the project - shoreline and below water clean ups. The shoreline component will remove water borne rubbish that has been washed up from terrestrial, coastal and offshore sources. Below water, divers will direct their attention primarily to cleaning up anchorages. Initially the focus of the project is along the southern coast with attention moving north until the whole of the Fiordland marine environment has been covered – something that is estimated will take five years.

Logistically the project has grown enormously with many different agencies, organisations and individuals contributing volunteers, funding and undertaking promotional activities. Several Guardians are involved in this exciting initiative - one that is demonstrating the enormous potential for resolving very difficult issues such as rubbish when all those involved share a common goal and goodwill.

As well as dealing to existing rubbish, such a project is a superb way of raising awareness and changing the behaviour of those who are responsible for the problem. It is important to capitalise on this project with initiatives to inform those who visit Fiordland about their responsibility to “take out what they bring in”.

5.4 Physical damage

5.4.1 Structures

Establishing structures within the Fiordland marine environment such as wharves and moorings, and a range of servicing facilities require resource consents from Environment Southland. Consent applications may be approved, approved with conditions or declined. When notified resource consent applications are processed there is an opportunity for interested parties to make submissions/objections and be heard. Appeals against decisions can be taken to the Environment Court. If a structure extends above mean high water and is on DoC administered land a concession may also be required from DoC.

The Guardians have made submissions on, and objected to, various consent applications considered to be against the interests of Fiordland’s fisheries and marine environment. On the basis of experience to date the group feels that provisions in the resource consent process can safeguard environmental values from physical damage. Furthermore, the Guardians recognise the value of working with Environment Southland over these issues.

5.4.2 Anchoring

Anchoring is a very specific requirement in Fiordland. Whereas safety is of fundamental importance, so too is preventing damage to the features that make the fiords special. Anchoring was identified as one of the main threats to special values within the china shop areas. Whether it be a china shop, representative area or other part of the fiords

there is good reason to anchor in locations that are not vulnerable to damage. Identifying suitable places to anchor within the china shops led to the suggestion that a map of suitable anchoring sites should be produced for the whole of Fiordland. Such a guide could contain other helpful information such as the most effective ways to anchor in different situations and advice about conditions likely to be experienced in Fiordland. This would build on Environment Southland's list of anchorages for Fiordland contained in the Southland Coastal Plan.

5.4.3 *Ships' wakes*

Cruise ships entering Fiordland are large vessels and there is a trend towards increasing size. The possibility of damage to rock wall communities caused by the ship's wake as the vessel passes through confined passages was considered. Environment Southland's agreement with the cruise ship companies and the number of available pilots currently limits the number of vessels entering Fiordland and the number that can be inside particular fiords at any one time. Vessel speed and the associated wake are controlled inside the fiords by Maritime Safety Authority speed restrictions. A navigational bylaw is replacing the water recreational regulations contained in the draft Coastal Plan that serve the same function for all vessels.

The Guardians concluded that damage from vessel wakes was not an issue at this time.

5.4.4 *Land slips*

Land slips are a natural occurrence that has been a feature of Fiordland for a very long time. From observations, colonisation of underwater landslip debris by marine communities can take place within a few years. Despite this, an unnatural increase in land slips is not desirable for marine habitats and communities. An increase in deer and possum density could increase the regularity of these events.

Responsibility for possum and deer control in the national park rests with the Department of Conservation. Whilst recognising that resources for animal control are limited, the Guardians consider the potential impact of possums and deer on the marine habitat in certain places is an issue. Local knowledge about the spread of possums and presence of deer in numbers is provided to DoC so that decisions about priority areas for control are better informed.

5.5 *Altered flow/sediment dynamics*

5.5.1 *Power generation (Meridian)*

The flow regime in Doubtful Sound has been modified since the Manapouri power scheme became operational and freshwater was diverted from Lake Manapouri into Deep Cove. During construction of the scheme, some workers were reputedly attracted to Deep Cove because of the quality fishery in Doubtful Sound. Accounts of plentiful catches were documented at that time and again in the 1980s but since then the state of the fish stocks has been a cause of increasing concern.

The fisheries measures proposed in this strategy assume that over harvesting is the reason for the state of the fish stocks in Doubtful Sound. Road access into Doubtful Sound and increasing numbers of fishers lend weight to that view. However, to be confident that the management measures are the most appropriate it is important to know what, if any influence the changed flow regime is having on the habitat and stocks of harvested species. Current research has revealed something of the impacts on sedentary species and it is likely that more information will become available.

The altered flow regime issue is solely to do with identifying factors that are contributing to the depleted state of harvested fish stocks in Doubtful Sound. The Guardians are anticipating that current research will provide more information about this situation.

5.6 Impact of increasing access (people) on wilderness values and visitor expectations

The most visible increase in numbers visiting the Fiordland marine environment is taking place in Milford and Doubtful Sounds. Road access, together with a fleet of tourist vessels, encourages thousands of day visitors into both Sounds, though Milford is certainly more crowded than Doubtful Sound. Crowding on the water and in the airspace over Milford Sound has reached the point where concern is being openly expressed that the values visitors' come to experience are at risk of being compromised. Public and navigational safety has also been identified as a concern. A Mayoral task force was set up to consider the visitor issue at tourist destinations including the Southern lakes and Milford Sound. As a result, a specific project was set up involving a co-ordinated inter-agency initiative to look at strategic issues associated with managing the Milford Sound situation. Environment Southland was nominated as lead agency at a recent workshop.

