File M135-15-03

MARLBOROUGH
DISTRICT COUNCIL

PROPOSED MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN

Shipping Activity in the Marlborough Sounds

- Variation No. 3 -

REPORT PREPARED TO FULFIL THE REQUIREMENTS OF SECTION 32 OF THE RESOURCE MANAGEMENT ACT 1991

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Introduction

This report sets out the rationale and process underpinning the Marlborough District Council's decision to vary the Proposed Marlborough Sounds Resource Management Plan to address the adverse environmental effects of shipping activity in the Marlborough Sounds. These adverse effects reached a new level with the commencement of fast ferries operating within the Marlborough Sounds in 1994. The speeds at which the vessels travelled within the confines of Tory Channel and the inner Queen Charlotte Sound resulted in widespread community concern regarding safety of those using the Sounds and damage to the coastal environment.

The Marlborough District Council (the Council) recognises that shipping activity contributes to the social and economic wellbeing of people and communities by providing an important link between the North and South Islands and by providing a means of transport for goods in the Sounds. However, ships capable of generating a significant wake in enclosed waters have the potential to conflict with a range of other coastal users and values and generate adverse environmental effects. The Council considers the effects that have been experienced are significant enough to warrant consideration under the provisions of the Resource Management Act 1991 (RMA).

In notifying any variation to the Proposed Marlborough Sounds Resource Management Plan (Plan), the Council has a duty under section 32 of the RMA to consider a number of matters.

Section 32 of the RMA requires the following:

> *(1) In achieving the purpose of this Act, before adopting any objective, policy, rule, or other method in relation to any function described in subsection (2), any person described in that subsection shall—*
>
> *(a) Have regard to—*
>
> *(i) The extent (if any) to which any such objective, policy, rule, or other method is necessary in achieving the purpose of this Act; and*
>
> *(ii) Other means in addition to or in place of such objective, policy, rule, or other method which, under this Act or any other enactment, may be used in achieving the purpose of this Act, including the provision of information, services, or incentives, and the levying of charges (including rates); and*
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> *(iii) The reasons for and against adopting the proposed objective, policy, rule, or other method and the principal alternative means available, or of taking no action where this Act does not require otherwise; and*
>
> *(b) Carry out an evaluation, which that person is satisfied is appropriate to the circumstances, of the likely benefits and costs of the principal alternative means including, in the case of any rule or other method, the extent to which it is likely to be effective in achieving the objective or policy and the likely implementation and compliance costs; and*
>
> *(c) Be satisfied that any such objective, policy, rule, or other method (or any combination thereof)—*
>
> *(i) Is necessary in achieving the purpose of this Act; and*
>
> *(ii) Is the most appropriate means of exercising the function, having regard to its efficiency and effectiveness relative to other means.*

(2) Subsection (1) applies to—

…

(c) Every local authority, in relation to—

(i) The public notification, under clause 5 of the First Schedule, of any proposed regional policy statement or proposed plan or of any change to a regional policy statement or of any variation:

(ii) Any decision made by the local authority, under clause 10 of the First Schedule, on a proposed regional policy statement or proposed plan or on any change to any regional policy statement or on any variation:

(iii) Any decision made by the local authority under clause 29(4) of the First Schedule on any plan or change requested under clause 21 of that Schedule.

…

(4) Every person on whom duties are imposed by subsection (1) shall prepare a record, in such form as that person considers appropriate, of the action taken, and the documentation prepared, by that person in the discharge of those duties.

(5) The record prepared by a local authority under subsection (4) in relation to the discharge by that local authority of the duties imposed on it by subsection (1), in relation to any public notification specified in subsection (2)(c)(i), shall be publicly available in accordance with section 35 as from the time of that public notification.

Essentially the Council needs to consider alternatives, assess the benefits and costs of the principal alternative and its effectiveness before adopting any objective, policy, rule or other method. The Council must be satisfied that the variation is necessary in achieving the purpose of the RMA and is the most appropriate means (with regard to its efficiency and effectiveness relative to other means) for exercising the functions of the RMA.

This report is a 'record' for the purposes of section 32(4). The level of detail contained in this report, reflects the complexity of the issue that the Council is addressing. The analysis that follows does not contain all the information used by the Council in making its decision to proceed with a variation. Where appropriate the report refers to supporting documentation and a comprehensive list of references is contained in Appendix 1.

Structure of the Section 32 Report

Part A: In carrying out the section 32 analysis the Council has identified that there is a resource management issue that does need to be addressed. Validation of the issue has been determined through a number of actions and initiatives undertaken by the Council and others subsequent to the arrival of the fast ferries in the Marlborough Sounds. These actions and initiatives are described in Part A of this report.

Part B: The legislative framework and the rules that currently apply are described in Part B.

Part C: The various options the Council considered in deciding how to address the resource management issue are outlined in this Part of the report. Public comment was sought on these options through a public discussion paper released in December 2000.

Part D: The preferred approach of introducing regulation into the Plan is explained in Part D.

Part E: The community's response was sought to the approach outlined in Part D through a draft variation. Their views to this approach are set out in Part E. Comment is also provided on a number of specific issues raised by respondents to the draft variation.

Part F: At the same time as the preferred approach was developed and then considered by the community and others, the Council initiated a series of further investigations to ensure the draft variation could satisfy the requirements of section 32 of the RMA. Part F of this report refers to the findings of these investigations, which include social and economic consequences of introducing controls on shipping activity.

Part G: An analysis of the provisions to be included within the Plan against the background of technical information, community response and the requirements of section 32 is provided in Part G.

Part A: Resource Management Issue

Background

The Proposed Marlborough Sounds Resource Management Plan was notified on 31 July 1995. At the time the Plan was drafted the wake effects of shipping activity were not clearly understood and a relatively permissive regime for their operation was established.

The commencement of the operation of fast ferries in the Marlborough Sounds in late 1994 signalled a marked difference in the type of passenger and freight vessel operating on the inter-island run. Traditionally, single hulled vessels took up to 3 ½ hours to cross Cook Strait. The new high speed vessels (single hull and catamarans), reduced this travel time to less than 2 hours.

Although the vessels provided a quicker travelling time across Cook Strait, there was however, considerable adverse reaction from the community to their operation, as they were perceived as having an adverse impact on the Sounds' environment. This included impacts on kaimoana, erosion of beaches and sites of cultural significance, water clarity, safety and marine ecology.

Not long after the commencement of the fast ferry service, enforcement order proceedings were brought against the ferry operators by Save the Sounds - Stop the Wash, Te Atiawa and the Minister of Conservation in what has become known as the "Fast Ferries" case *(Marlborough District Council* v *New Zealand Rail Limited* [1995] NZRMA 357 W40/95). The Council also sought certain declaratory judgments from the then Planning Tribunal (later to become the Environment Court) regarding the fast ferries and all the issues were dealt with at the same time.

The Tribunal held that section 12 of the RMA did not apply to the operation of fast ferries as the operation of these ships was protected by the provisions of the Draft Marlborough Sounds Maritime Planning Scheme, which at that time was a proposed regional coastal plan pursuant to section 367 of the RMA. Further, that even if the operation of the fast ferries were not protected by that Plan then they would be protected by section 418 (6B) as an existing activity.

The Tribunal decided to decline the application to make an enforcement order to stop the operation of fast ferries as the standard of proof sufficient to meet the requirements of section 17 of the RMA was not met. Judge Treadwell stated that he was *"unable on the evidence to find that the activity is noxious, dangerous, offensive or objectionable to such an extent that it has or is likely to have an adverse effect on the environment."* He further held that the positive social and economic effects of shipping activity such as fast ferries were significant in the national context.

The decision of the Court to decline the application for the enforcement order illustrates that the focus of the Council should be on the management of the effects of the operation of ships in the enclosed waters of the Marlborough Sounds rather than relying on the enforcement provisions of the RMA to address adverse effects.

Validation

Since the time of the former Planning Tribunal's decision, the Council has undertaken a number of initiatives and actions to determine if there is an issue that does need to be addressed under the Resource Management Act 1991 and to assist in developing an appropriate response to the community's concerns. These have included the following:

- Establishment of a **Reference Group in 1999** to consider the impact of the fast ferries. This Group prompted the investigation of ship wake characteristics and a geological evaluation of wave impacts;
- **Ongoing monitoring** by the Council on the impact of shipping activity on shorelines and coastal habitats;
- Participation in the **Tory Channel Navigational Safety Group** established by the Maritime Safety Authority (MSA) in 1999 to promote safety;
- **Establishment of a technical group** to oversee action on the issue of fast ferry operations in the Sounds (including appointment of specialists in wave processes and wave height monitoring);
- Commissioning of a study to assess the **safety risk** of fast ferries;
- Commissioning of a **social impact assessment**;
- Introduction of the **Navigation Bylaw 2000**, which was brought about to address navigational safety concerns; and
- Involvement in a project undertaken by the Ministry for the Environment and Te Atiawa to address issues of concern to **tangata whenua** in relation to shipping activity in the Sounds, and further discussions with Te Atiawa to address those concerns through the draft variation.

The following is a discussion on some of these initiatives and actions.

Monitoring

Since shortly after the commencement of the fast ferries in the Marlborough Sounds, the Council has been jointly involved with the Department of Conservation and the Ministry for the Environment in conducting two main forms of monitoring. Both initiatives are continuing and comprise shoreline profile monitoring and biological monitoring of boulder and cobble shores in Tory Channel and Queen Charlotte Sound.

These monitoring programmes were only initiated after the commencement of the fast ferries so there is no comparable data available over the period of time prior to their operation. Some initial monitoring

was undertaken for the Planning Tribunal proceedings that were heard in 1995. Subsequent to that, a more formal programme was established to monitor shoreline profiles and ecological changes.

Shoreline Monitoring

In January 1997 the Council engaged Auckland UniServices Ltd to establish and report on a shoreline monitoring programme in Tory Channel and Queen Charlotte Sound.

Shoreline profiles have been surveyed every 6 months at 21 sites in inner and outer Queen Charlotte Sound and in Tory Channel. Progress reports have been provided every 6 months and two major reports, each covering a 3 year period, have been published. The reports include a photographic record of the sites on each survey occasion.

Overall the monitoring shows that sites in outer Queen Charlotte Sound have been very stable over the entire survey period. Even sites with considerable exposure to reasonably high energy, have shown little change.

Many of the sites on the ferry route have exhibited change; some being erosional in nature while others have recorded accretion. However, trends or seasonality consistent between sites is not apparent. It is possible to make tentative links between the changing beach shape and the ferry operational regime at individual sites. Sites seem to be primarily influenced by the local circumstance, particularly with respect to sediment supply.

On the basis of the information gathered to date, the Council has confirmed the continuation of the monitoring programme until at least 2005.

The Council has also undertaken additional shoreline monitoring in the Grove Arm in response to concerns regarding erosion, even though this area is some distance from the sailing line of the ferries. This monitoring only commenced in 2000, so there is not the available data to distinguish between seasonal factors and what, if any, might comprise a trend. This monitoring will also be ongoing.

Biological Monitoring

Biological monitoring of boulder and cobble shores has been undertaken along the ferry route since 1995. Davidson Environmental Limited has presented information on the results of this monitoring for the period 1995 through until February 2000 in a report prepared for the Council[1]. In addition to

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[1] Davidson, RJ. 2000. Biological Monitoring of Boulder And Cobble Shores in Tory Channel and Queen Charlotte Sound in Relation to Ferry Wakes: 1995 to 2000. Prepared by Davidson Environmental Limited for the Marlborough District Council. Research, Survey and Monitoring Report No. 341.

The results reported are from the period prior to the introduction of the Navigation Bylaw 2000. Subsequent monitoring to the 2000 report is discussed later in this analysis. This discussion also includes consideration of the impacts on the benthic environment of slowing the fast ferries to 18 knots.

presenting all data collected from 1995 to 2000, the Davidson Environmental report sought to investigate the impact of the newer fast ferries, the all year round operation of a fast ferry and to determine whether the biota from along the ferry route had reached a stable equilibrium or had continued to decline as a result of ferry wash.

The following conclusions were reached in the report:

- For cobble and small boulder dominated shores adjacent to the ferry route, the number of intertidal species and animal densities were dramatically lower than those recorded from comparable sites free from ferry wash. This phenomenon was widespread over cobble dominated shore along the ferry route. Disturbance of substrata occurred at control locations[2], but these were irregular events, which provided an opportunity for recolonisation and recruitment into impacted areas from refugia or adjacent habitats. The year round impact generated by ferries meant that animals venturing into the impact zone from adjacent refugia (e.g. large immobile boulders or from the deeper subtidal zone) would be either killed or relocated. Ferry wash had not only resulted in a depletion of animals from the shallow subtidal zone to the high tide mark, but may have also resulted in depletion of animals in areas outside the impact zone through migration into the impact zone.

- In the 1995 and 1996 fast ferry off-season, a small recovery of species at intertidal sites was observed. This recovery was reversed with the return of the fast ferry for the summer season. This phenomenon suggested that fast ferry impacts on intertidal communities may have been more severe than conventional ferries as this recovery occurred while conventional ferries remained in operation. The scale of this difference was, however, unknown as there was insufficient time between fast ferry seasons to allow the animal communities to fully stabilise.

- The extent of the impact zone in subtidal areas along the ferry route appeared restricted to the shallow subtidal zone less than approximately 1.5 metres to 2 metres below the low water mark. Although less severe than the depletion of animals in the intertidal zone, the density of particular animals in the shallow subtidal environment was observed to have declined. This decline had been slower and less dramatic than the intertidal area as the subtidal environment has adjacent and deeper subtidal areas that appeared free from direct wave action. The proximity of the adjacent refugia may have allowed some level of restocking within the impact zone. Similarly, the subtidal environment often has bedrock or large boulder habitat that may have provided animals refugia from wave action. Over time the movement of animals from adjacent refugia may have acted to lower the abundance of animals in these refugia areas (i.e. the impact zone may extend outside the area physically impacted by waves).

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[2] Control sample sites were located in the northern entrance to Queen Charlotte Sound. Impact sites were located in either Queen Charlotte Sound or in Tory Channel. Sites were spread widely in an effort to represent a large range of shore aspects and exposures subject to ferry and natural wave climates.

- The report noted that densities of subtidal animals at control areas exhibited some small scale or short duration variation but overall remained relatively stable. These control sites were therefore considered representative of the outer Queen Charlotte Sound and indicative of the wider sheltered Marlborough Sounds. It was considered probable that densities of intertidal animals in Tory Channel and central Queen Charlotte Sound would have been comparable to the control areas as the habitats, shore types, and substrata were very similar. It was also considered that grazers such as paua, kina and cats eye would have been more abundant in Tory Channel as the biomass of algae (i.e.grazer food) is considerably higher in Tory Channel than Queen Charlotte Sound.

The overall conclusion in the report stated that the operation of ferries had resulted *"in a decrease in the number of species and a decline in the density of animals compared to control areas. A reduction in the waves produced by these boats would result in a level of recovery. The scale and recovery time would depend on the interaction between waves and substrata movement. Decreased mobility of substrata will result in a recovery of species and animal densities in areas adjacent to the ferry route."*

Geological Assessment

A preliminary engineering geological assessment was carried out of the ferry route between Picton and the eastern entrance to Tory Channel, in late November 1999. The primary objectives of the survey, which was conducted over 2 days, were to determine the extent of landsliding along the shoreline and to evaluate its possible geotechnical causes. Approximately 95 landslides were recorded and described during the initial survey, the majority of these being along the shores of Tory Channel, and subsequently about 10 further landslides were identified near its eastern entrance.

Causes of the landsliding included debris saturation during natural storm events, wave action at the shoreline under storm conditions, wake action from boat traffic especially in Tory Channel, and more rarely farming or roading activities. A report[3] prepared on the investigations did not conclude that the observed slope failures were directly due to the introduction of fast ferries, although they appeared to be a contributing factor in localised areas of continued slope movement. The absence of an adequate database on shoreline and slope changes over the past 40 years made assessment of the various contributing factors difficult.

An attempt was made to categorise the recorded landslide features by failure type and mechanism. Some 60% of the identified slope failures occurred in colluvial materials, and a further 20% involved weathered bedrock and/or associated colluvium, with volume estimates typically in the range 10-1000 m^3. About 15% of the identified landslides were in strong and/or fractured bedrock, and up to 5% of the failures involved reactivation of pre-existing slide features, which were clearly visible from

[3] Bell, D H. 2000. Preliminary Engineering Geology Evaluation of Slope Instability Along the Ferry Corridor, Picton to Tory Channel. Unpublished report prepared for the Marlborough District Council.

geomorphic evidence. Initial estimates indicated that some 1.7 km of shoreline was affected by landsliding, and in most cases the failed debris was being reworked by wave action to armour beaches and shore platform areas.