The increase in numbers of people visiting Fiordland is not limited to Milford and Doubtful Sounds. Increasingly innovative ways are being used to access every part of Fiordland. For instance, helicopters are being used to transport kayaks and their occupants into the most remote fiords. Charter boats, private boats, yachts, kayaks, helicopters and planes are now common throughout the whole of Fiordland. Although Environment Southland has certain controls over commercial surface water activities by way of resource consents, there are no controls on private boats, yachts or kayaks. Similarly, commercial operators require concessions from DoC to land in the national park, but no such requirement exists for private operators. Environment Southland recognises a number of different categories of visitor: the day visitor - largely restricted to Milford and Doubtful Sounds, the backcountry, comfort seeker who requires quality facilities generally provided by commercial operators and the backcountry adventurer who hunts, fishes, kayaks and tramps with the minimum of support facilities. Identifying the patterns and needs of different visitor groups is an important prerequisite to developing sensible strategies for managing the visitor issue.

From a fisheries and marine environment perspective, the measures contained in this strategy for fisheries, values of special significance and risks to the marine environment are aimed at minimising the effects of increased use on the marine environment. For instance, a number of the proposed fisheries measures are designed to manage the effects of increased fishing pressure associated with improving access. Similarly, the

kinds of diving and anchoring provisions associated with china shops and representative areas are to ensure that increasing visitor use does not destroy the very values that are attracting more visitors.

Apart from the impacts of increased numbers of people on wilderness values and the potential increase in such activities as tourism, fishing and diving, more people mean more rubbish, more sewage and more servicing facilities. Unless these issues are effectively managed, Fiordland's fisheries and marine environment are at risk. Managing numbers of visitors directly is a complex issue and one in which local knowledge held by the Guardians and associated groups will be a vital ingredient in finding practical solutions. Fiordland wide, increasing visitor pressure has such significant long term implications that an integrated approach between the relevant authorities, agencies and community is the one the Guardians' consider holds the most promise.

6.0 Expressing Kaitiakitanga

Key Objective

- That kaitiakitanga (stewardship) be appropriately expressed for Fiordland's fisheries and marine environment.

6.1 What is kaitiakitanga?

The Ngāi Tahu Whānui (defined under the Te Runanga o Ngai Tahu Act 1996 as the primary hapu of Ngai Tahu, Kati Mamoe and Waitaha) were principally a hunter-gatherer people dependent on seasonal harvesting. As a consequence a sophisticated system of management skills was developed based on the continuing sustainability of resources. Kaitiakitanga derives from tiaki. In a natural resources context tiaki incorporates notions of guarding, keeping, conserving, fostering, sheltering, and watching over resources. The kaitiaki - keepers or caretakers of knowledge relating to those natural resources - are appointed by the Tāngata Whenua. Kaitiakitanga is the process whereby kaitiaki carry out responsibilities such as managing resources, protecting taonga and taking care of Tāngata Whenua interests. In relation to natural resources, exercising guardianship in accordance with tikanga Ngāi Tahu Whānui (customary values and practices) is both a privilege and an obligation. Indeed it is an inherited obligation that cannot be alienated.

Safeguarding sustainability, looking after tauranga ika (special fishing grounds), protecting spawning grounds, and maintaining juvenile habitats were just a few of the reasons for managing mahinga kai (customary food gathering). Such practices as controlling the amount harvested were the responsibility of kaitiaki, as were setting in place rāhui, or temporary closures, to rest areas or species from harvesting.

The ability to provide manaaki (hospitality) to visitors is a fundamental principle of tino rangatiratanga that reflects the status, economic power, reputation and social standing of the host people. Being able to offer an abundance of food to visitors is a sign of the wealth and mana of the Tāngata Whenua and their success as rangatira and kaitiaki in preserving their local resources and cultural traditions. An inability to provide kai from your rohe is regarded as a failure to do your duty.

6.2 How is kaitiakitanga provided for in legislation today?

Through the process of settling Treaty of Waitangi claims, a number of legislative provisions that recognise and provide for customary fishing rights are now available.

In 1989, the concept of taiāpure - local fisheries, was introduced with the Maori Fisheries Act. Taiāpure are coastal waters of special significance to iwi or hapu as a source of food or for spiritual/cultural reasons. A management committee nominated by the local Maori authority has the role of recommending fishing controls for the area. In other words, taiāpure is an area management tool.

In 1992, customary fishing rights were further clarified in the Treaty of Waitangi (Fisheries Claims) Settlement Act. This took the form of an obligation to develop policies to help recognise customary use and management practices for non-commercial fishing. The Act deals with the requirement for regulations to be made to define how customary fishing could take place and defines Tāngata Whenua rights and responsibilities to manage their own customary fisheries.

In 1998, the Fisheries (South Island Customary Fisheries) Regulations were introduced. The appointment of tangata tiaki/kaitiaki to manage customary fishing and the creation of mātaimai, a second type of area management tool, were among the tools that recognised the traditional fisheries management role of Tāngata Whenua.

Another relevant provision under the Fisheries Act is s186B (temporary closure). This tool allows temporary closures of areas and restrictions of fishing methods much the same as traditional rāhui. The difference is that rāhui remain in place for the length of time required to achieve the result whereas s186B (temporary closure) is limited to a two year period with a possible two year extension.

6.3 Ngāi Tahu Whanui association with the Fiordland coastal marine area

Ngāi Tahu Whanui association with Fiordland is long and significant, as is evidenced by numerous Maori place names that describe landscape features, routes both inland and along the shore, landing places and important events. In addition to Maori place names, other important sources of information about the association include oral traditions and archaeological evidence. The association with Fiordland was formally recognised in the Statutory Acknowledgment for Te Mimi o Tu Te Rakiwhanoa (Fiordland Coastal Marine Area) in the Ngāi Tahu Claims Settlement Act 1998 (Appendix 3).

Popular routes (now classed as Great Walks), sheltered canoe landing places, nohoanga sites where people stayed and harvested mahika kai - indeed all aspects of living in Te Mimi o Tu Te Rakiwhanoa - are recounted and explained in the statutory acknowledgment, documented in full in Appendix 3.

6.4 Expressing kaitiakitanga in Fiordland's coastal marine area: whose role is it?

Responsibility for kaitiakitanga within Fiordland's marine coastal area lies with the Tāngata Whenua represented by Oraka/Aparima, the kaitiaki runanga with authority over all but a small area at the northern boundary. Support for the Oraka/Aparima role comes from three other runanga (Awarua, Waihopai and Hokonui) that belong to Murihiku (Southland) and Makaawhio. Te Runanga o Ngāi Tahu, the tribal authority representing all 18 papatipu runanga, provides an oversight/support role.

After the South Island customary fishing regulations came into law, the four Murihiku runanga appointed tangata tiaki/kaitiaki. Altogether 32 tangata tiaki/kaitiaki were appointed and each has the right and responsibility to manage customary fishing across Murihiku. Of the 32 tangata tiaki/kaitiaki, 10 are from the Oraka/Aparima runanga.

6.5 How can kaitiakitanga be appropriately expressed in Fiordland?

The whole of Fiordland holds special significance and cultural relevance for Ngai Tahu Whanui. Accordingly, an active involvement in managing Fiordland's fisheries and marine environment by Oraka/Aparima, the kaitiaki runanga and others they may select from Murihiku is clearly an appropriate way for kaitiakitanga to be expressed. Managing customary fishing by way of authorisations is already the responsibility of the tangata tiaki/kaitiaki in Fiordland. However, managing fisheries within an area by way of customary fisheries provisions such as s186B (temporary closures), mātaítai or taiāpure have all been considered as ways of implementing aspects of the Guardians' integrated strategy.

6.5.1 *S186B (temporary closure)*

S186B (temporary closures) are recommended for the harvesting of blue cod in both Milford and Doubtful Sounds. These closures are similar to rahui, but unlike rahui s186B (temporary closures) are time limited - initially for two years but this may be extended for a further two years.

6.5.2 *Mataítai*

Concern that paua can no longer be hand gathered close to shore along the southern Fiordland coastline resulted in the Waitutu Land Incorporation initiating discussions about establishing a mataítai along the coast abutting their land. A mataítai application was lodged by the Oraka-Aparima Runanga and the Waitutu Land Inc for this part of the coastline. The outcome of the application is not known at this time.

6.5.3 *Taiāpure*

Taiāpure is considered to be a suitable fisheries management mechanism for expressing kaitiakitanga over areas of significance within the Fiordland marine environment. Areas of significance to Ngai Tahu Whanui that require flexible fine scale management could benefit significantly under a taiāpure management mechanism.

The main advantages are:

- taiāpure is the only available mechanism whereby local management of Fiordland fisheries can be implemented under a single tool;
- the taiāpure - local management committee has statutory status;
- the committee is nominated by local Iwi (who are already members of the Guardians), and can include non-Maori members;
- the committee can accommodate a wide range of interests - just as the Guardians do currently;

- taiāpure allows flexibility that will be an advantage in managing discrete areas that require fine scale management;
- other management mechanisms may be able to be accommodated within a taiāpure.

Drawbacks include:

- the timeframe for processing taiāpure applications can be in the order of 2-8 years, with the longer processing times compromising the purpose of the mechanism;
- there are no resources for taiāpure committees;
- the isolated nature of the area imposes additional requirements on the management committee.

6.5.4 *Taiāpure as the overarching mechanism*

The possibility of a taiāpure fulfilling the overarching and co-ordination function for Fiordland's fisheries and marine environment has been discussed by the Guardians throughout the development of the strategy. The group supports taiāpure particularly for the expression of kaitiakitanga and provision of local management. As the strategy took shape and the non-fisheries components were developed it became clear that a complex range of functions from a number of different statutes had to be able to be co-ordinated by the overarching mechanism. Due to the nature and complexity of the co-ordinating function the Guardians recognised that legal advice was required. Advice received suggests that taiāpure may not be an appropriate mechanism to co-ordinate non fisheries aspects of the strategy and further that the expression of kaitiakitanga could be compromised in the process of appointing a management committee to carry out management functions for the Fiordland marine environment.

***Note:** The purpose for which taiāpure was defined in the 1989 Maori Fisheries Act is in no way compromised by views about the suitability of this tool as an over arching mechanism.*

7.0 Implementing the Strategy

Key Objective

- **The negotiated package of measures contained in the strategy be implemented as a whole without compromising underlying principles and balances.**

7.1 The balance negotiated between groups

This strategy contains a package of management measures negotiated by the Guardians. What was required of those who currently fish in Fiordland was determined on the basis of sustainable fish stocks and the maintenance of values of special significance. Then, considerable debate took place over the contribution each group would make to ensure the outcome. The resultant package represents a balance of gifts and gains negotiated between commercial and recreational fishers, Ngāi Tahu Whanui, charter operators and environmental and community interests, and is considered to be fair and reasonable by the Guardians.