The report concluded that the Council should facilitate increased monitoring and site-specific assessment of the identified landsliding, and to implement expanded baseline surveys which incorporated both beach and slope observations. The report also stated that whilst there is evidence available to show that fast ferry wakes have different wave characteristics from those of conventional ferries at the shoreline, there are many contributing factors involved with slope instability that required careful documentation and evaluation before scientifically valid conclusions could be reached.

Reference Group

The Council established a Fast Ferry Reference Group in May 1999 to raise, examine and comment on issues concerning fast ferries. The Group's membership comprised representatives from iwi, the Department of Conservation, Sounds residents and the Council. Latterly, ferry operators also took part in the Group's meetings.

The Reference Group met on a number of occasions throughout 1999 and 2000 and acted as a forum for each of the attending interests to air concerns regarding ship wake. A trip to Tory Channel and part of the Grove Arm was also undertaken to inspect some of the wash effects. The meetings also provided a forum in which the results of ongoing monitoring could be relayed to participants, including information provided by technical experts.

One of the significant outcomes of the Group's meetings was assisting in establishing what the issues were regarding fast ferries. This culminated in a matrix[4] being prepared that indicated there were adverse environmental processes occurring from ferry operations. The matrix, which was subsequently reviewed from a legal viewpoint, broadly identified the following:

- Effects purported to be caused by high speed vessels;
- Whether mitigation was required to address those effects;
- What could potentially be done to address these; and
- What information would be required to take matters further.

Other outcomes from the Reference Group included recommendations to the Council that beach profile monitoring programmes be continued and that a geological assessment of erosion processes occurring in Tory Channel be initiated. The Council followed up on both of these recommendations.

[4] See Appendix 2

Review by John Milligan

In December 1999 the Council considered whether it was, at that time, in any different statutory position in terms of whether there was a need to act in terms of perceived or real detrimental effects, having regard for the overall position considered by Judge Treadwell in the 1995 case. This was against a background of the matrix developed by the Fast Ferry Reference Group and the preliminary geological assessment undertaken. The Council sought the assistance of John Milligan, a Christchurch barrister very experienced in resource management matters, to provide a commentary on whether there was evidence available that indicated the Council ought to initiate proceedings under the RMA.

Mr Milligan discussed some of the issues canvassed in the 1995 decision and some that were not. He noted (in a speculative manner) the following in response to the question as to whether the natural environment had been adversely affected:

- *"Changes to the environment are not necessarily evidence of an 'adverse' effect. The environment is not a static thing - changes to it occur all the time, and the ecosystems that form part of that environment exhibit significant adaptive power.*

- *An environment is affected adversely to the extent that the adaptive power of entities within it (ecosystems, species, and on occasions, individuals) is diminished. This may have to do more with the rapidity of change than with change itself. On this way of looking at things, a change which results in the replacement of one biotic community with another shows merely that the environment is different, rather than worse.*

- *Because the perspective or frame of reference is the relevant environment rather than that of individuals within it, the displacement or destruction of some species members may have little significance. To the contrary, of course, if the species is rare or endangered, or if the existence of the species in some particular place has significance as a resource.*

- *As a first approximation, human induced changes to the environment may be seen as adverse when those changes*

  (a) occur in a way or at a rate which overbears the ability of the affected ecosystem to adapt;

  (b) significantly reduce biodiversity; and/or

  (c) lead to biotic stasis. In this respect stopping all changes may be as bad as causing too much.

With appropriate alterations some of these thoughts may be applicable to alleged detractions to amenity values."

In terms of the role of the Council in monitoring, Mr Milligan noted that, "*both the duty to monitor and the duty to act are to be exercised within the functions conferred by the Act and are affected by considerations of appropriateness, effectiveness and necessity*".

He concluded that "*a Council has an obligation to apply for an enforcement order only when, on the basis of the evidence available, it ought reasonably to conclude firstly that there is an adverse effect on the environment sufficient to found an order, secondly that there is a remedy available (i.e.; some order that would avoid, remedy or mitigate the adverse effect complained of) and thirdly, that there is some chance that such a remedy would be granted. This implies that it is not part of a Council's function (statutory or otherwise) to 'show willing', as it were*."

On the basis of this the Council concluded that it ought not apply again for an enforcement order, rather it should address the issues more comprehensively through the Plan.

Tory Channel Navigational Safety Group

The Maritime Safety Authority and the Council jointly convened the Tory Channel Navigational Safety Group in mid 1999 to review safety issues surrounding the operation of ferries in Tory Channel. The Group's membership included representatives from the Maritime Safety Authority, ferry operators, Port Marlborough New Zealand Limited, the Council and recreational and commercial users of the area.

The terms of reference agreed to by the Group included identifying whether there were safety issues regarding navigation in Tory Channel, reviewing those issues, identifying possible safety strategies and releasing those in the form of a discussion document for wider consideration by the organisations represented on the Group.

The issues identified in the discussion document were speed and overtaking restrictions, shipping lanes, education, communication, incident reporting and size and speed restrictions. The issues were discussed in the document with a series of questions posed about each in order to elicit response from the various communities of interest. The following outcomes were initiated as a result of the feedback received.

- A lane was identified within which all vessels of 500 GRT and above, would navigate in excess of 18 knots. This lane was introduced on a voluntary basis as from 1 December 1999 and was monitored during the course of the 1999/2000 summer.

- Improved ship-to-shore and ship-to-ship communications were set in place through a dedicated VHF channel on a repeater system. This ensured that the radio blind spots associated with previous VHF frequencies were eliminated. This radio channel can be used by other Sounds users to warn them of large vessel movements.

- Improved public education through the review and distribution of the "Safe Sounds Boating Brochure".

- Increased availability of accident/incident reporting forms and a public campaign to make small boat users aware of the legal requirement to report accidents and incidents.

- Voluntary overtaking restrictions between all vessels of 500 GRT and greater at Tory Channel entrance, Te Uira-Karapa Point, Arrrowsmith Point and Ruamoko Point.

Risk Assessment

An outcome of the Tory Channel Navigational Safety Group's consideration of safety concerns regarding ferries, was a realisation by the Council that an in depth analysis and assessment needed to be undertaken of all water users in Queen Charlotte Sound and Tory Channel. Risk & Reliability Associates Pty Ltd in association with Captain Kerry Dwyer & Associates were engaged in late 1999 by the Council to undertake a risk analysis of vessel patterns, trends and usage in Queen Charlotte Sound and Tory Channel. The assessment was to identify possible conflicts and to make recommendations to the Council as to what measures would be desirable to reduce or eliminate any such identified risks. The risk assessment report[5] included consideration of the suggestions and recommendations from the Tory Channel Navigational Safety Group especially with regard to risk reduction effectiveness and efficiencies.

One of the difficulties in undertaking the analysis was a lack of reported incident data involving ferries. This is evident in the following figures available at the time, which were reported incidents:

1996	3
1997	6
1998	7
1999	28

The report attributes the increase in the number of incidents reported in 1999 to increased publicity regarding safety in Queen Charlotte Sound and Tory Channel.

The recommendations arising from the study included the following:

- consideration of introducing a safety case regime as policy for regular port users;

- reducing speed of all ferries in Tory Channel and Queen Charlotte Sound, at least during nominated key times. This was considered the single most important control option in both the collision and wake wash risk issues;

[5] Risk & Reliability Associates Pty Ltd. January 2000. Risk Assessment of Queen Charlotte Sound. Report prepared for the Marlborough District Council.

- consideration of timetabling ferries, particularly as to the frequency of ferries passing to minimise the likelihood of augmented wash waves; and

- a programme aimed at encouraging the public to report all incidents to ensure that all future risk analyses are based on a larger data set.

5 Of these, ultimately the recommendation concerning reduction of speed was pursued with the introduction of the Navigation 2000 Bylaw in late 2000. A public campaign aimed at making small boat users aware of legal requirements to report accidents and incidents was also undertaken.

Technical Working Group

A group of technical advisers met from time to time to address specific issues as they arose. These
10 advisers and the expertise they provided the Council are described below.

Dr Kevin Parnell (Auckland UniServices Ltd)	Dr Kevin Parnell has a specialist interest in near shore and on shore processes and has a long term contract with Council to monitor beach profiles. Additionally, he has carried out a number of exercises measuring wash waves generated by conventional and fast ferries and these are central to the understanding of near shore and on shore effects of such waves.
Dr Richard Croad (Opus International Consultants Ltd)	Dr Richard Croad has a specialist interest in wave propagation and related coastal process. He provides technical advice on the likely form and effect of ship wash waves. Dr Croad has had an involvement in this particular topic since 1995 when he was an expert witness for Council at the Fast Ferry hearing before Judge Treadwell.
David Bell	Mr David Bell has a specialist interest in geotechnical engineering and has carried out an exercise of scoping land stability mechanisms and processes along the ferry route.
Rob Davidson (Davidson Environmental Ltd)	Mr Davidson is a marine biologist with extensive knowledge of the benthic environment of the Marlborough Sounds. He has undertaken biological monitoring of intertidal and shallow subtidal biota along the ferry route and at control sites in Tory Channel and Queen Charlotte Sound. Mr Davidson has had an involvement in this particular issue since 1995 when he was an expert witness for the Department of Conservation at the Fast Ferry hearing before Judge Treadwell.

Di Buchan/Chris Cosslet (Corydon Consultants Ltd)	Corydon Consultants Ltd undertake socio-environmental research with much of their work having a resource management focus. They have assisted the Council with assessments of the following: • social impacts of the fast ferry operations including prior and subsequent to the introduction of the Navigation 2000 Bylaw; • an assessment of the nationwide perceptions of the Marlborough Sounds; and • the social costs and benefits of introducing regulation to manage the effects of shipping activity.
Mike Copeland (Brown, Copeland and Company Limited)	Mr Copeland is an economist who has assisted the Council in the consideration of the economic costs and benefits of introducing regulations on shipping activity to manage.

From time to time, Dr Kevin Parnell and Mr Rob Davidson were in attendance at the Reference Group meetings to elaborate on or interpret technical matters.

Each of these experts has provided specialist advice to the Council including through written reports (listed in Appendix 1). In some cases this has included assessments in terms of addressing the costs and benefits of implementing the variation.

Social Impact Assessment

The Council commissioned Corydon Consultants Ltd in April 2000 to undertake a social impact assessment. The aim of the study was to provide specific information on the effects of fast ferries on residential property owners and other users of the Sounds. The assessment incorporated input from over 450 property owners and boat operators who used the area affected by the fast ferries. Collectively, these people offered a vast amount of experience of life in the Marlborough Sounds. Many have had first-hand experience of the effects of shipping in Queen Charlotte Sound and Tory Channel spanning several decades.

Inter-island ferries have been plying the Sounds since 1925 and the development of private properties since that time has taken account of the wash produced by these conventional vessels. In effect, the "conventional" wash has defined the limit to which it has been considered safe to erect buildings and other structures. In general, recreational users have not found the wash produced by conventional ferries to threaten or constrain their use of the foreshore or the sea.

The effects of the fast ferries however were unlike those of any vessels previously seen in Queen Charlotte Sound or Tory Channel by property owners or by recreational users. In particular, the wash was considered to be more powerful and to affect the shoreline to a greater degree than that produced by the conventional ferries. In undertaking this research Corydon Consultants received numerous reports of damage both to private property and to the coastal environment, and of numerous incidents threatening the safety of people both at sea and on the shore.

The resulting impacts noted were:

- Significant costs imposed on many property owners in terms of money and time spent repairing and rebuilding property;
- Widespread changes needed in the way people go about their daily lives;
- A detraction from the quality of the living environment and impeded social interaction among Sounds residents;
- A new element of stress introduced to life in the Sounds;
- Reduced availability of and increased danger in gathering kaimoana;
- Damage to many sites of historic and cultural significance, particularly to tangata whenua;
- The attractiveness of the Sounds as a place to live and recreate, has been reduced both for residents and visitors.

The report stated that while the availability of the fast ferries had brought significant benefits to the national community by facilitating faster travel across Cook Strait, the costs noted above represented social and environmental externalities. Corydon Consultants considered that these costs were being unfairly imposed on private individuals and that it was inequitable that the fast ferry companies should reap the financial benefits of their operations without compensating those who bear these costs. It was recognised that not all of the costs *could* be compensated and that in such cases, the effects should be mitigated to a degree where the wellbeing of the affected parties was not compromised.

A growing sense of frustration was recorded among residents about the prevailing situation, because they felt powerless to address ongoing impacts. Because of the Treadwell (1995) decision, residents were unwilling to embark on legal action against the ferry companies. There was a high degree of frustration amongst those affected about the lack of action by those who they perceive as having the responsibility to act. After considering the wealth of material provided for the study, Corydon Consultants reached the conclusion that the fast ferries were having a significant and continuing detrimental effect on the social environment of the Marlborough Sounds.

This information assisted the Council in its deliberation of the Navigation Bylaw 2000 and in the preparation of a draft variation to the Plan.

Navigation Bylaw 2000

The Navigation Bylaw 2000 was made operative on 15 December 2000 following extensive community consultation. This Bylaw was promulgated under the provisions of the Local Government Act 1974, a separate process distinct from the RMA, and focused on safety. The provisions of the Bylaw control the speed of vessels such as fast ferries in Queen Charlotte Sound and Tory Channel only in terms of generated wash wave height. A speed limit of 18 knots is applied and vessels cannot exceed this limit unless they meet the wave height standard, which is set out in the Bylaw. Any operators wishing to exceed this speed level must apply to the Council in the manner set out in the Bylaw provisions. Before a permit can be granted, the operator must be able to demonstrate that the vessel complies with the wave height standard.

The wave height criterion is a formula that expresses the maximum wave height in relation to wave period. The formula works from the basis that the wave period (the time it takes for a wave to break on the foreshore) has an inverse relationship to wave height, i.e. the longer the wave period the shorter the wave height allowed. As such the Bylaw seeks to avoid situations where powerful waves break at the foreshore, arriving unheralded and persisting for an extended time. The power of the waves was such as to cause danger to persons, in particular, near the waters edge. However, the Council considers this method, introduced to address preserving public safety, is not sufficient to address the wide range of other environmental effects of large and high-speed vessels in the Marlborough Sounds. The use of the Bylaw as a method to address these environmental effects is discussed again later in this report.

Iwi

The RMA sets up a special relationship between local government and the tangata whenua of an area. It requires that the Council recognise and provide for the relationship of Maori with their ancestral lands, water, sites, waahi tapu and other taonga. It further requires the Council to have particular regard to kaitiakitanga, and to take into account the principles of the Treaty of Waitangi.

Much of the discussion with iwi concerning ship wake issues has been with Te Atiawa, who hold a particular affiliation with Tory Channel. Other iwi have not been precluded from being involved in the consideration of the issue but the Council has recognised Te Atiawa as having a long association with the area of concern.

Te Atiawa took part in the 1995 Planning Tribunal proceedings having sought an enforcement order against the two fast ferries operators of that time. Judge Treadwell considered at that time he was unable to conclude from the evidence that the sustainability of food resources were affected by the fast ferries. On the contrary he found *"… the sustainability of the resource proven. Kaimoana are relocated, but that relocation is not universal throughout the length of the channel nor is it significant. Further investigation may lead to a contrary conclusion but in the short time which has elapsed from the commencement of the fast ferries to the date of hearing of this case I am unable to reach a positive conclusion on this question.*

In respect of sites of cultural significance and waahi tapu (apart from Bob's Bay which I have addressed) the evidence does not persuade me that the ferries have interfered with any such sites. Maori are concerned with Kaitiakitanga but nothing in the Act indicates that the ferry operators were required to enter into consultation before commencing a service which they had no cause to believe would result in any environmental damage."

However, Te Atiawa have maintained that the ferries have had significant adverse effects on and continue to have effects on the following:

- customary use of Tory Channel and Queen Charlotte Sound;
- the distribution, abundance and gathering of kaimoana;
- access to the area and safety issues;
- a loss of cultural knowledge and mana; and
- damage to waahi tapu sites.

Te Atiawa have been represented on the Fast Ferry Reference Group and have also been consulted on a number of occasions with regard to the preparation of the draft variation and the proposed variation that is being publicly notified.

The Ministry for the Environment has funded the preparation of a report[6] by Te Atiawa as part of an effort to assist the iwi to actively engage in consultation regarding the management of shipping within Tory Channel and Queen Charlotte Sound. The report's Executive Summary records the following:

> *"The continued operation of fast ferries in Tory Channel and Queen Charlotte Sound has affected almost all aspects of the customs and practices that belong to Te Atiawa. Since the advent of the ferries it is no longer possible to gather kaimoana from traditional areas. The habitat of finfish has decreased due to the continued wave action from vessels. There has been significant destruction to waahi tapu, in particular Moioio Island. Beach structure has been dramatically altered, threatening coastal waahi tapu. Respondents have reported a general loss of enjoyment, whanau no longer feel comfortable taking young children to Tory Channel and Queen Charlotte Sound. It is becoming increasingly difficult to pass cultural knowledge between generations. The adverse effects that fast ferries and large vessels have had on the Iwi must stop. Methods to remedy these effects must be worked towards to allow for the ongoing sustainability of Te Atiawa."*

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[6] Aratika Associates. October 2001. The Impacts of Fast Ferry Wash on Te Atiawa. Prepared for Te Atiawa Manawhenua Ki Te Tau Ihu Trust

The report concludes that Te Atiawa's worst fears regarding the fast ferry service did eventuate, and the outcome was in fact much worse than anticipated. Te Atiawa sees the variation to the Plan as an opportunity to respond to these issues and to remedy the environmental damage that has occurred.

Summary

Through the various investigations and actions undertaken, it has become evident that there are adverse effects from shipping activity in the Marlborough Sounds. The effects on the environment have included impacts on the following:

- **Land form:** significant changes to composition of sediments and beach form.
- **Habitats:** significant changes to marine life.
- **Property:** damage to structures such as jetties, loss of property values brought about by changes in beach form and land instability.
- **Open space and recreation:** detracting from the public use and enjoyment of areas of the Sounds.
- **Public safety:** increased risk involved in using the navigation channel and surrounding areas.
- **Impact on the quality of life** of Sounds residents and visitors.
- **Social and cultural impacts** specific to tangata whenua: damage to sites of historic and cultural significance, damage to kaimoana habitat, and difficulty in gathering kaimoana.

The Council then went on to consider how these impacts could be addressed whilst taking into account the following:

- National transport issues in terms of a water transport route through the Marlborough Sounds providing an important link between the North and South Islands;
- Cumulative effects of what continued impact larger and faster shipping will have on the Sounds' environment and a lack of knowledge of the extent of what these impacts might be; and
- The potential social and economic consequences for the community if shipping activity were somehow constrained through the RMA.

Part B: Current Legislative Framework

Resource Management Act 1991

Purpose

The purpose of the Resource Management Act 1991 is to promote the sustainable management of natural and physical resources. Sustainable management means:

> *"managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while—*
>
> *(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
>
> *(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
>
> *(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment."*

In achieving the purpose of sustainable management, the Council must have regard to a number of principles set out in the RMA. These include recognition and provision for a number of "matters of national importance" described in section 6 of the RMA. The Council must also have particular regard to matters such as "amenity" and "heritage values", "kaitiakitanga", "quality of the environment", and "ecosystem values" (section 7).

The RMA enables the use and development of resources as long as such use does not adversely affect the environment in a way that impacts on the foreseeable needs of future generations, the life supporting capacity of ecosystems, other users or the environment. This is the concept of "sustainability" which the RMA promotes as its overriding purpose.

Marlborough District Council Responsibilities

The Council is a unitary authority, that is, it has the functions, powers and duties under the RMA of both a district council and a regional council. One of the functions of regional councils listed under section 30(1)(d), is the control of activities in relation to the surface of water in the coastal marine area. The Act defines the coastal marine area as being that area surrounding the coastline from mean high water springs to the outer limits of the territorial sea (12 nautical mile limit). This includes the foreshore, the seabed, the coastal water and the air space above the water. By virtue of this definition, a vast proportion of the Marlborough Sounds planning area is 'coastal marine area'.

Section 12 of the Resource Management Act places restrictions on the use of this area. In the current context sections 12(1)(c) and (e) and 12(3) are the relevant provisions that potentially constrain the operation of shipping activity in the coastal marine area. These sections state the following:

"(1) No person may, in the coastal marine area,—

…

(c) Disturb any foreshore or seabed (including by excavating, drilling, or tunnelling) in a manner that has or is likely to have an adverse effect on the foreshore or seabed (other than for the purpose of lawfully harvesting any plant or animal); or

…

e) Destroy, damage, or disturb any foreshore or seabed (other than for the purpose of lawfully harvesting any plant or animal) in a manner that has or is likely to have an adverse effect on plants or animals or their habitat; or

…

(3) Without limiting subsection (1), no person may carry out any activity—

(a) In, on, under, or over any coastal marine area; or

(b) In relation to any natural and physical resources contained within any coastal marine area,—

in a manner that contravenes a rule in a regional coastal plan or proposed regional coastal plan unless the activity is expressly allowed by a resource consent or allowed by section 20 (certain existing lawful activities allowed).”

Section 12(1)(c) and (e) are applicable where there is disturbance of the foreshore or seabed associated with the operation of ships that is likely to have an adverse effect on the foreshore or seabed or on plants or animals or their habitat. Although Judge Treadwell was unable to find on the evidence available to him that the effects of the fast ferries were having an adverse effect on the environment, he did state the following with respect to sections 12(1)(c) and (e):

“… I do not accept that it is necessary for the disturbance or destruction to be caused by primary or direct physical interference with the environment. I find that if a person operates a vessel within the coastal environment and such vessel has wake characteristics which result in disturbance of the foreshore or seabed then the provisions of s 12 of the Act would be violated if the effects are adverse and procedures under the RMA could be initiated for the purpose of putting an end to, or mitigating, the activity which has those consequences.”

It is considered likely that a number of the adverse effects experienced from shipping activity have arisen as a result of disturbance to the foreshore and seabed, particularly in the near shore areas along the ferry route. It is appropriate therefore that consideration be given to ensuring that any controls imposed on shipping activity takes this aspect into account.

The Second Schedule to the RMA sets out those matters that may be provided for in policy statements and plans. In any matter relating to the use, development or protection of the coastal marine area, a regional coastal plan may control "activities in relation to the surface of water" (Part I - Clause (2)(d)). Although not argued before Judge Treadwell in the Fast Ferries case, his decision recorded (at page 10) that shipping would appear to be included within the ambit of this clause.

The RMA sets up a framework therefore that allows the Council to control shipping activity in the Marlborough Sounds.

New Zealand Coastal Policy Statement

The Council's responsibilities for managing the coastal environment are shared with the Minister of Conservation. The Minister is responsible for the preparation of a New Zealand Coastal Policy Statement (NZCPS) which sets out a national framework for promoting sustainable management of the natural and physical resources in the coastal environment. A regional coastal plan prepared by the Council must not be inconsistent with the NZCPS (Section 67(2)(c)).

The current NZCPS was gazetted in 1994, and establishes that it is a national priority to:

- *Preserve the natural character of the coastal environment;*
- *Protect the essential or important elements of the natural character of the coastal environment;*
- *Protect the integrity, functioning and resilience of the coastal environment; and*
- *Restore and rehabilitate the natural character of the coastal environment where appropriate.*

Policy 3.3.1 embraces the adoption of a precautionary approach to activities where the effects are as yet unknown or little understood. Classifying activities into a permitted, controlled, discretionary, non-complying or prohibited status allows for that approach.

One of the general principles included in the NZCPS is that people and communities expect that the coastal marine area shall generally be available for free use and enjoyment. Public access to the coastal environment is particularly relevant in the context of this issue as it is widely perceived that shipping activity has impeded access to some areas of the Sounds because of safety concerns.

Other general principles of particular relevance are as follows:

> *"Recognition that some uses and developments which depend upon the use of natural and physical resources in the coastal environment are important to the social, economic and cultural well-being of people and communities, and that functionally certain activities can only be located in the coastal marine area."* (General Principle 1)

"Recognition that the protection of the values of the coastal environment need not preclude appropriate use and development in appropriate places." (General Principle 2)

"The importance of maintaining biological and physical processes in the coastal environment in as natural a condition as possible, and to recognise their dynamic, complex and interdependent nature." (General Principle 10)

As set out in the Introduction to this report, the Council recognises that shipping activity contributes to the social and economic wellbeing of people and communities. The geographic nature of New Zealand being an island nation means that water transportation plays an important part in New Zealanders lives. Accordingly General Principle 1 is a very relevant consideration in how and the extent to which shipping activity should be managed in the Marlborough Sounds.

General Principle 2 recognises that appropriate use by shipping activity in the Marlborough Sounds need not be precluded in order to protect the values of the coastal environment. This is clearly an important principle as the Council needs to be clear on the extent to which values have been affected by shipping activity and what can be considered to be "appropriate" in the context of how ships should use the Sounds.

The investigations undertaken in respect of shoreline profiles, shoreline habitats and geological assessments of landforms along the ferry route, have certainly demonstrated that biological and physical processes in the coastal environment are dynamic, complex and interdependent. While general Principle 10 recognises that it is important to maintain biological and physical processes in as natural condition as possible, it is difficult to fully determine the degree to which these process have been affected by shipping activity in recent years, given the absence of in depth monitoring prior to the introduction of the fast ferries.

The Council has had regard to these principles and the policies in the NZCPS, in the assessment of the existing management framework and in the development of a new framework to address the adverse effects of shipping activity.

Marlborough Regional Policy Statement

The Marlborough Regional Policy Statement (RPS) was made operative on 28 August 1995. It provides a community based vision and direction for the management of the natural and physical resources of Marlborough. The RPS identifies five regionally significant issues for Marlborough. These are:

- Protection of water ecosystems (which includes coastal water);
- Protection of land ecosystems;
- Enabling community wellbeing;
- Protection of visual features; and

- Control of waste.

A number of the subsequent objectives, policies and methods developed to deal with these issues are relevant in the Council's consideration of the management of the environmental effects arising from wake generated by shipping activity in the Sounds. The following are particularly relevant:

- *Water quality is maintained at a level that provides for the sustainable management of the marine ecosystem [Objective 5.3.2];*
- *The natural species, diversity and integrity of habitats are maintained or enhanced [Objective 5.3.10];*
- *Water transport systems are safely and efficiently operated whilst avoiding, remedying or mitigating adverse environmental effects [Policy 7.1.19];*
- *Public access and recreational use of the coastal space is considered when assessing all proposals for use of the coastal marine area [Policy 7.2.10(a)];*
- *Developments in the coastal marine area are allowed where they provide for public use/benefit [Policy 7.2.10(c)]; and*
- *The interests of tangata whenua are taken into account [7.3].*

The above matters are important in that they need to be addressed in the development of options to manage the effects of shipping activity.

Transitional Regional Coastal Plan

The Transitional Regional Coastal Plan (Transitional Plan) is an operative plan that came into force on 1 October 1991. The Transitional Plan comprises those relevant provisions of former district schemes relating to that part of the coastal marine area between mean high water and mean high water springs. There are no transitional provisions relating to the coastal marine area below mean high water.

Although some of the effects of ship wake are felt in the area between mean high water and mean high water springs, the Transitional Plan does not specifically cover the coastal marine area seaward of mean high water, which is where the activity creating the effects is located. No weight has been given to the provisions of this Plan in this report.

Proposed Marlborough Sounds Resource Management Plan

In addition to preparing a regional policy statement, the Council's unitary authority status imposes an obligation to prepare a coastal plan, a district plan and such other regional plans as are necessary to promote the sustainable management of natural and physical resources. Because of its unitary authority status the Council has taken the opportunity to integrate the management of the resources of the Marlborough Sounds by preparing a combined regional, district and coastal plan, known as the 'Marlborough Sounds Resource Management Plan' (Plan).

The Council publicly notified the Plan in July 1995. Approximately 650 submissions were received covering some 5,000 matters. Following notification of a summary of submissions some 8,000 further submissions were lodged. Decisions on all submissions were released in January 1998 and 46 references (appeals) were lodged with the Environment Court. Aside from the issue under consideration in this report, and two unrelated matters concerning port noise and coastal occupancy charges, all other provisions of the Plan are now beyond challenge.

Plan Structure

The Marlborough Sounds Resource Management Plan is comprised of three volumes:

Volume One	Contains the introduction to the Plan, which incorporates information requirements for resource, consent applications, cross boundary matters and monitoring. Volume One contains the issues to be addressed by the Plan as a whole, the objectives, policies and methods to be used in promoting sustainable management of the natural and physical resources of the Marlborough Sounds and the environmental results anticipated from their implementation.
Volume Two	Sets out the rules to achieve the objectives, policies and methods including the assessment criteria for those activities subjected to resource consents. Volume Two also contains the interpretation section, which defines the words, terms and phrases used in the Plan.
Volume Three	Contains the planning maps for the Marlborough Sounds Resource Management Plan. The coastal marine area is divided into two zones: Coastal Marine Zone (CMZ) 1 and Coastal Marine Zone 2. Within CMZ 1 marine farming is a prohibited activity.

The Plan identifies that Chapters 9 (Coastal Marine) and 19 (Water Transportation) in Volume One and the Port, Marina, and Coastal Marine Zones 1 and 2 chapters in Volume Two are principally the regional coastal plan. However there are elements from other chapters in Volume One that are also relevant. Those chapters of specific relevance include the following: Natural Character (2); Indigenous Flora and Fauna and their Habitats (4); Landscape (5); Tangata Whenua and Heritage (6); and Public Access (8). In terms of how the Plan provides for, or otherwise, shipping activity in the Marlborough Sounds, the most relevant provisions are indeed found in Chapters 9 and 19 of Volume One and in the Coastal Marine Zones 1 and 2 chapter of Volume Two.

How Does the Plan Provide for Shipping Activity?

Chapter 9 (Coastal Marine) of Volume One includes very little reference to the effects of shipping activity. It is briefly mentioned in the context of disturbance of the foreshore and seabed under the broad resource management issue of "*Adverse effects of activities on the natural and physical resources of the coastal marine area*". There are no specific objectives or policies on shipping activity and only one general policy of relevance. This policy (9.4.1.1.1) concerns the effects on a range of values of any activity that disturbs the foreshore or seabed. Arguably all of these values have some relevance to varying degrees in this current matter being considered. These values are as follows:

a) Conservation and ecological values;

b) Cultural and iwi values;

c) Heritage and amenity values;

d) Landscape, seascape and aesthetic values;

e) Marine habitats and sustainability;

f) Natural character of the coastal environment;

g) Navigational safety;

h) Other activities, including those on land;

i) Public access to and along the coast;

j) Public health and safety;

k) Recreation values; and

l) Water quality.

Chapter 19 (Water Transportation) of Volume One identifies that the waters of the Sounds are of strategic significance in terms of water transportation, in that they provide a "*very important link between the North and South Islands of New Zealand, particularly through the inter-island ferry operations*". The issue identified in this chapter is the need to recognise and provide for the different types of water transport; manage the adverse effects of water transportation; and provide for the maintenance and enhancement of navigational safety. These are all matters that are important in the context of this section 32 analysis.

One of the methods set out in Chapter 19 for avoiding conflicts between water transportation and other users of the coastal marine area is the establishment of a water transportation corridor. Shipping activity within this corridor, called the 'National Route for Navigation Purposes', is currently controlled through the rules for Coastal Marine Zones 1 and 2 set out in Volume Two. (The route is currently shown on Zoning Maps 2 and 4.) The rules that apply to shipping activity, provide that the use of surface water by non-exclusive users is a permitted activity, subject to the following conditions:

1.2.10 Use of Surface Water by Non-Exclusive Users

1.2.10.1 Defined Navigation Route and Beyond Pelorus Sound and Queen Charlotte Sound

Beyond the enclosed waters of the Sounds, being beyond straight lines drawn between:

- *Te Akaroa (West Entry Point) and Kaitira (East Entry Point);*
- *Cape Jackson and Cape Koamaru; and*
- *East Head and West Head.*

and on any national route defined by notation on the Planning Maps for navigational purposes the use of surface water by shipping, ferries or other ships shall be a Permitted Activity provided the ships are operated:

- *In accordance with the safety requirements of the Maritime Safety Authority; and*
- *As hydrodynamically efficiently as possible so as to avoid any unnecessary wake effects.*

1.2.10.2 Undefined Enclosed Surface Waters

The use of any stretch of enclosed water within Pelorus Sound and Queen Charlotte Sound (including Tory Channel) being within straight lines drawn from:

- *Te Akaroa (West Entry Point) to Kaitira (East Entry Point);*
- *Cape Jackson to Cape Koamaru; and*
- *East Head to West Head, and*

not defined as a national route for navigational purposes by any ship, ferry or other ship shall be a Permitted Activity provided that this rule shall not apply to ships greater than 500 gross registered tons travelling in excess of 18 knots.