Gifts and gains: A variety of rights apply to groups involved in Fiordland's fisheries and marine environment. From the clearly defined 'property' rights of commercial fishers and inheritance based customary fishing rights, to those that have not yet been clearly defined, such as the rights of recreational fishers and environmental interests, there is considerable diversity. If these rights were equivalent, trading as envisaged in a property rights scenario might be possible. However, the rights are not equivalent and informal discussions involving all the groups proved to be the most pragmatic way of arriving at agreements about what each group was prepared to offer in the interests of Fiordland's marine environment. Gifts and gains seemed the most appropriate terms to convey the generosity and goodwill of those negotiations.

For instance, offering to withdraw fishing operations and bulk harvesting methods from inside the habitat lines represents a very generous gift on the part of the commercial fishers. Similarly, significant reductions in daily bag limits and strict controls on accumulation clearly demonstrate the commitment of recreational fishers and charter operators to the Fiordland fishery and marine environment. Ngāi Tahu Whanui (customary) contribution includes observing a voluntary rahui on the issuing of customary fishing authorisations inside the habitat lines. All groups support the package of restrictions to look after the china shops and representative area as well as the variety of measures associated with minimising risks to the marine environment. Ensuring this balance is safeguarded when the strategy is implemented is critical. Should it be compromised the integrity of the entire strategy will be compromised.

7.2 The package - more than a sum of its parts

Provisions in this strategy are not solely directed at fisheries, values of special significance and risks to the marine environment. Together, they provide a powerful combination that applies to the whole of Fiordland's marine environment. In other words, collectively the provisions ensure greater safeguards than the individual contributing parts might indicate.

Those who focus primarily on one aspect of the strategy may not appreciate the extent to which the package of management provisions advocated throughout the strategy will contribute to conserving the values of particular importance to them.

For instance, recommendations for representative areas and some china shops include management controls associated with marine reserves. That commercial, recreational and customary fishers are prepared to relinquish their rights and withdraw from the areas identified to conserve biodiversity (the purpose of the Marine Reserves Bill) is a major gift.

Recommendations about sustainability of fish stocks actioned under fisheries legislation also have positive implications for conserving biodiversity. The withdrawal of commercial fishing from inside the habitat lines of all the fiords and the adoption of "fish for a feed - no accumulation" by recreational and customary fishers for these same areas is a key contribution.

As well as marine reserve and fisheries tools (including the South Island Customary Fishing Regulations), relevant provisions in the Resource Management Act and the Southland Coastal Plan have also been identified and recommended to protect the fiord habitat and communities.

Arguably the most significant threat facing the Fiordland marine environment is the invasion by unwanted organisms such as undaria. Given the impact such an occurrence could have along the whole of Fiordland's coastline, a task force to develop hull cleaning and ballast codes, a risk surveillance network and ready response plan is considered a top priority for protecting the marine environment.

Similarly, minimising the impact of oil spills by developing contingency plans is strongly supported, as are rubbish clean up initiatives and the management of sewage disposal. Physical damage to the habitat from structures and anchoring are also the subject of recommendations. By managing the effects of activities at specific sites, or more generally, the potential impact on habitat values can be avoided or minimised.

Given that some of the above provisions are generic to Fiordland's marine environment and others are specific to individual fiords, every fiord has its own particular package of management measures.

For instance, the package for Charles Sound includes:

- possible marine reserve provisions and the withdrawal of commercial, customary and recreational fishing from the whole of Gold Arm that includes both a china shop and representative area;
- in Emelius Arm, provisions of the Historic Heritage provisions of the Resource Management Act may be appropriate for ensuring the values of the china shop located there;
- a rahui on customary fishing authorisations inside the habitat lines;
- commercial harvesting withdrawn from inside the habitat lines;
- amateur bag limits reduced significantly inside the habitat lines and some reductions outside the lines;
- a cap on accumulation;
- removal of bulk harvesting methods applies both inside and outside the habitat lines;
- codes of practice regulating hull cleaning and ballast exchange, a risk surveillance network and ready response plan;
- an oil spill contingency plan;
- rubbish clean up exercises;
- sewage disposal codes;
- structure and anchoring provisions.

Such a package for each fiord addresses a wide range of actual and potential risks to the values that make Fiordland's marine environment special. The Guardians are confident that these special values can be effectively safeguarded by a package of measures tailored to individual fiords.

An evaluation of the package of measures recommended by the Guardians for Fiordland's fisheries and marine environment revealed that:

1. every provision in the strategy fits into the Marine Protected Areas toolbox.
2. every provision in the strategy contributes to the conservation of biodiversity.
3. together, all the provisions in the strategy provide a local working example of Oceans Policy - a holistic approach to managing a highly valued part of our marine environment by a community/agency group that crosses agency and statutory boundaries.

7.3 Overarching co-ordination of existing statutory provisions

Central to the draft strategy is one of the Guardians' premises - that existing statutory mechanisms should be used to implement the package. Indeed, existing statutory provisions are sufficient to implement all components of the draft strategy.

Provisions within the fisheries legislation, including customary regulations, cover the proposals contained in the fisheries and kaitiakitanga (fisheries) components. For example, method restrictions, daily bag limit changes, accumulation provisions and temporary closures are all provided for within the fisheries legislation. Management of customary take, s186B, mataitai and taiāpure - local fisheries are provided for in the customary regulations and fisheries legislation respectively.

Conservation and resource management legislation contain provisions that are relevant for implementing the values of special significance and risks to the marine environment components of the draft strategy. For instance, the revised marine reserves' legislation is likely to be appropriate for the representative areas and the Resource Management Act for the china shops outside representative areas.

The need for some form of overarching co-ordination is clear, given the number of legislative provisions and agencies that might be involved in implementing the strategy should it be adopted. Ensuring the integrity of the package during implementation is an absolute must for the Guardians. Issues such as significantly different timeframes associated with implementing different management measures within the strategy will involve the Guardians in an important ongoing role.

During discussions about overarching legislative provisions, the Fisheries Plan provision contained in the 1996 Fisheries Act was raised. Although the fisheries component of the strategy might qualify as a Fisheries Plan this provision is not suitable as an overarching mechanism. Fisheries Plans are restricted to fisheries matters and there is no formal link to conservation or resource management provisions. Furthermore, there is no provision for a group that develops a Fisheries Plan to be recognised as a management committee. Given the length of commitment and expertise involved in developing this draft strategy, the Guardians anticipate an ongoing role through implementation and into the longer term. Certainly, this continuity is required for the strategy to be successfully put in place.

Although there are currently no overarching statutory provisions in legislation, the Guardians discussed two possibilities for conferring advisory/management status over an area of the coast on a local group: taiāpure and special legislation. The Guardians have considered both options in detail and decided on the basis of legal advice that the taiāpure mechanism may not be appropriate for fulfilling the overarching function.

7.3.1 *Special legislation*

Because special legislation offers flexibility, the major issue with this option is defining what needs to be incorporated. For instance, over-arching legislation needs to guarantee the balance of gifts and gains that underpins the strategy, incorporate the expression of kaitiakitanga and provide for joint community/agency management. According to legal advice this option could be complex but feasible.

The Guardians decided that defining what the group felt was needed in the legislation was the most constructive action they could take at this time, recognising that the development of special legislation is the role of government and officials (should the strategy be adopted).

Special legislation must:

- guarantee the balance of gifts and gains that underpins the strategy;
- incorporate the expression of kaitiakitanga;
- define how special legislation links across the existing legislative provisions;
- provide a framework for implementing recommendations using existing statutory mechanisms;

- define the establishment and statutory functions of a combined community/agency management group;
- define membership of the community participants according to a set of criteria that reflects the strengths of the current Guardians (local knowledge, experience and expertise with particular emphasis on an active involvement in the fiords);
- define regional co-ordinating functions and the agency/authority responsible for this role;
- incorporate the need to adequately resource the management committee;
- provide flexibility for future management needs.

***Note:** The name given to an area managed under special legislation is simply the choice of those advocating that status. For instance, this Fiordland Marine Conservation Strategy could be afforded statutory status by special legislation. Similarly, special legislation was used to establish the Hauraki Gulf Marine Park.*

The term “marine park” is simply a name for the area - there is no Marine Parks Act. What is common between this Fiordland Marine Conservation Strategy and examples of marine parks is the range of activities that are accommodated whilst providing for the conservation and protection of the marine environment. To the Guardians’ the title Fiordland Marine Conservation Strategy expresses the motivation of the group and the values of Fiordland’s marine environment more appropriately than the term “marine park”.

7.4 Implementing statutory and non-statutory recommendations

To implement recommendations that are subject to existing statutory provisions, the agencies/authorities with responsibility for administering fisheries, conservation and resource management legislation need to evaluate the recommendations against statutory management tools. Officials need to work with the Guardians to ensure the most appropriate and effective tools are used.

Implementing recommended actions that are not controlled by statutory mechanisms could be carried out in the short term by the Guardians/agencies/authorities or in the longer term by the community/agency management group established under the special legislation.

8.0 Compliance with the Strategy

Key Objective

- Encourage voluntary compliance and reinforce the view that non-compliance is unacceptable behaviour¹⁰

8.1 Compliance needs in Fiordland

The Guardians recognise that high levels of voluntary compliance of existing law and new legislative provisions are critical to the success of the management regime proposed for Fiordland's fisheries and marine environment in this strategy.

From a compliance perspective Fiordland is a very challenging environment - it is isolated, the coastline is extensive, access is limited, even with a vessel, and the weather can be unrelenting. However, feedback from the wider groups represented on the Guardians makes it clear that effective compliance and enforcement in Fiordland are fundamental if rules are to be seen to be fair to everyone. Laws will not be observed unless the users accept the law is both necessary for achieving an important goal and adequately enforced.

The package of voluntary and statutory management mechanisms proposed is diverse, reflecting the very different needs of an extraordinary combination of low productivity animal dominated communities inside the fiords and productive kelp based communities at the entrances and along the outer coast. The diversity in management measures is also a consequence of integrating very different components of the Fiordland marine environment together into the strategy. Implementing such a range of measures will involve a number of different statutes. The more important of these are administered by three agencies: the Ministry of Fisheries, Department of Conservation and Environment Southland. When the management package is implemented, compliance of the new rules will be the responsibility of the agency that administers the relevant statute. Therefore an innovative and co-operative approach to compliance is needed on the part of the agencies involved, the Guardians and those who are regularly in Fiordland. Such an approach is necessary if the integrity of the management package is to be ensured.

¹⁰ **Compliance - a comprehensive account**

Because the issue of effective compliance in Fiordland is one of the Guardian's highest priorities, a comprehensive account of every aspect has been compiled and is included as Appendix 4. The legislative mandate, objectives, approaches and resources of each key agency with responsibilities in Fiordland are documented. So too is the role that fishers and marine environment users can play. To become better informed about compliance, Appendix 4 is required reading.

8.2 The fundamentals of compliance

Irrespective of whether compliance is carried out by MFish, DoC or Environment Southland, the following two basic principles underlie the approach of these agencies.

- the preferred outcome is voluntary compliance with the rules, encouraged by information and education.
- voluntary compliance must be backed up by an effective deterrent against illegal activities, such as the fear of prosecution.