However, Rule 1.2.10.1 is subject to references (appeals) to the Environment Court. It is considered that the conditions attached to the rule are not defendable in Court, as they are ultra vires. Reference to Maritime Safety Authority requirements within the Plan is inappropriate as the Council has no control over what these 'requirements' might be. The second condition is impossible to determine with enough certainty for a permitted activity standard. Permitted activity standards should have a greater level of certainty, particularly for enforcement purposes. The existing standards are also inadequate as they lack an effective trigger to require consent where there may be significant adverse effects.

The Court is limited to the scope of the original submissions made in 1995 to the Plan, so there is no assurance that the appeal process will find a solution to this problem. Therefore, the Council considers it necessary to assess alternative methods to address the objective of managing the adverse environmental effects of shipping activity in the Marlborough Sounds rather than persisting with the form of the current provisions.

The existing format of Chapter 9 (Coastal Marine) of Volume One does not provide an adequate framework within which new policies and methods addressing the effects of shipping activity can be easily included. As a consequence, a new issue statement with its own objective, policies and

methods of implementation has been proposed as part of the variation. Amendments are also proposed to existing policy and methods in Chapter 19 (Water Transportation) and to the rules in Coastal Marine Zones 1 and 2 - Volume Two.

Navigation Bylaw 2000

The Navigation Bylaw 2000, made operative on 15 December 2000, was promulgated under the provisions of the Local Government Act 1974, a separate process distinct from the RMA. The Bylaw has been referred to previously in this report.

Maritime Transport Act

The Council, as harbour authority, has the responsibility for ensuring navigational safety for waters over which it exercises navigation safety jurisdiction - harbour limits. In order to discharge these duties, the Council enforces harbour bylaws that were formulated under the Harbours Act 1950. The Harbours Act has been repealed, with the power to make navigation and safety related bylaws being incorporated in the Local Government Act 1974 by way of amendment in 1999. All bylaws that were made under the Harbours Act remain in force until 31 March 2003 unless replaced by new bylaws prior to that date.

The function of the Maritime Safety Authority is set out in section 431 of the Maritime Transport Act 1994. This Act confers the duty of establishment of maritime safety standards, the adherence to these standards and a regular review of the maritime transport system to promote the improvement and development of the system.

In broad terms, the MSA sets the rules for ships on a national basis. The Council, on the other hand, makes those specific rules (bylaws), which it considers necessary for ensuring that the navigation safety standards particular to its area of responsibility are in place and met.

In order to ensure consistency, the bylaw making provisions contain a requirement ensuring that navigation safety bylaws are not inconsistent with maritime rules made under the Maritime Transport Act and provide for consultation with the Director of Maritime Safety at the time of promulgating navigation safety bylaws and/or amendments.

Part C: Options for Resolving the Issue

Having decided that there was an issue that needed to be addressed within the framework of the Resource Management Act 1991, the Council prepared a discussion paper for public comment in December 2000. The paper set out the background to the issue and presented the public with seven broad options to consider, on how the effects of large, high speed vessels in the Marlborough Sounds should be managed. The options presented were not considered exclusive as it was felt that further options might be developed through the feedback received. These options were:

- Maintain the status quo;
- No regulatory control;
- Regulatory methods;
- Use of economic instruments;
- Self regulatory methods;
- Central government action (national policy statement/national environmental standards); and
- Establish a passenger port in a new location.

The Council undertook a series of public meetings at the time the discussion paper was released to explain the options and invite feedback. These meetings were held in Wellington, Blenheim, Picton, Havelock, Nelson and Christchurch[7]. Some 200 parties provided the Council with written feedback on the various options. Their views, along with a brief description of the options and the Council's reasons for accepting or not pursuing particular options are explained.

Maintaining the Status Quo

This option involved no action on behalf of the Council and relied on the Navigation Bylaw 2000 and existing Plan provisions to address the environmental effects of shipping activity.

There was little community support received for maintaining the status quo.

The existing Plan provisions are inadequate in that they cannot be enforced and additionally they have been referred (appealed) to the Environment Court. Consequently the provisions need either to be amended or withdrawn. In this respect therefore, maintaining the status quo is not appropriate.

The Council considered that the Bylaw, which only addressed navigational safety, was not sufficient to manage the broader environmental issues. This was particularly so as at the time of preparing the discussion document and its subsequent release, the Bylaw had only just been

[7] A record of who attended those meetings and matters discussed is contained on the variation files - M135-15-03.

introduced. The Council was in no position to be able to determine what outcomes would result from its introduction. Therefore, the Council decided at this point that it could not rely on the Bylaw to effectively manage the wider adverse effects on the environment from shipping activity that were being experienced. The Council readdressed the option of maintaining the status quo, particularly in terms of using the Bylaw, after considering the results of further biological monitoring and assessing the social costs and benefits of introducing controls on shipping.

No Regulatory Control

This option is similar to maintaining the status quo and the comments in respect of the use of the Navigation Bylaw 2000 are also applicable here. The key difference would be that new provisions would be introduced into the Plan, which would permit ships to operate unrestricted, anywhere in the Marlborough Sounds.

A few submitters thought that there should be no controls in the Plan. The main reason given for this view was that the matter was of national importance and the ferries were vital to New Zealand's economic wellbeing.

However, a clear majority of submitters favoured having provisions in the Plan to address the adverse effects of shipping activity. The majority of those responding stated that the Council had a duty to protect the Sounds for future generations and that the effects of large and fast ships being experienced at that time were unacceptable. There was also distrust of commercial operators to adequately address the effects though other methods.

The Council did not consider this was a realistic option as studies had identified adverse environmental effects arising from the operation of large and high speed vessels in the enclosed waters of the Marlborough Sounds.

Economic Instruments

Economic instruments are methods that are designed to create incentives to change behaviour through market signals. Types of economic instruments include charges, contributions, works, subsidies, deposit/refund schemes and financial enforcement incentives.

There is a lack of methods available to directly manage the environmental effects of shipping activity. The only available method would appear to be the control of speed and it is not considered possible to use this in any economic instrument. It is also difficult to address the intangible environmental effects such as loss of recreational amenity values, with economic instruments. However, the Council considered that financial contributions, as a method, could be used to offset some of the adverse effects.

Approximately one-third of the responses to the discussion paper did not favour this option. The reasons for this were that the adverse effects were more than those suffered directly by property

owners and that there was real difficulty in placing a monetary value on the broader environmental effects. There was also a view that fast ferries have brought economic benefits to the region and that further restrictions would affect travel and ultimately local businesses.

Other responses stated that financial contributions could be useful but not as compensation. It was thought that in conjunction with a regulatory approach, financial contributions may be useful to ensure positive effects are achieved which could offset the adverse effects.

Most responses supporting the use of financial contributions qualified their support. It was considered that contributions should be required in relation to full cost recovery for consents, monitoring, legal costs for non-compliance, fines, as a back up for regulatory control, and for property damage.

The Council considered that the use of economic instruments should not be pursued as an option, with the exception of requiring financial contributions. These contributions could be used to offset the adverse effects of shipping activity, research and for monitoring.

Self Regulation

A self-regulatory regime is where resource users manage the effects of their activities on the environment to standards set by the regulatory body or the industry. Some examples of self-regulation include voluntary accords, code of practice agreements and the use of environmental management plans developed by resource users.

This option is difficult to apply to a situation where it appears that the only way to address the adverse effects of shipping activity in enclosed waters is to decrease ship speed. Therefore, self-regulation in this instance is likely to prove meaningless. If another means, apart from decreasing ship speed is developed that manages environmental effects, then this option may become more effective in the future.

There was an overwhelming negative response from the community to self-regulation by shipping operators as an option for managing environmental effects. Many people stated that self-regulation was costly, inappropriate or insufficient to address the adverse effects. Tranz Rail, the only operator to comment on the discussion paper, did not support this option.

While the Council did not consider this option should be pursued, it was thought that a degree of self-regulation could be encouraged, through participation in community forums, monitoring and information sharing.

Central Government Action

Under the RMA the Minister for the Environment has the ability to prepare national policy statements (NPS) on matters of national importance and also nationwide environmental standards (NES) relating to the use, development and protection of natural and physical

resources. The Council considered these to be options to explore given the importance of the transport link between the North and South Islands and the uniqueness of the Marlborough Sounds.

The community expressed mixed views on whether central government should use its functions under the RMA. For those opposing this option, the main reason was that the Marlborough Sounds were unique and therefore a nationwide standard would not work given the different types of coast around the country. It was considered that a local solution should be sought.

The Ministry for the Environment did not support this option and therefore it is unlikely that the required NPS or NES would be developed. The community was also concerned at the time it would take the Government to act, political issues and the fact that the Council would still need to undertake a change to its Plan following the introduction of an NPS or NES.

Many people supported central government involvement, seeing the ferry route as a national issue and as a means of reducing the cost and liability for the Council. Other people advocated continued central government involvement though funding research, and providing legal and technical advice.

The Council considered the RMA provided sufficient 'tools' to address the environmental effects at the local, rather than national, level. The Council will seek continued central government financial and technical support but does not consider this option should be pursued further than this.

Establish a Passenger Port in a New Location

The development of a port in a new location might be able to cater specifically for large and high-speed ships while avoiding the need to use the confined waters of the Sounds. This option may remove the problem by shifting some shipping activity away from the Sounds. However, it is not within the powers of the Council to establish an alternative port and such a decision is seen to be a commercial decision that can only be made by ship operators. If a new port were to be developed, there would be no guarantee that all ships would shift to that port.

The Plan currently provides for the development of a port at Clifford Bay, and the development of ports at other locations could be considered within the current provisions of the Plan. Tranz Rail also holds a number of resource consents for development of a port at Clifford Bay.

The community's views on whether the Council should encourage the relocation of port facilities elsewhere were divided. Some considered that the first priority was to slow the vessels down and then look at alternative locations. Some thought that the Council should take a neutral stance on the matter and that it was an issue that would be determined by economics.

A number of alternative locations were suggested as was the option of shifting high impact boats out of the Marlborough Sounds with the lower impact boats remaining. It was considered by others that irrespective of this option, a speed restriction would need to be put in place in the Marlborough Sounds. It was noted by many that there would be national and regional impacts if the ferries were to move to a new port. Some thought that overall there would be long term benefits while others considered there would be significant impacts on tourism.

The Council did not consider it could pursue the establishment of a passenger port in a new location any further as this option needed to be industry initiated.

Regulatory

The regulatory option involved introducing rules into the Plan to control the effects of certain types of activities. Two options were proposed, the first being to prohibit ships travelling faster than a certain speed, and the second being to assess each ship on its merits when travelling faster than a certain speed.

Prohibition

A prohibition on ships travelling faster than a certain speed would reduce the environmental effects, however, this option was not thought sufficiently flexible to provide for shipping in the enclosed waters of the Marlborough Sounds.

Some members of the community considered a prohibitive option necessary, particularly while further data is gathered on the ongoing environmental impact. This option was seen as providing certainty and being easier to administer. The prohibitive option was considered to have potential if applied to particularly sensitive areas of the Sounds that are not able to sustain even minor adverse effects. It was suggested that two or more zones could be established depending on vulnerability and the environmental values of the areas.

Assessment by Application

Assessment by application would enable an assessment of the environmental effects generated by a ship. Restrictions could be placed on the operation of ships so that the environmental effects were minimised and ships with low environmental impacts could operate at higher speeds. This option has enough flexibility to provide for shipping in the Sounds, while minimising environmental effects.

Members of the community considered that the assessment by application option places the responsibility onto the operators to prove that their vessels comply, rather than the Council having to establish compliance. This approach also allows every case to be dealt with on its merits. The assessment by application approach was seen as being the fairest system for all parties concerned and would allow for future developments in

speed/wake refinements. It was also seen as a way to encourage operators to take advantage of new hull designs and technology.

Other Issues Raised

Quite a few people considered that controls should be placed on all large shipping, not just those deemed as fast, as there was no guarantee that wash/speed effects would arise solely from fast ferries. Some people specified certain tonnages or lengths of vessels over which controls should apply and controls were also considered necessary to limit the number of shipping movements. It was also suggested that the Plan may need separate rules to accommodate speed and wash.

The future technology of ship design was commented on and it was stated that the Council had to be proactive without being prohibitive and that the Council needed the ability to counteract new problems arising from new ferries in the future. It was noted that progress must be accepted but in a manner that allows the Sounds to be used and visited by New Zealanders and overseas visitors. People considered that regulation would provide certainty for resource users, operators and the public.

Having considered the practicality of the various options, the community's response to those options, the information gathered from consultation generally and research undertaken, the Council opted for a regulatory approach, in conjunction with other methods, to manage the effects of shipping activity in the Marlborough Sounds.

Part D: Preferred Approach

The Council prepared a framework, which it incorporated into draft provisions for inclusion within the Marlborough Sounds Resource Management Plan. The regulatory option required a set of "tools" to control the effects of ship wake and the following were chosen:

- Control of **speed** at which the ships travel;
- Control of the **areas** where ships travel;
- Control of **ship types;** and
- Assessment of the **wake** generated by ships.

Speed

There has been a significant amount of research undertaken internationally on the speed of ships within enclosed waters. The speed at which a ship travels has a direct relationship with the amount of energy created and released into the coastal environment. The Council has also undertaken research to investigate the types of wake generated by different types of ships at varying speeds and locations in the Marlborough Sounds. This research showed that the wake generated by ships such as fast ferries has significantly different characteristics at elevated speeds.

It is too early to conclusively say that introduction of the Navigation Bylaw 2000, which imposed a speed limit of 18 knots, has led to the recovery of marine ecosystems or the slowing of the foreshore erosion process, among other matters.

However, anecdotal evidence to date supports this conclusion and members of the public in Queen Charlotte Sound and Tory Channel have observed positive environmental benefits. A number of people responding to the Council's first discussion paper, which was released around the same time as the Bylaw was introduced, mentioned the improved environmental conditions from the reduced speed. Given these factors and the research on wake characteristics of vessels at speeds of 18 knots and above, it was considered appropriate to adopt 18 knots as a speed trigger level. (An assessment of speed, ship type and wake as tools and the basis for the triggers is contained in Croad, RN and Parnell, KE. 2002. "Proposed Controls on Shipping Activity in the Marlborough Sounds - A Review under s.32 of the Resource Management Act." Produced by Opus International Consultants Limited and Auckland UniServices Limited for the Marlborough District Council.)

There are two ways to measure speed. One way is to measure speed through the water, which is measured by the speedometer of a ship. The other way is to measure speed relative to the seabed, or point to point. For any given speed through the water, speed measured point to point will vary with the direction and strength of any sea current.

Speed through the water is most relevant to the generation of wake, but speed point to point is a more practical measure for monitoring purposes, as it can be tracked by Global Positioning Systems (GPS).

Areas

The Marlborough Sounds is made up of a number of different coastal environments distinguished by differing physical attributes in conjunction with land use and water transport activities.

- Inner Queen Charlotte Sound and Tory Channel comprise the main shipping route for inter-island shipping and the most significant environmental effects have occurred in this area.
- The outer Queen Charlotte Sound currently has lower levels of shipping than Tory Channel, and is relatively unaffected by this activity. It is considered that this area could be adversely affected if more ships used this area in preference to Tory Channel.
- Shipping activity in Pelorus and Kenepuru Sounds is different to that of Queen Charlotte Sound and Tory Channel. Most commercial shipping activity in this area relates to the transport of tourists, logs and livestock as well as fishing and marine farming fleets. These vessels are generally smaller and travel at speeds that are significantly slower than ships such as the fast ferries and conventional ferries. It is considered unlikely that this area of the Sounds will experience an increase in shipping activity given the lack of a deep water port (and suitable locations for a deep water port development) or national transportation routes.
- The external waters of the Sounds are largely high energy environments and unlikely to be affected by ship wake.

The Council took into consideration the different characteristics of areas within the Marlborough Sounds in developing the rule framework.

Ship Types

Research has found that both fast and conventional ferries travelling at relatively high speeds may have adverse environmental effects. The Council considered therefore that it was important to manage the effects of any ship capable of generating significant adverse environmental effects.

In defining the type of ship to be controlled, the definition needed to be wide enough to address future developments in maritime design and to capture all appropriate ship types.

Assessment of Wake

There is a wide range of views as to what is the most appropriate method to assess the wake, that is the energy, produced by ships travelling at varying speeds in different areas.

The method used in the Navigation Bylaw 2000 measures wave height in relation to wave period. This tool was created by the Danish Hydraulic Institute as an appropriate method to address safety issues and environmental issues. It is considered that if a ship travelling at a certain speed can meet this formula, then the adverse effects from the wake generated by the ship are considered tolerable by most people and the environment. If this method were to be adopted, then monitoring would need to be undertaken to ensure no significant adverse environmental effects were occurring.

The Bylaw wave height criterion is considered the most appropriate tool to use at this point in time. Alternative methods e.g. "near bed velocity" were assessed at a technical workshop of experts on wave characteristics and coastal hydraulics but those methods were found to be unsuitable or not sufficiently developed to be able to be used as a method in the Plan. It is anticipated that different methods for measuring the effects of wake on the environment may be developed in the future and the Council can always adopt these methods later through the plan change process.

The Draft Variation

Based on the above tools the Council developed a framework that provided for shipping activity in the Sounds subject to controls that related to speed, area, ship type, and wake as well as other methods to provide for ongoing community participation. The draft variation to the Plan that was prepared is outlined below. (*It is important to note that what is described below is the draft variation. As a result of public consultation and further consideration by the Council, some aspects of the draft were modified and the variation that was eventually adopted by the Council is different in some aspects to what is described here.)*

Controls for Inner Queen Charlotte Sound and Tory Channel

Essentially, in the area where shipping activity is concentrated and has regular transits (Tory Channel and inner Queen Charlotte Sound), shipping operators would be subject to speed controls. The ships that needed to comply with the controls included those that are presently managed through the Navigation Bylaw 2000 (i.e. 'fast' ships) and/or ships that are 500 UMS registered tonnes or greater (i.e. 'large' ships).

The main way to control the effect of wake wash from large and fast ships is to reduce the speed at which ships travel. Evidence given by Dr R Croad at the Planning Tribunal hearing on this matter in 1995 concluded that the speed of the *Condor 10* and *Albayzin* would need to be reduced to 15 knots or less to ensure that wave heights did not exceed those of the existing

conventional ferries. Analysis of the considerable data[8] gathered since the Tribunal hearing, shows that both conventional ferries and the high speed craft comply with the wash rules for speeds at equal to or less than 15 knots (with one very minor exception). Accordingly the Council did not propose any controls for ships travelling less than 15 knots.

At speeds of less than 18 knots, the Council was also reasonably certain that the wake wash generated in most cases would be tolerable. However, as shipbuilding technology is evolving, it was important that the controls allowed the Council to assess the impact of new ships on the coastal environment, as they may be quite different in character to existing vessels. It was proposed that ships travelling at speeds of between 15-18 knots be assessed in terms of the wake that they produce, just in case a particular vessel generated damaging wake at these speeds. If ships met the wave height criteria, a resource consent would be granted.

Evidence shows that the wake produced by ships travelling over 18 knots can adversely affect the environment and is increasingly less tolerable for near shore users. Any operator wishing to travel over 18 knots would require a resource consent, which would be assessed on a case by case basis. A resource consent would not be granted to ships travelling in excess of 18 knots if the adverse effects on the environment were too great.

The wave height formula developed for the Navigation Bylaw 2000 is the tool to be used to assess the wake of ships travelling at 15 knots or faster. All ships travelling 15 knots or greater would be required to meet the formula.

One of the perceived benefits from imposing controls, in conjunction with other methods, is in being able to monitor the effects of these ships in terms of the overall need to improve understanding of how their operation affects the enclosed waters environment of the Marlborough Sounds.

The following table[9] shows the characteristics of ships that have or currently routinely operating on the inter-island route through the Marlborough Sounds. From this table it can be seen that in terms of those ships currently operating the Arahura, Aratere and Lynx will need to apply for resource consents.

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[8] Croad, RN and Parnell, KE. 2002. Proposed Controls on Shipping Activity in the Marlborough Sounds - A Review under s.32 of the Resource Management Act. Produced by Opus International Consultants Limited and Auckland UniServices Limited for the Marlborough District Council.

[9] Ibid. p. 10

Characteristics of ships that have or currently routinely operating on the inter-island route through the Marlborough Sounds

Vessel	Start Date	Cruising Speed (knots)	Tonnage		Dimensions			
			Gross* (tonnes)	Δ (tonnes)	L_{oa} (m)	L_{wl} (m)	B (m)	T (m)
Aramoana	1962	17	4,532	4,845	112.2	107.8	17.9	4.74
Aranui	1966	17	4,547	4,889	112.2	107.8	17.9	4.78
Arahanga	1972	17	3,894	6,405	127.5	123.4	18.3	4.88
Aratika	1974	20.5	9,035	6,808	127.7	123.4	18.3	5.09
Arahura	1982	19	13,621		148	143.5	20.2	5.47
Aratere	1999	19.5	12,596		150	137	20.5	5.5
Suilven	1985	13	3,620	1,900	86	78	15	3.8
Kent	2001	14.5	6,836	3,526	122.9	119	18.5	4.2
Straitsman	1994	12	1,481		62.6	55	11.6	3.8
Straitrunner	1995	33	120		31		6.5	
Condor 10	1994	37	3,241		73.6	59.9	26	3.1
Albayzin	1994	36	3,107	1,070	96.2		14.6	2.2
Condor Vitesse (Incat 044)	1999	40	5,007		91.3	81.3	26	3.73
TopCat (Incat 050)	1999	38	5,092		96	86	26	3.7
Lynx (Incat 057)	2001	42	6,581	1,775	97.2	92	26.6	3.42

* Changes in the definition of Gross Tonnage were introduced in 2001. Figures for the Aratere, Arahura, Straitsman, Suilven, Kent, and Lynx (Incat 057) are based on the new measurement rules.

Other Areas

In order to reduce the area in the coastal environment that is affected by shipping activity, the Council proposed to encourage ship operators to stay in the existing national transportation route (inner Queen Charlotte Sound and Tory Channel). In order to do this, the Council considered that it may be necessary to prohibit ships from travelling at speeds above 15 knots in the outer Queen Charlotte Sound. This would encourage operators to take the Tory Channel route, where higher speeds are permitted, in preference to the outer Queen Charlotte Sound. The draft variation did not propose to control ship speed in other areas of the Sounds.

Community Advisory Group

Another key feature of the framework proposed was the establishment of an Advisory Group to act as a reference group to address issues on the effects of shipping activity in the Marlborough Sounds and also to review the effectiveness of controls. It was proposed that the group should comprise representatives from iwi, the community, tourism, commerce, the shipping industry, the Department of Conservation and the Council.

Te Atiawa Partnership

The Council recognised in the draft variation, the special role of Te Atiawa as kaitiaki (or guardians) of Queen Charlotte Sound and Tory Channel. In recognition of that role the Council seeks to closely involve Te Atiawa in matters arising from managing the wake issue.

Financial Contributions

It was considered appropriate to apply the financial contributions provisions of the RMA to address unavoidable adverse effects. Consent holders would be required to pay annually a financial contribution which would be used to fund research, monitoring and to offset adverse environmental effects. The draft variation set out the purposes for which the contributions would be used, and the annual plan process was intended to be used to set the amount to be paid each year and to list the projects that contributions would be spent on. The draft variation placed an upper limit on the level of financial contributions to be imposed each year. Iwi, the community and shipping operators can have their say on how much, and what the contributions should be spent on, through the annual plan process. *Note that this is one aspect of the variation that differs considerably from what was eventually adopted by the Council.*

Monitoring and Environmental Partnership Agreements

Monitoring plays an important role, as information gathered through monitoring is critical in ensuring that ship wake is being properly managed. All consent holders would be required to monitor and would be encouraged to enter into an Environmental Partnership Agreement. This agreement would establish an ongoing monitoring programme and set up a partnership between the Council and the operators. Monitoring and Environmental Partnership Agreements would be the key elements of an adaptive environmental management regime, which reviewed the effectiveness of the controls at regular intervals.

The approach taken in the draft variation was considered the most appropriate for the following reasons:

- **All** ships that have the potential to generate significant wake would be addressed;
- The scale of environmental change generated by the wake of shipping activity would be limited to an area currently experiencing high levels of use;
- Certainty would be provided for operators of existing conventional vessels as they receive a resource consent subject to meeting a wave height formula;
- A balance between local community and national/regional interests would be encouraged; and
- Co-operation with the shipping industry is promoted and community participation would be provided for.

Part E: Public Response to the Draft Variation

The Council sought feedback on the draft variation from the community, iwi and other groups such as the shipping industry, commerce and tourism organisations on their views of how appropriate the measures were. A discussion document was prepared which outlined the issues and set out in detail what the actual controls and methods would be. The Council released this document in December 2001 and received comments until late February 2002. A series of public meetings to explain the draft variation and to encourage community involvement accompanied the release of the discussion document. Meetings were held in Blenheim, Picton, Christchurch, Wellington and Havelock.[10]

The Council has summarised the views of the 150 parties who provided comments on the draft variation. This summary can be found in a document entitled "Brief Summary of Comments for Draft Variation for Proposed Controls on Shipping Activity in the Marlborough Sounds - April 2002". The document was sent to all of those who provided comments to the Council.

A number of those commenting, both in support of or opposition to the draft variation, considered that there would be a potential for a substantial economic impact if vessel speeds were reduced. A cost benefit analysis of the economic value to Marlborough of Tory Channel/Queen Charlotte Sound being used as the main shipping route between the North and South Island was suggested before a final decision was made.

The following is a synopsis of the summary of other comments received.

Opposing Views

Both individuals and commercial operators commented that the effect of reducing the sailing speed in the Sounds would result in an increase in sailing time and potentially reduce the number of daily sailings. Regular users of the ferries did not want further restrictions to this mode of travel.

Responses raised questions about whether there was evidence to support the view that conventional ferries are causing damage, given that they had been operating in the Sounds for many years, without any apparent mention of environmental damage. Conventional ferries were seen generally as being an integral part of New Zealand's transport system and should therefore be allowed to maintain current schedules and loadings.

A number of parties also considered that the public should be more responsible for themselves and take necessary safety precautions when using Tory Channel and Queen Charlotte Sound. It was also suggested that the issue should be treated wholly as a safety issue in terms of Harbour Bylaws. It was felt that the matter should not be dealt with through the RMA as it was never designed to control shipping.

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[10] A record of who attended those meetings and matters discussed is contained on the variation files - M135-15-03.

A significant number of the parties opposing the draft variation spoke of the economic effects or consequences of slowing the ferries down. The **tourism industry** made the following comments:

- The issue of compliance costs is important. The draft variation does not reflect the contribution that Cook Strait shipping services makes to passengers (including tourists) and freight traffic movements nationally and the direct and indirect economic benefits derived from such movements.
- A reduction in capacity would have an impact on the ability for visitors to move between the islands by ferry. Increasing the travel time of ferries will make them a less attractive option, which could have a negative impact on visitor flows.
- The proposal appears to unfairly place a burden of reducing impacts on shipping operators with little consideration being given to the responsibility of property owners to ensure their properties are developed to withstand a reasonable level of wake from shipping.

A range of views was expressed by **individuals** in terms of the economic effects on them personally. This included reducing the ability to use holiday homes in the Sounds, if there were longer journey times with ferries, or a reduced number of sailings. Some users felt that they already had difficulty in getting on sailings to suit their circumstances and that any further changes would be disastrous, not only for themselves but for tourism generally. Other comments included the following:

- Allowing ships to operate through the shipping route at the most efficient operating speeds would provide benefits to Marlborough and to New Zealand, that far outweigh any net benefits associated with reducing vessel speed.
- The implications are of a scale that is well beyond the interests of Marlborough and the matter should be something for Government to decide.
- By their very nature, nodes and routes of transport infrastructure are not environmentally benign or intrinsically safe. Society accepts these penalties given the benefits to the community and contribution to the wider interests of the nation, as long as the operators take reasonable steps to mitigate the effects in the interests of effective and economic transport systems.

Responses to the draft variation from **industry associations** included the following:

- Traditional concepts, such as freedom of the seas, exist to ensure those routine maritime activities and associated commercial activities operate efficiently and economically without unnecessary regulation. Shipping in New Zealand is an international industry therefore, any restrictions on the operation of ships should be a Government matter as opposed to a local authority matter.
- Cook Strait ferries are an integral part of New Zealand's freight distribution system, in that they are in effect part of State Highway 1, providing access between the North and South Islands in the same manner as a bridge or section of road. Imposing speed restrictions on the ferries

would add an extra cost on freight moving on that route. This would increase the transport cost of a high percentage of all freight moving into and out of the South Island, effectively reducing the competitiveness of South Island businesses and increasing costs for all South Island consumers.

One response was received from a **commercial shipping operator**, the Interisland Line, who stated that there is no evidence of adverse environmental effects. Other points made include the following:

- Slowing the Interisland Line conventional ferries from 19 to 15 knots adds 15 minutes to the Cook Strait crossing time and will have important effects on the operation and viability of the service. An overall reduction in sailing capacity will reduce trade and revenue and put up costs for the inter-island trade. A further 15 minutes on a future fast ferry time would essentially destroy the principal reason for existence: they would no longer be fast. This would place doubt on the long term viability of the current route.
- Increased costs will enhance the benefit of alternative port location and will itself detract from the public use and enjoyment of the Sounds.
- The impacts of conventional ferries are less than fast ferries at full speed, yet despite the fast ferries not justifying action under the RMA, the draft variation seeks to control the lesser effects of conventional ferries. If the effects of conventional ferries are so important, the Council could have taken action under section 17 of the RMA.
- The Council has not presented any evidence of environmental damage caused by conventional vessels and what evidence there is supports the opposing proposition that the environment of Tory Channel and Queen Charlotte Sound is in a dynamic equilibrium with shipping activity on it. Scientific evidence gathered by the Interisland Line shows these areas have obtained a state of dynamic equilibrium with the presence of fast ferries at full speed. Limiting the speed of fast ferries has changed the nature of this equilibrium, the accretion impact of long period waves has gone.
- There is no survey research as to the effects of vessels at 15 knots, nor is there any justification in environmental terms for use of the safety bylaw formula. The bylaw has contributed to environmental change with fast ferries now producing wave action with an erosive rather than an accretive impact.

Supporting Views

While there was acceptance of the importance of shipping activity to Marlborough's economy, those commenting said that it needed careful management to ensure no further damage takes place and to protect public safety.

Several parties living on the fast ferry route commented on the improvements that had occurred since the introduction of the bylaw. They noted that the safety of people using beaches was now considerably greater than when the fast ferries were travelling at high speed, although concerns were

raised in respect of the wash from the conventional ferry, Aratere. Other responses stated that the environment of the Sounds is a key factor that sustains our economy and tourism potential, and that if shipping harms that environment, then it will harm the economy and tourism in the long term.

Provision was also considered necessary for other types of vessels that may operate in the Sounds, e.g. hydrofoils. It was also considered that a shipping corridor (narrower than the national transportation route) should be mandatory for large ships. It was stated that navigational safety issues were matters that ought to be addressed in the draft variation in terms of section 5 of the RMA.

Types of Ships to be Controlled

There was widespread support for the draft variation to cover both large and fast ships as both were seen to have the potential to damage the environment significantly. Specific mention was made of the Aratere being capable of generating a powerful wake, which meant it was important that large vessels were also controlled. Some considered it appropriate to extend the controls to include vessels that were less than 500 tonnes given the increasing number of smaller boats capable of high speeds, which can create considerable wake. Other views included:

- that wake effects and safety issues should be the determinants rather than the size of vessel;
- fast ships should be controlled but not the conventional ships; and
- that the rules could be simplified by referring to all vessels over 500 tonnes.

Area to which Controls Should be Applied

Many considered that Council has a duty of care over the entire Sounds and should not be sacrificing one area to supposedly protect another. It was stated that wake effects are detrimental in restricted waterways and therefore any areas vulnerable to wake effects should be protected. Although there were not the same number of large vessels using the Pelorus Sound area at present, there could well be larger ships using that area in the future. Adopting a precautionary approach therefore, would enable any future activities to be dealt with in a proactive rather than a reactive manner.

Given the concept of this area being denoted as a “national transportation route”, some parties stated that controls should be confined to this area. One party went further and suggested that given the importance of the route, it should be designated by central government as part of the national transportation route and that Council should receive entitlements and subsidies from the Government.