This carrot and stick approach generates a number of compliance activities, including:

- informing and educating fishers and other users about the rules in the management package.
- being the eyes and ears on the water (surveillance).
- supporting enforcement action (prosecution).

8.3 A support role for the Guardians

From the Guardians' perspective there is a crucial support role to play in these compliance activities:

8.3.1 *Informing and educating fishers and other users about the management package*

Those who either work in, or visit Fiordland regularly can play a major role in encouraging voluntary compliance with fishing and other rules. Key groups include charter boat and helicopter operators, commercial fishers, private vessel syndicates and sport fishing and diving clubs. The majority of first time fishing in Fiordland takes place from a charter vessel, private syndicate vessel or during an organised fishing or dive club visit. For this reason it is important that the operators or trip organisers take ownership and responsibility for informing those on board about the rules and ensuring that activities take place within the rules.

Explanations can be positively reinforced by information contained in attractive pamphlets and posters. The Guardians 1996 code of practice entitled "*Beneath the Reflections: Caring for Fiordland's Fisheries*" includes a guide to taking care of the fish and the marine environment. This has been widely distributed to recreational charter vessels fishing clubs, businesses associated with Fiordland, access and transport points into Fiordland and a range of agencies. The agencies also hold a variety of helpful educational pamphlets and codes of practice covering such topics as "*Handling and measuring rock lobster*" and "*a care code for divers*", part of the Fiordland Marine Reserves pamphlet.

An important component of implementing this strategy will be the production of material describing and explaining the package of management measures. Given that some fisheries provisions will relate to fine scale management of Fiordland fish stocks while others, such as area closures, will apply to particular fiords, informing fishers and other users of the local rules will be of critical importance.

It is clear that a booklet or pamphlet will be needed - and this would best be a combined effort on the part of the Guardians, MFish, DoC and ES. In addition to a single document containing all the information, there is the potential to produce codes of practice for particular parts of the strategy, such as the china shops, or for particular fiords that are subject to a variety of provisions. A co-ordinated approach to informing and educating Fiordland visitors about the management package is a task the Guardians and the agencies intend to focus on once the draft strategy is finalised.

8.3.2 *Being the eyes and ears on the water*

In remote areas like Fiordland, where agency resources are limited, the importance of networks with key users and commercial operators is critical. For those visiting the fiords, engaging the eyes and ears is a worthy way of caring for Fiordland's fisheries and marine environment. Observing what's happening and passing relevant information on to the agencies as soon as possible provides a very valuable service. The agencies rely on such information. Building successful information networks and collecting accurate and timely information about possible illegal activity enables effective follow up and results.

MFish, DoC and ES all recognise the value of "eyes and ears" in the community and out on the water. Establishing effective networks, liaison, protocols, and strategic alliances with the other agencies for the purpose of information sharing is also seen to be vital. Working together and with the community is regarded as the best way of covering the extensive Fiordland coastline.

8.3.3 *Supporting enforcement action*

Providing relevant information to compliance may result in the detection of an offence. However, being prepared to go the next step and give evidence at a prosecution could make the difference between a successful and unsuccessful outcome for Fiordland. The agencies need both types of support if prosecutions are to be successful and the necessary deterrent to illegal activities maintained.

8.4 Local knowledge and compliance planning

The remoteness and isolation of Fiordland imposes considerable logistical difficulties and high costs on enforcement agencies in carrying out both proactive and reactive enforcement. Enforcement in all reality remains a necessary back up to an effective education and awareness programme, with enforcement resources targeting, where possible, repeat and aberrant offenders.

These types of limitations make a co-operative compliance effort the only sensible approach for Fiordland. Support from the wider groups represented on the Guardians must play a major part if effective compliance is to be achieved along this part of the coast. The group considers that a joint effort should be fostered between the agencies and the Guardians over aspects such as developing and distributing information, surveillance, reporting and providing evidence at prosecutions.

Just as the Guardians and agencies have worked together to develop this integrated management strategy, the detailed local knowledge held within the group should prove very helpful to the agencies in designing an integrated compliance strategy for Fiordland. Inter-agency co-operation and improved co-ordination of enforcement resources is essential to ensure limited agency resources and funds are utilised in the most efficient manner. The Guardians support an integrated enforcement approach by the various agencies to ensure that the best results and compliance outcomes are achieved for Fiordland.

9.0 Monitoring the Performance of the Strategy

Key Objective

- Evaluate whether the package of management measures is achieving the objects of the integrated management strategy.

As with many strategies, evaluating success can be difficult and expensive. However, it is a task that is fundamental to understanding how well the strategy is performing. Without this information, there is nothing on which to base future management decisions. There is also a responsibility to monitor the strategy when significant resources have gone into developing it and livelihoods are being affected.

9.1 Indicators

To monitor the effectiveness of the Guardians' Fiordland Marine Conservation Strategy should it be adopted and implemented, potential indicators of success were identified for each component of the strategy. These indicators are only initial suggestions and considerable work will be required to develop and implement appropriate indicators should the strategy be adopted.

Note: The resources required to monitor all the indicators throughout Fiordland is bound to be prohibitive. Accordingly a selection system to achieve the most effective cover will need to be developed.

9.1.1 Fisheries indicators

- The state of the blue cod, rock lobster and groper stocks and fisheries in Milford and Doubtful Sounds is improving.
- The state of the blue cod, rock lobster and groper fisheries inside the habitat lines in selected northern and southern fiords is improving.
- Recreational and charter boat fishers are familiar and complying with the rules.
- Fishers understand and appreciate why the rules have changed.