An opposing view stated that the shipping lane area should not have stringent restrictions because it is the main area of travel between the North and South Islands. However, it was accepted that there should be restrictions outside this area.

Concentration of Shipping Activity in Inner Queen Charlotte Sound and Tory Channel

Some parties believed that Cook Strait shipping activity would continue to focus on Tory Channel and that it would inevitably have some adverse effects. It was considered preferable therefore, that these effects were limited to the current ferry route. Respondents did not suggest that Tory Channel possessed any lesser value than the rest of the Sounds, but were acknowledging the concentration of shipping in Tory Channel as an existing situation, which related to its importance as a key transportation route between the North and South Islands. One party noted that there was a risk in concentrating shipping activity and that the validity of the approach would be its robustness in terms of the assumptions and policing within the permissive control area.

Others had a converse view stating that Tory Channel should not be treated in a lesser way than outer Queen Charlotte Sound, and should not be expected to suffer environmental damage, just because it is a national transportation route. Tory Channel was an area where greater speed or relaxation of controls should not be allowed because of its narrow width and well used route. If large and fast ships were encouraged through this area, through use of more permissive controls, the Channel would become even busier and more congested than it is now and that this would have increased effects on the environment and safety. Some actually commented that because outer Queen Charlotte Sound was wider, it could probably cope better with the effects of wake than Tory Channel, which is much narrower.

Some parties made specific comment on the outer Queen Charlotte area noting it has its own significant ecology, particularly around Blumine, Long and Motuara Islands and it was important that those areas be protected.

It was stated that so long as the ships were not causing erosion then they should be allowed to go where they want. This was reinforced by other parties who commented that ship operators should be allowed the flexibility to choose a safe route. Others considered that the Council needed to be wary of using this method to encourage large shipping to keep to the Tory Channel route, as the future may bring increasingly large cruise ships on a more regular basis that because of their size, would need to use the outer Queen Charlotte Sound.

Controlled Activity Status 15 - 18 knots

There was widespread support for the controlled activity status in the draft variation although quite a few of the parties suggested a more precautionary lower threshold. This was to ensure a coastal permit could be required for vessels going slower than 15 knots but which produced a significant wake. Given the way the draft variation had been prepared, respondents considered the Council would not be able to manage the effects of ships at speeds less than 15 knots.

A number of parties supported the controlled activity rule but noted that the 15-18 knot range had not been tested in terms of effects on the shoreline, ecology, beach stability etc. They therefore saw that the speed thresholds should be considered as preliminary and refined on the basis of ongoing monitoring, testing and review.

Some questioned the speed levels chosen as these seemed to be an arbitrary restriction. It was considered that the Council had created uncertainty by promoting speed restrictions and that compliance costs could make commercial operations in these areas not viable. There was also some question as to how it would be possible to quantify the difference in wash effects between a ship moving at 15 knots and the same ship moving at 18 knots.

A mandatory shipping lane that would compel all ships to stay closer to the middle of fairways was considered necessary in conjunction with speed limits as this would make the Sounds much safer but would also reduce environmental effects.

Discretionary Activity Status - Over 18 knots

Many parties supported the discretionary activity status for vessels exceeding 18 knots in speed and meeting the wave height formula. Discretionary activity status was seen as appropriate as it provided for an assessment of the effects on the environment and communities affected.

Again, many of those commenting considered that there should be an upper speed limit with suggestions ranging from 18 knots up to 30 knots. Some parties considered that restricting speed within the Sounds was important regardless of the wake produced because modern technology could produce a ship, which can travel at speed and still meet the wave height requirement. Whilst this might satisfy environmental concerns, it would not necessarily satisfy the safety of other water users, which was as important.

For some parties however, the converse was expressed, i.e. that in the future with better hull designs which produced minimal wakes, it should be acceptable for them, subject to safety precautions, to go faster than 18 knots.

Ongoing monitoring and research were also expressed by a number of parties as being important in managing the effects of wake.

Wave Height Formula

Some parties considered that the use of the formula was appropriate so long as it prevented environmental and ecological damage from occurring. Others saw the use of the formula as being appropriate at present, if options were kept open in terms of better measurement procedures being developed. Several commented on the effectiveness of the formula in terms of its use in the navigational bylaw and that since the fast ferries had had their speed reduced, some beaches had recovered to more or less their original state.

Some parties questioned the use of the formula noting that its development in Danish coastal waters may make it inappropriate in the Marlborough Sounds context. A few parties commented that the formula was not appropriate, as it has proven to be insufficient to prevent damage.

Some parties appeared to offer tentative support for the formula, but considered that it needed monitoring to ensure its appropriateness to manage environmental effects in the Marlborough Sounds, and to control the effects from wake generated by conventional ships.

Use of Financial Contributions

Several parties thought that the financial contributions were little more than a tax with some seeing it being used to offset environmental effects that have occurred in the past. Some were concerned that if the levels were set too high these costs would be passed on to users, that future development and innovation may be stopped and/or that operators may look to establish a port elsewhere.

Of those supporting the use of financial contributions, a number were quite clear that the level of contributions required should only be such that it covered monitoring, research and activities related to the draft variation. Others commented that under the 'user pays' rationale, those who pose a threat to safety and shoreline damage should bear the cost of control. This was reinforced by others who considered that ratepayers should not have to bear the cost of addressing the effects of ship wake.

Some people were opposed to the idea of paying a financial contribution while continuing to allow environmental damage to occur. This view was further supported by comments that if reducing the speed of vessels reduces the damage, then there wouldn't be a need for contributions at all. It was also stated that it was important that the contributions not be considered as a means of allowing environmental damage to continue.

Of those commenting on the method used to determine the level of contribution, a number thought the method was fair and equitable but that Government should also contribute, as much of the research will extend to other areas in New Zealand.

Two different views of using the annual plan process were as follows:

- it was important the annual plan process be used because it is regularly reviewed; and
- the annual plan is not realistically available to many of the non-permanent residents in Marlborough.

Suggestions for use of the financial contributions included establishment of a 'Sounds patrol' to assist in the daily monitoring activity and environmental effects occurring in the Sounds. Other suggestions included controlling pests and noxious weeds, developing and improving facilities to affected people, effects of pollution, recreational activities, funding basic research into environmental protection of the Sounds including establishing an ecological database, raising awareness of the historical, geological and geographic nature of the Sounds generally, reinstating property damage and improving fisheries.

Adaptive Environmental Management Regime Method

Only very few people were negative in their response to the approach of an adaptive environmental management regime. Of those that offered reasons, there was distrust that this would be used as a way of reviewing wake effects leading to an increase in vessel speeds, that a framework should be permanent once implemented and that the expense involved would be too great.

Of those supporting the approach, it was generally stated that all of the Council's policies and regulations should be reviewed from time to time to ensure they are achieving their aim and are not imposing unnecessary impediments to legitimate activities. A proactive stance was seen as encouraging international support for ship designers to incorporate "environmental damage control" factors in their design criteria. This adaptive approach was also thought to enable the management of the impacts of large vessels to be dynamic.

The need for regular and quite frequent reviews was supported as well as the need to be able to react quickly where adverse effects are being felt. One party commented that the process of undergoing a variation to the Plan takes far too long and that action was needed more quickly. A possible solution suggested was to vest discretionary powers with the Harbourmaster, so that temporary restrictions could be imposed until the Plan was modified.

Regular monitoring, of areas that have been damaged and areas that have not yet been affected, was seen as being essential to gain proper information. One party sought independent monitoring on the basis that this was necessary to ensure that unbiased scientific evidence was ongoing. This was proposed to be paid for from general rates given that all ratepayers would benefit from better safety/environmental results.

Establishment of a Community Advisory Group

Specific organisations suggested to be represented, other than those proposed in the draft variation, were Guardians of the Sounds, Ministry of Fisheries, Ministry for the Environment, Lochmara Bay Residents' Association, the Royal Forest & Bird Protection Society, the Marlborough Environment Centre, Outward Bound, and recreational fishing organisations. Several commented that it was important that non-permanent residents and property owners be represented, as well as ensuring that "broader" community representation reflecting the interests of New Zealand as a whole, was provided for.

It was proposed that an advisory group could identify areas of work/investigation/monitoring that would benefit from the financial contributions. Revision of the control formula when appropriate and involvement with respect to the Environmental Partnership Agreements between consent holders and the Council were also suggested as tasks that an advisory group could undertake. Other suggestions for using an advisory group included giving advice on wider issues with a positive effort being made to develop and enhance the area - rather than simply maintaining the status quo. Some saw a role for the group in attempting to re-establish conditions existing before the ferries were introduced and to

monitor and control any future development in the Sounds. Overall management was seen as appropriate to enhance all environmental aspects of all the Marlborough Sounds.

Of those who responded that an advisory group was not needed there was little reason given. One comment was made that there were too many people and organisations involved while another commented that the group would be dominated by a small number of people opposing any form of development. A number of process issues were identified on how such an advisory group might be run.

Environmental Partnership Agreements

There was some distrust of the role that operators could play in such agreements as a number of those commenting considered that operators may try to manipulate the process. Conversely, others saw that without the cooperation of operators affected, then these agreements could not be successfully implemented or maintained.

A number of those commenting supported the agreements but considered they should be subject to peer review from independent qualified organisations, that the agreements should include representatives of the advisory group, that the information be made available to the advisory group for comment and that Government should be included in the process. Several thought that this activity could be part of the advisory group's responsibilities with the power to co-opt expertise as necessary.

On the question of what the Environmental Partnership Agreements could be used for, a number responded directly in terms of the issue of shipping activity in the Sounds while others raised a broader range of issues. Of the responses in terms of shipping activity the following suggestions were made:

- Whether it was appropriate for two large vessels to be in the confined waters of Tory Channel at any one time i.e. cumulative wake effect.
- Discussions on the design of any intended new ships to prevent dilemmas further down the track.
- Damage caused to private property as a result of large and/or high speed vessels and safety issues.
- To hand out fines for any ships travelling above the said limits.

Responses to Draft Variation Provisions

Limited comment was made to the actual provisions of the draft variation i.e. the policies, rules etc. The changes that were sought reflected the concerns that had been raised under the previous headings, e.g. it was proposed that Policy 1.1 be amended to refer to all of the enclosed waters of the Marlborough Sounds, not just Queen Charlotte Sound and Tory Channel. Another example was in respect of the speed rules where a maximum speed for any vessel travelling in the Sounds was

suggested. This differed from party to party but ranged from 12 knots up to 30 knots, regardless of whether the vessel was operating in the national transportation route or not.

Follow-up to Specific Issues Raised by Respondents

A number of specific issues requiring further comment have arisen out of the feedback received on the discussion document. Those of particular note are listed below and where appropriate, comments have been made on the issue. In some cases reference has made to further investigations undertaken by the Council.

A cost/benefit analysis should be undertaken of the economic value to Marlborough of Tory Channel/Queen Charlotte Sound being used as the main shipping route between the North and South Islands.

An economic assessment of introducing the proposed controls on shipping has been carried out. This assessment has been undertaken for the Council by Brown, Copeland and Company Limited and is discussed in the next part of this report.

The public should be more responsible for themselves and take necessary safety precautions.

Since considering the recommendations of the risk assessment and also as a result of the Tory Channel Navigational Safety Group's findings, the Council has been active in raising public awareness of general boat safety. This has included promoting a brochure on "Safe Sounds Boating" with pertinent information on accident and incident prevention and reporting, mandatory use of radio warning broadcasts for the transit of Tory Channel entrance, speed limits, normal navigation routes for vessels over 500 tonnes etc.

There are, however, many people who have claimed to be affected by vessel wake while using the foreshore along the ferry route. It would be impossible and unreasonable to expect all of the people in this group to be fully aware of sailing times of vessels and the possible implications of wake from those vessels, particularly where some of these effects are being experienced some distance away from ferry routes.

Notwithstanding this, there is now greater public awareness of issues concerning ferry wake and people have modified their behaviour accordingly. These changes made by residents and boat owners are reported in Corydon Consultant Ltd's social impact assessments that were carried out before and subsequent to the introduction of the Navigation Bylaw 2000.

The issue should be treated wholly as a safety issue in terms of harbour bylaws.

The Council has already considered the ship wake issue as a safety issue and has imposed restrictions in terms of a navigation bylaw promulgated under the Local Government Act. However, the Council does not consider that the issue is one wholly of safety. In light of the investigations undertaken and consultation and feedback received from the community, the Council considers there are broader environmental issues that need to be addressed. These cannot be considered within the narrow framework of a navigation bylaw.

The functions of the Council as set out in section 30 of the RMA and the requirements for matters to be addressed in Plans (Second Schedule to the RMA) both refer to activities on the surface of water. The RMA therefore anticipates that the Council may manage the effects of activities on the surface of water through provisions in a plan.

In addition, safety issues are valid considerations in the context of sustainably managing the natural and physical resources of the Marlborough Sounds. Sustainable management has to be undertaken in a way, and at a rate, which enables people to provide for their social and economic wellbeing and for their safety – section 5 of the RMA. Case law supports the view that issues of safety are to be dealt with through the RMA even where there is other legislation that may also regulate an activity. [See Dart River Safaris Ltd v Kemp AP35/00 and Glenntanner Park (Mount Cook) Ltd v MacKenzie District Council W50/94.]

There are effects on landowners and tourists of a possible reduction in sailings.
Two assessments carried out for the Council canvass the social and economic costs and benefits of imposing speed restrictions on the ferries. The economic assessment is that of Brown et al referred to earlier. The social impact assessment was undertaken by Corydon Consultants Ltd and is discussed in the next Part of this report.

As the Cook Strait route is one of national importance, the Government should decide the issue.
The Council, in its first discussion paper, explored the option of using national policy statements or national environmental standards under the RMA to manage the effects of shipping activity. However, these have to be prepared by the Minister for the Environment. The Minister has not indicated any willingness to prepare any such statements or standards in respect of shipping activity, or more particularly, wake from shipping but the Council has received some financial assistance from the Ministry for the Environment for monitoring.

There has been no indication from central government that the issue should not be dealt with at the Council level.

The Council acknowledges that the Cook Strait route is of importance both regionally and nationally. However, it considers it has sufficient scope within the RMA to address the national implications of regulating shipping, including making decisions on whether regulations should be introduced.

The degree to which the community should accept environmental degradation in the wider interests of the nation.
The community has already accepted some environmental degradation in the Marlborough Sounds in the interests of the nation. A regular inter-island service through the Sounds was introduced in the early 1960s and since that time there have been complaints regarding vessel wake and speed, particularly from property owners in Tory Channel (Valentine 1982). However the community's reaction to the effects from the fast ferries was much more significant than to

previous ferry operations, given the newer vessels much higher travelling speed and different wake characteristics.

The Corydon social impact assessments indicate that the community made a number of modifications to the way in which they viewed, lived and used the Sounds as a consequence of the fast ferries. For some the Sounds became a much less attractive place to spend time, and their tolerance in accepting environmental degradation from shipping activity in the interest of the nation, appears to be lower than previously**.**

The Council is also aware that there are likely to be new innovations in vessel design that may have different or greater impacts in the Sound' environment than previously or currently being experienced. It is considered appropriate therefore to have a framework in place to ensure that the Council is in a position to manage any such impacts and reduce any environmental degradation.

The Council considers that in this instance the community should not have to accept environmental degradation to any greater degree than has been experienced prior to the fast ferries, particularly when there is an approved alternative location for a ferry terminal. The proposed regulatory framework in the variation does not preclude that option from being taken up by Tranz Rail Limited, a company who is the holder of a number of consents for the development of a ferry terminal at Clifford Bay.

The question needs to be asked why should the community continually accept degradation of the environment in the interests of the nation?

Use of enforcement provisions of the RMA to control adverse effects.
The Council believes that there is a resource management issue that does need to be addressed through the Plan as opposed to using the enforcement provisions of the RMA. The issue identified in the variation states as follows:

"Ships capable of generating a significant wake in enclosed waters have the potential to conflict with a range of other coastal users and values and generate adverse environmental effects."

This issue is of significance for the district as the Council also recognises that shipping activity through the Marlborough Sounds does contribute to the social and economic wellbeing of the community by providing an important link between the North and South Islands. The Plan already recognises the significance of the inter-island ferry operations (Volume One - Chapter 19 Water Transportation) but also includes as <u>issues</u> to be addressed, that the adverse effects of water transport need to be managed and that navigational safety needs to be maintained and enhanced.

The Council is satisfied that addressing the issue through the Plan is likely to make a difference to the Sounds' environment in that operators and the community are provided with greater

certainty regarding the level of effect from shipping activity that is considered acceptable. The adaptive management regime also being proposed enables continual assessment and reassessment of the controls imposed and also encourages community participation in the overall management of the issue. These things could not be readily achieved if the enforcement order provisions in the RMA were used on an ongoing basis.

The community is also unlikely to accept using enforcement provisions every time there is an issue with shipping activity given the costs associated with appearing in Court.

Available evidence supports the view that the environment of Tory Channel responds to changes in the energy regime and comes into "dynamic equilibrium" with the shipping activity. The expression "dynamic equilibrium" is commonly used in geomorphologic study to describe processes that bring about change over periods of time of sufficient duration that it appears the environment is apparently static or largely so. In the "Sounds" context the expression has been associated with effects of the wash from high speed ships when referred to by Judge Treadwell.

The Sounds' environment with its particular landforms is subjected to energy derived from climatic and tidal processes. Energy has also been added by way of large vessels operating on set schedules from the early 1920s (e.g. *Tamahine*). The overall situation could be described in terms of an energy budget with particular processes contributing to that budget i.e. - tidal movement, rainfall, wind (wave action) stream flow and ship movement.

The Sounds environment in terms of shore stability can be characterised as one of low energy (inputs from natural sources) compared with an open coastal shore. Newton[11] concludes from his work that wave heights of 0.5 metres and wave periods of 3 seconds will be rare. The main factor governing the level of energy is the quite restricted "fetch" available for wave development through wind action.

A significant change to the energy environment occurred with the introduction of the New Zealand Rail ferry *Aramoana*. This ship was more powerful than the previous *Tamahine*. The changes, although only anecdotally noted, clearly signalled a lift in the energy budget through the size, speed and frequency of the change. The energy budget was further increased with the introduction of the *Aratika* and the *Arahanga*. The new services generated negative reactions because of the impact of the ship generated waves at the shoreline, in particular. A period of dynamic dis-equilibrium occurred in a number of ways and in particular changes to the beach particulate composition and profiles. The change in the dynamic equilibrium was also evidenced in the vocal concerns and, further, the findings set out in Charles Newton's thesis.

[11] Newton, CGH. 1977. The Sedimentary Dynamics of Tory Channel. Unpublished Thesis, Geography Department, University of Canterbury, New Zealand.

The next major event in terms of energy input was the commencement of high speed ship services in 1994. These generated a previously unrecognised wave system through the ships operating at "super-critical" speeds. This period of increased energy resulted in apparent changes in biota, particularly in the intertidal zone and the morphology of beaches where fine materials were removed to lower levels.

The work of Parnell in respect of later generations of high speed ships quantified the very high near bed water velocities and provided the confirmation of the energy levels that the cobble movement clearly demonstrated. The mechanics of wave generation are such that the 1994 series ships will have been producing similar levels of water velocity and therefore similar effects for similar speeds.

Each successive stage of introducing additional energy into the system is an additive act that either advanced elements of the process in time or caused new effects. For the most part these new effects are not reversible because of their particular character. For example wave effects may subsume any "normal" conditions creating a new state at which level the historical processes resume.

The achievement of a state of "dynamic equilibrium" is not to say that the state is acceptable. The issue becomes one of determining whether the effects of the particular state are either not immediately sustainable or, because of the dynamic elements has the potential to be unsustainable within an unacceptable duration of time.

Provision should be considered for other types of vessels that may operate in the Sounds.
In a broad sense, vessels are categorised as being either for commercial or recreational use. Commercial vessels are regulated by the Maritime Transport Act and associated Maritime Rules. Although there are many different classes of commercial vessels, traditionally, those of UMS gross 500 tonnes and greater are subject to such requirements as pilotage owing to their length. Although recreational vessels may not be subject to the some of the same rules and regulations as commercial vessels, they nonetheless have to observe such regulations as the Collision Prevention Regulations, bylaws etc. Similarly, pleasure vessel owners/operators can be prosecuted under the same provisions and face with the same penalties as the master of a commercial vessel.

There has not been the same level of concern expressed regarding other types of vessels that currently operate or may operate in the Sounds to anywhere near the same extent as there has been regarding the fast ferries and the latest conventional ferry, the Aratere.

Use of a shipping corridor (narrower than the national transportation route) should be mandatory.
There are difficulties in marking shipping corridors since the waters along the route are relatively deep. A regime of minimum distance off salient points has been part of an informal code of

practice but not enforceable by law. The Council's Draft Navigation Safety Bylaws have generally increased the distance off major points of land as a form of separation between different users. Modern navigation systems carried on board ships allow these distance to be plotted on visual chart displays, and, with the aid of GPS, enable the master to have a clear picture of his/her ship's position in relation to the required distances off. Bylaws will further require that ships like the ferries carry automatic location communicators enabling effective monitoring to take place.

Wake effects in restricted waterways are detrimental and any areas vulnerable to wake effects should be protected.

Most of the shipping activity within Pelorus and Kenepuru Sounds is coastal or local in nature and revolves around fishing and marine farming, and the transport of tourists, logs and livestock. This shipping activity is quite different to that of Queen Charlotte Sound and Tory Channel with vessels generally being smaller and travelling at speeds that are slower than ships such as the fast ferries and conventional ferries. There is no evidence that wake wash levels are approaching a level that is intolerable to near shore users, coastal morphology or other coastal values.

While some of the narrower parts of the Pelorus and Kenepuru may be vulnerable to wake effects it is considered unlikely that these areas will develop the type or extent of shipping experienced in Tory Channel or Queen Charlotte Sound. This is because there of a lack of, or potential to, develop a deep water port within these other areas. As there are only minor effects arising from ship wake in these areas of the Sounds, and there is unlikely to be a significant increase in effect in the future, there is currently no justification for the regulation of shipping activity in these areas. If an issue concerning wake from vessels in other areas of the Sounds does become a problem, then the Council is able to undertake a plan change if necessary, to address such issues.

Tory Channel should not be treated in a lesser way than outer Queen Charlotte Sound, and should not be expected to suffer environmental damage, just because it is a national transportation route.

Tory Channel has long been used as a route for both inter-island and coastal trading vessels. From time to time there have been complaints about boat wash, particularly since the commencement of the regular inter-island service in the early sixties. By and large people had come to accept a certain level of effect associated with shipping activity in Tory Channel prior to the introduction of fast ferries in 1994.

The Council does not view the proposed rule framework as treating Tory Channel in a "lesser" way than outer Queen Charlotte Sound but seeking a balance of the national needs with local needs. Nor is it seeking to compare the values of Tory Channel against those of Queen Charlotte Sound. The rules effectively recognise a situation that existed prior to the advent of

the fast ferries, that is, an environment in Tory Channel in which conventional ferries operated in relative harmony with their surroundings and the community.

Ship operators should be allowed the flexibility to choose a safe route.

As a general rule, there is a public right of navigation within harbour waters. The Council, as harbour authority, has a duty to ensure that all who may choose to navigate within the coastal marine area of the region may do so without danger to their lives or property. In order to achieve this, it follows, therefore that the Council must regulate, through a number of statutory instruments this right of public navigation, irrespective of whether a vessel is used for commercial or recreational purposes. Operators should therefore not expect that their needs alone dictate the manner in which their ships transit harbour waters.

There is no justification in environmental terms for use of the navigation bylaw.

The Council has always recognised the environmental aspects of wake wash. It also recognised that due process requires a considerable investment of time. There were pressing safety issues both vessel/vessel and vessel/shore that could not wait the fullness of the RMA process, hence the introduction of the Navigation Bylaw.

The Council has opted to use the method adopted in the Navigation Bylaw as a starting point to address the environmental effects of shipping activity. The reason for this is that there is no other recognised method of addressing effects from ship wake that can be easily measured. Technical experts advising the Council have considered methods such as “near bed velocity” but they are not sufficiently developed to be used as a method in the Plan. It is anticipated that different methods for measuring the effects of wake on the environment may be developed in the future and these methods may be adopted at a later date through the plan change process.

In addition anecdotal evidence from a number of those submitting on the Council’s two discussion documents have commented that there have been improvements to the environment, both from a physical and social point of view, since the introduction of the Navigation Bylaw. The post bylaw residents’ survey by Corydon Consultants also includes comment as to the effectiveness of the bylaw in improving the quality of life, safety and reducing effects on private property.

In the absence of any other method that has been tested and which is able to be readily used in the Marlborough Sounds’ context, the Council considers that at this time the adoption of the method underpinning the Navigation 2000 Bylaw, is the most appropriate.

There should be an upper speed limit.

The adaptive environmental management regime that is also proposed as part of this variation recognises that advances in ship building technology may lead to the development of ships that are able to travel at high speeds but have limited impact in terms of wake generation. From a safety perspective, it is important to ensure that there is a case-by-case assessment process for

ships that exceed certain speed levels in order to take into account concerns that may arise in relation to the operation of a particular ship. It may well be that ship speed will be called to be examined in the context of bylaws at some future time.

If it is considered necessary to impose an upper speed limit for vessels travelling through Tory Channel and inner Queen Charlotte Sound, this can be achieved by imposing a condition through the resource consent process. One of the assessment criteria included within the proposed variation for consent to exceed 18 knots, requires consideration of the effects on people and communities including navigational safety. In this context therefore, if it is appropriate to place an upper speed limit, the framework is in place within the proposed variation.

A more precautionary lower threshold of 12 knots should be considered.
Some respondents considered that a speed of 12 knots should be used as the lower threshold for controlled activity status rather than the 15 knots proposed. The 12 knot limit originates from a standard that has been applied in Rich Passage, Puget Sound, Washington, USA called the "no harm" standard for wake wash. The 12 knot limit was a limit at which a panel of experts considered the effects of high speed craft waves were negligible relative to a background of natural waves and tidal effects.

The 15 knot limit applied in the variation is considered to be an appropriate lower threshold based on data gathered for both conventional and high speed craft in the Marlborough Sounds.

The Council considers that it would be very difficult to go back to a baseline of natural waves in the Marlborough Sounds given the history of shipping traffic that has been "tolerated" since the inception of the "rail ferries".

There is no survey research as to the effects of vessels at 15 knots.
There is survey research as to the effects of vessels at 15 knots with data having been gathered by a number of experts over a period from 1982 through until 2001. As explained earlier in this report, evidence that was given by Dr K W Croad at the Planning Tribunal hearing on this matter in 1995, showed that the speed of the *Condor 10* and *Albayzin* would need to be reduced to 15 knots or less to ensure that wave heights did not exceed those of the existing conventional ferries. (These vessels were the two high speed craft operating during the 1994/95 summer.) With additional information gathered since the Tribunal hearing, the data shows that both conventional ferries and the high speed craft comply with the wash rules for speeds at equal to or less than 15 knots (with one very minor exception)[12].

[12] Croad, RN and Parnell, KE. 2002. Proposed Controls on Shipping Activity in the Marlborough Sounds - A Review under s.32 of the Resource Management Act. Produced by Opus International Consultants Limited and Auckland UniServices Limited for the Marlborough District Council.

The development of the wave height formula in the Danish coastal water may make it inappropriate in the Sounds.

Essentially the wash rule is based on Danish Maritime Authority (DMA) Order No 307 dated 1997 [*Approval of the Safe Navigation of High Speed Ferries*]. The rule in the variation has been adapted for the Marlborough Sounds' situation and tested against wave data collected in the Sounds. This matter is more fully discussed in a report entitled "*Proposed Controls on Shipping Activity in the Marlborough Sounds*" prepared by Drs Richard Croad and Kevin Parnell for the Council. This report provides an assessment of the technical aspects of the regulatory framework.

Ongoing monitoring of the formula is necessary to ensure its appropriateness to manage environmental effects.

Monitoring of the formula and its appropriateness to manage environmental effects will be ongoing. Several forms of monitoring are set out in the variation. These include:

- Investigation into the effects of shipping activity in the Marlborough Sounds through the Council's responsibility for monitoring the state of the environment in the district.
- Monitoring plans required of consent holders will include stages, locations and methods of monitoring, timing of reporting monitoring results, and will include details regarding the availability of monitoring information to the Council.
- In addition, the Council will support Te Atiawa initiatives to monitor cultural, and ecological effects on kaimoana, from the wake of ships.

Information gathered from this monitoring will need to continue to be collected, analysed and an assessment made with regard to the effectiveness and efficiency of the entire regulatory framework. This process is fundamental to an adaptive environmental management regime, which recognises the uncertainty of understanding the effects of change in the coastal environment. If in the future some other form of measurement or method of assessing the effects of shipping activity is developed, then the Council will need to assess that against the wave height formula adopted for this variation.

Financial contributions should not be considered as a means for allowing environmental damage to continue.

It is considered that it is generally inappropriate to attempt to offset some adverse effects generated by the taking of financial contributions, as some adverse effects should either be completely avoided or mitigated in some other way. Other effects might be considered to be acceptable, given the national benefit derived from the shipping industry within the Sounds.

It is generally considered more appropriate to focus the taking of financial contributions on the monitoring of effects of consented activities, and research into potential adverse effects of consented activities, rather than in an attempt to 'offset' adverse effects generated. By

implementing the adaptive management approach, review conditions could be imposed on the resource consents granted, which would enable the Council to require avoidance, remediation and/or mitigation of adverse effects if they are shown to be occurring (through the research and monitoring to be carried out).

Notwithstanding this, it may be appropriate for the Council to take a contribution to 'offset' a particular effect, where a decision is made to grant a resource consent with the knowledge that a certain effect will be generated, but on balance, that effect is acceptable given the countervailing positive effects. However, it is accepted that care will need to be applied in so doing.

Discretionary powers should be vested with the Harbourmaster to impose temporary restrictions until the Plan can be changed.

The timeframes in undertaking a change to the Plan can be lengthy depending on the complexity of the issue being considered. However, discretionary powers cannot be vested with the Harbourmaster by the Council to impose temporary restrictions. The Harbourmaster's functions are prescribed under the Local Government Act 1974 and that Act has a legal process that must be gone through before introducing new rules regarding navigation. While this process is probably quicker than changing a resource management plan, the RMA does not allow the Harbourmaster to impose restrictions on shipping of any description.

The Council did consider whether provision could be made for the temporary trialling of ships so that the effects of any particular ship could be assessed in the Sounds' environment. However, the advice of the Council's technical advisers was that this was not necessary as the effects of wake produced from a ship can be assessed through methods such as computer modelling and tank testing. The Council also considered that it would be extremely unlikely that an operator would bring a ship to New Zealand waters without some certainty that it would be able to operate within the constraints of the regulatory framework to be adopted. Additionally, one trialling event (dependent on speed and the type of ship involved) could potentially set back the recovery of the natural environment and again raise community concerns that were previously aired.

Part F: Additional Investigations

In conjunction with the release of the draft variation for public comment, the Council initiated a series of further investigations in light of what had been proposed by the draft variation. These investigations form part of the overall section 32 analysis for this variation and include the following:

- consideration of the social costs and benefits of introducing the draft variation;
- an economic analysis of the costs and benefits of introducing speed controls;
- technical analysis of the speed rules proposed by the draft variation in terms of wake and wave characteristics; and
- a biological monitoring report.

The Council also discussed with Risk and Reliability Associates Pty Ltd as to whether there was a need to reconsider the risk analysis undertaken in 1999/2000. As one of the main recommendations to come out of the initial assessment had been achieved, i.e. the speed of fast ferries has been slowed through the bylaw, there seemed little merit in repeating the risk analysis.

Separate reports have been prepared on each of these, however a summary of the findings from them, is provided below.

Consideration of the Social Costs and Benefits of Introducing the Draft Variation

This assessment was compiled primarily from an analysis of the findings of earlier research undertaken by Corydon Consultants Ltd concerning the Marlborough Sounds. This research includes the following:

- A social impact assessment of fast ferry operations in the Marlborough Sounds undertaken in August 2000[13]. This assessment was compiled from a range of information sources including questionnaire responses from 180 Sounds' residents, 146 recreational boat users, meetings and interviews with key informants and interest groups, written submissions and an analysis of the incident files held by the Marlborough Harbourmaster.
- A follow-up survey undertaken in December 2001/January 2002 (one year after the introduction of the Navigation Bylaw reducing the speed of the Lynx to 18 knots) to identify

[13] Corydon Consultants Ltd. August 2000. Fast Ferry Operations in Marlborough Sounds: A Social Impact Assessment. Produced by Corydon Consultants Ltd for the Marlborough District Council.

changes experienced by Sounds' residents.[14] The information for this survey came from 218 questionnaire responses drawn from a wider geographical area than was covered by the first survey.