9.1.2 Values of special significance indicators

- Special values in china shops are maintained or enhanced.
- Damage is not evident to special values in china shops.
- Educational material about how to look after the china shops is widely available.
- People using china shops are familiar with codes of practice and adhere to them.

- There is no evidence (direct/indirect) of activities such as fishing or recreational diving that was excluded from representative areas taking place.
- Special values within representative areas are maintained/enhanced.
- Representative areas are properly marked and information freely available.
- Visitors understand and appreciate the role of the representative areas and why restrictions are in place.

9.1.3 *Risks to the marine environment indicators*

- Knowledgable community input into decisions about issues that impact on Fiordland's fisheries and marine environment increases (e.g. submissions on consent applications).
- Guardians' principles about risks to the marine environment are apparent in documentation and practice.
- Impacts of damaging practices are being controlled and not increasing.

9.1.4 *Expressing kaitiakitanga indicators*

- Oraka/Aparima Runanga, tangata tiaki/kaitiaki and Te Rūnanga o Ngāi Tahu are comfortable with the way kaitiakitanga is being expressed in Fiordland.
- Representatives of Oraka/Aparima Runanga take part in implementing management mechanisms associated with the strategy.
- Kaitiakitanga is understood and appreciated by locals and visitors to Fiordland.

9.1.5 *Overview indicators*

- The whole package of management measures has been implemented.
- The stakeholders feel positive about the success of the plan 3-5 years on.
- The strategy has met the expectations of the Guardians.

9.2 Measuring indicators

Once indicators have been identified, methods that best measure each indicator can be explored and evaluated. For some indicators, such as 'damage not evident to values in china shops', direct observations/measurements are possible. For others, such as "the state of the rock lobster stocks and fisheries in Doubtful Sound are improving", indirect methods must be used. Measurements that evaluate such things as "whether people know and understand the rules", are based on the assumption that well informed fishers are more likely to observe the rules than those who are poorly informed. This type of measurement will be meaningful assuming the grounds on which it is based are correct.

9.2.1 *Baseline information*

To gauge whether Fiordland's fisheries and marine environment are undergoing beneficial changes, information about the current situation is needed. Without this baseline data there will be very little to compare future monitoring data with. Accordingly, the potential of current research to provide baseline data about the indicators listed above needs to be assessed.

Current research - Fisheries indicators

1. *The state of the blue cod, rock lobster and groper stocks and fisheries in Milford and Doubtful Sounds will be improving.*
 - A recreational fisheries research project, "to determine the feasibility of estimating areas fishes, species targeted and caught, methods used and to estimate the total recreational harvest from Milford Sound and the Doubtful Sound complex from private boats" is being funded by MFish and conducted by Rick Boyd, Kingett Mitchell.
 - This project will provide an indirect measure of the current state of the blue cod, rock lobster and groper stocks and a direct measure of the fisheries within Milford and Doubtful Sounds. Baseline information on other fish stocks and fisheries will also be gathered.
 - A second recreational fisheries research project, "to determine areas fished, species targeted and caught, methods used and to estimate the total recreational harvest from charter boats for the whole of Fiordland" is also being conducted by Rick Boyd, Kingett Mitchell. This will provide the charter boat fishing component of recreational harvests for both Milford and Doubtful Sounds.
2. *The state of the blue cod, rock lobster and groper fisheries inside the habitat lines of selected northern fiord and southern fiords will be improving.*
 - The charter boat research project will provide information about the current state of blue cod, rock lobster and groper stocks and fisheries inside a number of fiords, both inside and outside the habitat lines.
 - A project studying "the relative abundance and movement of blue cod in Fiordland" is being funded by MFish and conducted by Glen Carbines, NIWA. Relative abundance of blue cod has been assessed from the head to the mouth of Dusky Sound using a cod pot method. Results demonstrate this technique is suitable for application in other sounds, particularly those further north that are considered to be subject to, or at risk from local depletion. In the movement component of the study blue cod have been tagged from the head to the mouth of Dusky Sound. Returns from recreational fishers and follow up cod potting is showing how little blue cod move within the sound. Together the study is providing an insight into the state and behaviour of blue cod stocks both inside and outside the habitat lines in what is regarded as the best sound for blue cod in Fiordland (see Section 3.3.2).

- The development of spatial population models for blue cod (*Paraperis colias*) and sea urchin (*Evechinus chloroticus*), two indicator organisms, is also the subject of a research study by Steve Wing, University of Otago.

Current Research - Environmental indicators

1. *A Geographical Information System (GIS) to support management of marine resources and biodiversity in Fiordland.*

Stephen Wing, University of Otago and Franz Smith, Department of Conservation Science and Research are developing a Geographical Information System (GIS) to support the management of marine resources and biodiversity in Fiordland. Funding for this programme has come from the Department of Conservation and the Ministry for the Environment.

Incorporating layers of data about a variety of habitat features into the GIS will allow the identification of spatial patterns of Fiordland's marine resources and biodiversity. Layers include: bathymetry, hydrography (encompassing climatological temperature, salinity, and wave exposure), type of substrate, shallow water habitat types as well as distribution of habitat forming organisms (macro algae, suspension feeding communities), distribution and abundance of "critical" species, indicator species and species of special concern.

The GIS is a tool that incorporates baseline data for habitat and community definitions and evaluations. Depending on the ongoing collection of baseline data it should prove a very useful tool for assessing and monitoring changes to key indicator species and communities, particularly changes that result from implementing management actions proposed in this strategy. Ecological information to support the development of future proposals about biodiversity and other habitat and fisheries issues is also expected.

10.0 Implementation and Beyond – What role for the Guardians?

The Guardians are demonstrating the value of combining local skills and knowledge with agency advice. This is proving to be a credible alternative to existing management approaches as the group provides a forum for the agencies to step outside their own boundaries and think about the issues collectively. That the Guardians are facilitating a more holistic approach that is inclusive of the stakeholders enables the group to provide oversight for the management of Fiordland's fisheries and marine environment.

The group has a vision, is demonstrating leadership and has processes in place. Furthermore, an enormous commitment was required to develop the draft strategy. For instance, during 2001/2002 members took time off work to attend 12 all day meetings and eight information/feedback meetings with stakeholders throughout Southland and Otago. Whilst this level of commitment may be sustained in the short term, performing an overarching co-ordinating role effectively will require the local advisory/management group to be formally recognised and funded.

10.1 Necessary functions identified from the strategy

It is difficult to anticipate all the possible roles the Guardians might usefully perform during and beyond implementation if the strategy is adopted. However, the following list of functions has been extracted from the strategy and provides an indication of the need for an ongoing role:

10.1.1 *Implementing the overarching mechanism*

Provide input and advice to those with responsibility for designing/implementing the overarching mechanism to ensure the balance of gifts and gains is safeguarded.

10.1.2 *A major involvement advocating for and advising on legislative provisions to implement the package of management measures proposed in the strategy*

This would involve:

1. advising both local and national authorities and agencies about the rationale for the recommended provisions, and in particular the gifts and gains that are inherent in the management measures. Without an appreciation of the gifts and gains negotiated by the Guardians' within the package, implementing particular provisions could well compromise that balance;
2. Evaluating draft legislative provisions and providing feedback.
3. Advising about the practicality of particular legislative provisions in the Fiordland situation.

These functions would ensure the following measures are implemented in the most effective and practical manner:

- *Fisberies measures* - a whole range of regulatory measures including area, bag and accumulation limits and method restrictions.
- *China shops* - Resource Management Act provisions for a number of china shops including anchoring and diving measures. Marine reserve provisions for china shops located within representative areas. Codes of practice tailored to each china shop.
- *Representative areas* - marine reserve provisions with appropriate measures for each area.
- *s186B/mataitai/ taiäpure* - work with the Oraka Aparima rununga and the Murihiku tangata tiaki/kaitiaki to progress s186B, temporary closures for blue cod in Milford and Doubtful Sounds and mataitai/taiapure applications.

10.1.3 ***Approaches and information/education associated with the strategy proposals***

- **Risks to the marine environment:**
 1. *Bioinvasion* - work with ES and MFish's, Biosecurity Group to develop an appropriate approach to hull cleaning and ballast for Fiordland.
 2. *Risk surveillance* - carry out surveillance to detect new organisms.
 3. *Emergencies such as oil spills*. - Provide logistical support and advice.
 4. *Rubbish* - Provide information and education.
 5. *Anchorage and anchoring* - produce information about the distribution of anchorages throughout Fiordland (based on the maps in the Coastal Plan) and advice about Fiordland marine conditions that can impact on safe anchoring.
 6. *Possums/deer* - provide information about possum/deer distribution to DoC.
 7. *Access* - contribute ideas on the issue and take part in initiatives if invited.
- *Compliance* - information and education about the new rules.
- Information and education about the strategy and new provisions - a very significant task.

10.1.4 *Compliance*

The eyes and ears in Fiordland, providing information to the agencies, integrated agency/Guardians approach to compliance.

10.1.5 *Monitoring*

Identify the most effective monitoring tools and approaches and providing input.

10.1.6 *Identify information gaps and needs - advocate for projects to fill the gaps*

e.g. relative abundance studies of blue cod in the accessible fiords.

10.1.7 *Provide contacts for surveys and research*

Ensure that the methods and approach are realistic for Fiordland.

10.1.8 *Work with members' wider groups to address issues of relevance*

e.g. rock lobster pot storage.

This list of possible roles will undoubtedly change and evolve with time and is very much dependant on whether the Government decides to implement the strategy and in what way this is achieved. What is certain is the importance of retaining local experience and knowledge from those actively involved in Fiordland's fisheries and marine environment.

10.2 The strategy - future flexibility

The package of measures contained in this strategy is considered to be in the best interests of Fiordland's fisheries and marine environment at this time. The Guardians are well aware that neither Fiordland's fisheries nor the marine environment will remain static. Aspects of the environment and patterns of use are bound to change over time. Accordingly, management must be flexible and responsive. For instance, it would be unrealistic to imagine that every provision contained in this strategy would remain as relevant to the needs of Fiordland's fisheries and the marine environment in say 10 years as it is now.

That is the purpose of the monitoring programme - an integral part of the strategy. Implementing the strategy will take time - time in which baseline monitoring of the indicators could usefully be initiated. Monitoring indicators will provide information about how effective the management measures are. Furthermore, monitoring, together with the observations of those who spend time in the fiords will detect changes that may need future attention. Such changes might include the identification of further areas of outstanding abundance and diversity (china shops) or an increase in one or more of the harvested fish species that justifies a revision of the management rules.

If a newly constituted community/agency group is created to fulfil management functions specified in the Guardians' strategy, each issue will need to be considered on its merits and in the context of the balance of gifts and gains that might be appropriate at that time. In other words, the balance of gifts and gains is not set in concrete but will depend on the issues, the information and goodwill among those negotiating.

Just as this strategy draws together many threads in the best interests of Fiordlands fisheries and marine environment, in the future the same approach may produce a strategy that looks quite different but is still in the best interests of Fiordland's fisheries and marine environment at that time.