- The results of a nationwide survey of people's perceptions of the Marlborough Sounds[15]. This telephone survey covered 1,154 people aged 18 years and over from throughout New Zealand. The survey documented the frequency of visits to the Sounds; areas visited and activities undertaken; the characteristics people associated with the Sounds and the qualities they most valued; and the perceived importance of the Sounds to the country as a whole. The survey also sought to identify the types of developments and activities which people considered could be potentially damaging to those qualities of the Sounds which they most valued.

The research was also supplemented by telephone interviews with a range of key informants including business operators and representatives of business-related organisations in Picton and Marlborough, Te Atiawa Manawhenua Ki Te Tau Ihu, Guardians of the Sounds, Wellington Information Centre and Tranz Rail.

Social Costs of Introducing Regulation

National Costs

A slight increase in trip duration (by up to 15 minutes each way) is unlikely to deter travellers from making the crossing, especially in the case of those making recreational trips of more than 1 or 2 days – by far the most common type of ferry passenger[16]. However, in the event that both of the conventional ferries have to slow to a point where it becomes necessary to reduce the number of crossings per day (and assuming that no other party enters the market to provide a supplementary ferry service) then the following impacts on passengers can be expected:

- Reduced choice of travel time (this has already occurred with the demise of the *Top Cat*);
- A greater probability that tickets would be unavailable for preferred sailings (especially during peak travel periods and when booking at short notice); and

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14 Corydon Consultants Ltd. 2002. Fast Ferry Operations in Marlborough Sounds: Post-bylaw Residents' Survey. Produced by Corydon Consultants Ltd for the Marlborough District Council.

15 Corydon Consultants Ltd. May 2001. Perceptions of the Marlborough Sounds and the Impacts of Marine Farms - Results of a Nationwide Survey. Produced by Corydon Consultants Ltd for the Marlborough District Council.

16 Information provided by Tranz Rail and the Wellington Information Centre.

- A possible increase in fares if Tranz Rail seeks to recover the fixed costs of terminals and vessels from fewer passengers.

The ability of Tranz Rail to accommodate the consequential longer travel times, together with the level of consumer resistance to any increase in fares or less convenient services, will largely determine the effect on passenger numbers.

Local and Regional Costs

The local and regional costs of introducing regulation are likely to be a reduced ability to make short visits and reduced custom for local businesses.

Reduced ability to make short visits (of 1 or 2 days' duration) could result from less convenient travel times, reduced availability of tickets at short notice, and higher fares. These impacts would be most significant for ferry travellers who are day or weekend-trippers, and/or the owners of residential properties in the Sounds who visit their properties regularly for short periods.

Local businesspeople interviewed for the assessment said there had been a significant decline in the number of day-trippers to Picton, and particularly to the local wineries, since the demise of the *Top Cat* and the slowing of the *Lynx* in the Sounds. Information on ticket sales obtained from Tranz Rail tends to indicate that the reduction in the actual number of crossings and the less convenient arrival time for day-trippers, rather than the slowing of the *Lynx*, have caused the decline in passengers making short trips.

Over the past year (since the slowing of the *Lynx*) overall volumes of passengers for day and quick-break trips (3-4 days) has declined by 1% but there has been a significant shift in the numbers of these passengers travelling on the different ferries. While *Lynx* passengers have substantially declined (by 9% for day trips and 18% for quick-break trips) the numbers choosing to make these trips via conventional ferries has significantly increased (a 2% increase in day trippers and a 17% increase in quick-break trips).

These figures indicate that time savings are not a significant determinant of people's choice of mode of travel in the Sounds. Therefore it is unlikely that an additional 15 minutes (maximum) travel time each way on its own would be enough to deter a significant number of day-trippers, provided sailings were reliable and timed to suit, and provided the weather is fine[17].

However, a significant increase in the ticket price, together with greater difficulty in obtaining tickets at short notice would be likely to reduce the number of day and quick-break passengers including those who have weekend/holiday homes in the Sounds.

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[17] Tranz Rail's records confirm that unusually severe weather has created considerable problems for the ferries over the past year.

A reduction in the *number* of sailings (which Tranz Rail has indicated could result from slowing of the conventional ferries to 15 knots) could have a significant impact on the numbers of people arriving in both Picton and Wellington each day (especially at peak travel times when the current number of sailings sees the ferries fully booked). This could be expected to have a negative impact on those businesses (retailers and tourist operations) that rely on custom from ferry passengers including motel owners, water taxi operators, grocery stores and food outlets as well as those operating tourist businesses such as cruises, fishing expeditions and tourist visits.

Some submitters to the Draft Variation Discussion Document claimed that slowing the fast ferries has had an adverse effect on local businesses and that slowing the conventional ferries will exacerbate the situation. However, there are a range of factors that have contributed to the recent decline in the number of day and weekend ferry passengers including reduced frequency of sailings (especially the loss of the early morning service to Picton), cancellations of sailings, fare increases and reduced advertising. Therefore it is unlikely that reducing the speed of ferries in the Sounds will reduce ferry passenger demand. However, a reduction in the number of sailings, especially if the remaining sailings were at less convenient times, could have a severe effect on customer numbers for some businesses.

Social Benefits of Regulation

National Benefits of Regulating Ferry Speeds

There are three principal ways in which the slowing of conventional ferries could bring about social benefits at a national level:

- enabling travellers concerned about environmental issues to have a sense of being party to protecting the Sounds;
- further reducing the risk to water-based recreation (especially boating) in Queen Charlotte Sound and Tory Channel; and
- for those who enjoy cruising through the Sounds on a ferry, increasing the amount of time they can spend doing so.

New Zealanders as a whole attribute a high degree of importance to the Marlborough Sounds both as a recreational resource and as a contributor to New Zealand's image both at home and overseas. There is also a high degree of concern about activities in the Sounds that are seen to be potentially damaging to the natural environment. This became evident through a national survey of perceptions of the Sounds undertaken in 2001[18]. Ferry operations registered the highest level of concern in terms

[18] Corydon Consultants. May 2001

of their potential to damage every one of the qualities most valued[19] in the Sounds – see Appendix 3. Therefore, it can be assumed that there will be a degree of acceptance by many travellers of speed restrictions, which while marginally affecting their travel arrangements, contribute towards the protection of the Sounds' environment.

The social impact assessment of fast ferry operations[20] identified a high degree of concern about the perceived danger posed by fast ferry wash and wake to water and shore-based recreational activities, and that this concern was detrimental to enjoyment of the Sounds. While the focus of the 2000 social impact assessment was on the effects of the fast ferries, a significant number of respondents commented that wake from the conventional ferries (particularly the *Aratere*) also presented threats to water and shore-based recreation. If the speeds of all ferries were reduced from present levels, it is assumed that this would reduce the levels of anxiety about ferry-related impacts in the Sounds currently experienced by water and shore-based recreationalists. Therefore their sense of recreational enjoyment is likely to be increased.

Extra time spent on the ferries has tended to be counted as a cost to passengers, based on the practice of attributing economic values to traffic delays as a means of justifying expenditure on roading. While this is appropriate in the case of many ferry travellers (for whom getting from A to B as quickly as possible is important), time spent cruising through the Sounds would be considered a benefit by some passengers – especially tourists. In fact the Warratahs' song used by Tranz Rail to promote the Interislander makes frequent references to "*cruising*", "*taking my time*" and the recreational value of the journey.

Local and Regional Benefits

In assessing responses in a comparative sense prior to and one year after the slowing of the *Lynx*, Corydon Consultants concluded that the introduction of the bylaw had led to a significant reduction in the negative effects of ferry activities previously experienced by residents in the Sounds. A small proportion of residents reported they were still experiencing some negative effects, particularly from the *Aratere*. However, the marginal improvements gained from restricting the speed of conventional ferries to address all of the negative effects being experienced will not be of the same magnitude as those achieved from the slowing of the fast ferries. Eliminating all social and environmental impacts could involve significant economic costs.

In terms of the **foreshore and foreshore area, restricting the speed of the *Lynx* to 18 knots had substantially reduced damage**. Although it was noted that some damage to foreshore property,

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[19] The qualities were scenic beauty, peace/tranquillity, wilderness/naturalness, remoteness, pristineness, high water quality, native bush, restfulness/retreat, water-based recreation.

[20] Corydon Consultants Ltd. 2000

especially at high tide, was still occurring – principally as a result of wash from the *Aratere*. Reducing the speed of this vessel is therefore likely to have an incremental benefit in terms of the protection of foreshore property.

Damage to boats and/or equipment had also been substantially reduced since the original social impact survey of residents[21], where 45 (25%) reported they had experienced damage to boats, which they attributed to one of the fast ferries. Of the 218 respondents to the follow-up survey, only two said they had experienced ferry-related damage to boats since the introduction of the bylaw. Respondents were however, still wary of tying their boats to jetties where they could be damaged by wash. This has significant implications for the convenience of the lifestyles of Sounds' residents that revolve around water transport.

While in some cases the reduced incidence of boat damage could be attributable to reduced fast ferry speeds, it is likely that in other cases it would be attributable to boat owners now taking greater care to avoid situations where their boats could be damaged by wash. However, if the speed and wash effects of conventional ferries are reduced, residents and other boat owners may begin to feel more relaxed about leaving boats tied to jetties.

Improvements in safety also appear to have resulted from the introduction of the bylaw. Of the 180 respondents to the social impact residents' survey [22], 109 (61%) reported that they had experienced at least one safety incident related to a fast ferry. Of the 218 respondents to the follow-up survey, 29 (13%) said they had experienced at least one such incident since the introduction of the bylaw. While this suggests that the frequency of safety related incidents has been significantly reduced since the bylaw, this should be treated with some caution. The period covered by the follow-up survey was 1 one year compared with approximately 5 years for the original survey. Therefore the number of incidents reported by respondents *per year* since the introduction of the bylaw may in fact be higher. One reason for this may be the heightened public awareness of ferry wash impacts as a result of publicity surrounding the introduction of the bylaw in December 2000.

A "marked improvement" in the wellbeing of the kaimoana beds had been noted by Te Atiawa and The Guardians of the Sounds since the slowing of the fast ferries. Rocks are no longer being rolled around on the sea floor and kelp is no longer being torn off the rocks, and there are signs that ecological processes are returning to something resembling their pre-fast ferry state. The Aratere continued to be problematic for near-shore marine life, with the severity of impacts being partly influenced by loading and weather. Therefore reducing the wash impacts of the conventional ferries (particularly the Aratere) could further assist the marine environmental improvements begun by slowing the Lynx.

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[21] Corydon Consultants. 2000

[22] Ibid

Reorganising daily activities in order to avoid fast ferry sailings had been carried out by 138 (77%) of the 180 respondents to the 2000 social impact resident's survey[23]. Activities that seemed to be most affected were the launching and taking in of boats, loading and unloading at jetties, sailing, diving and fishing in Tory Channel and swimming or walking along beaches. The follow-up survey (2001/02) showed that repeat respondents had significantly reduced the degree to which they now adopted these protective behaviour mechanisms.

Sounds-based tourism operators were generally torn in their attitudes towards fast ferries. The 2000 social impact assessment concluded that while tourism operators recognised the opportunities fast ferries offered to increase the numbers of day-trippers to the Sounds, all considered that the fast ferries were adversely affecting the very qualities that attracted tourists to the area. Some considered that because of the danger caused by the wash, the ferries were having a negative effect on their customers' experience of the Sounds, which in the longer term could damage the reputation of the Sounds as a place for water-based recreation.

Conclusion

Corydon Consultants concluded that the proposed regulation is likely to bring further environmental benefits to the Sounds over and above those already achieved by the slowing of Lynx to 18 knots. Those benefiting most would be those who own property and/or recreate in Tory Channel and Queen Charlotte Sound, including in the bays around Picton. However, it is important to recognise that these benefits will not be of the same magnitude as those accruing from the Navigation Bylaw 2000.

The reduced speed of the Lynx has obviously brought significant improvements for the people who live and/or recreate in the Sounds. While negative effects of ferry wash (mainly from the Aratere) are still being experienced in some areas, eliminating all social and environmental costs could involve significant economic costs. This would be especially so if conventional ferries had to reduce their speed to 15 knots.

A reduction in the frequency of ferry crossings (which Tranz Rail has indicated could result from a regulation slowing the conventional ferries to 15 knots) would reduce the convenience of ferry travel and could lead to an increase in the price of fares. The timing of the revised sailing schedule would be a crucial factor in determining the impact these changes would have on the number of day and quick-trip passengers in particular. The demise of the early morning fast ferry sailing (previously provided by the Top Cat) seems to have had a severe impact on the number of day-trippers using tourist facilities in Marlborough, particularly beyond Picton. Any reduction in the number of passengers being brought in to Picton each day will have a negative effect on tourism related businesses and those providing services to these businesses.

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[23] Corydon Consultants Ltd. 2000

Economic Analysis of the Costs and Benefits of Introducing Regulations on Shipping Activity

The Council recognised that there may be some economic costs and benefits of introducing controls to regulate the speed of shipping activity in Tory Channel and Queen Charlotte Sound. A number of those commenting on the Draft Variation Discussion Document also raised concerns as to the economic consequences of introducing regulations. Accordingly the Council commissioned a cost benefit analysis from Mike Copeland of Brown, Copeland and Company Limited, to undertake an assessment.

At the outset the report[24] notes that in undertaking an economic assessment of the effects of the proposed regulations on shipping activity in the Marlborough Sounds it is important to

- ensure no double counting of benefits occurs;
- specify whether a national or regional viewpoint is adopted;
- exclude transfers; and
- adjust expenditure impacts to deduct the costs incurred in providing the goods and services purchased.

The report states that if, as Tranz Rail claim, their two existing conventional ferries are unlikely to comply with the proposed wave height restriction for vessels travelling between 15 and 18 knots, then there will be annual economic costs from both national and regional viewpoints. However the Council's maritime engineering consultant disagrees with Tranz Rail. He has advised that only one of the existing conventional ferries (the Aratere) would not comply with the proposed wave height restriction.

From a national viewpoint, assuming both the ferries are required to travel at 15 knots[25], the economic costs are considered to be:

- an additional 15 minutes travel time costs for passengers, vehicles and freight which continue to use Tranz Rail's two conventional ferries;

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[24] Copeland, M. September 2002. Economic Assessment of Proposed Regulations of Shipping Within Marlborough Sounds to Manage the Effects of Ship Wake on the Environment. Prepared for the Marlborough District Council. Brown, Copeland and Company Limited Consulting Economists.

[25] Should the regulations in fact mean that the three current ferries must travel at 18 knots then the economic costs would only relate to additional travel time costs for conventional ferry passengers, freight and vehicles of around 3.75 minutes. Presumably this would not have the drastic impact on the schedule of crossings per day predicted by Tranz Rail with an additional 15 minutes per crossing as a consequence of speeds being reduced to 15 knots in the Sounds.

- reduced profitability for Tranz Rail, higher fares and reduced schedule flexibility for conventional ferry passengers, vehicles and freight;
- the suppression of some inter-island trips for passengers, vehicles and freight; and
- the diversion of some inter-island trips for passengers, vehicles and freight to higher cost alternative modes or shippers;

Given the high volumes of passengers, vehicles and freight carried on Tranz Rail's ferries, the lengthening of the journey time (15 minutes for the conventional ferries) and the required reduction in conventional ferry sailings from 6 per vessel per day to 4 per vessel per day, each of these economic costs are likely to be substantial. A very approximate order of magnitude estimate for the maximum value for these costs is $20 million per annum. Again in approximate order of magnitude terms, this maximum figure would be halved if only one of the ferries failed to comply with the proposed variation.

Fleet rationalisation, especially when vessels are due to be replaced, may reduce these costs, although in the case of the Aratere, that is some time away. The economic costs will then relate to the additional capital (or annual lease costs) for vessels, which comply with the wave height criteria and forgone benefits relating to time-savings from even faster vessels which might otherwise have been selected.

At the national level most reductions in expenditure in Picton and the Marlborough region are considered likely to be offset by increases in expenditure in other regions. Therefore, from the national viewpoint, such expenditure reductions are unlikely to be significant economic costs.

Should the proposed regulations contribute to Tranz Rail deciding to relocate from Picton to Clifford Bay, the additional costs to Tranz Rail would be offset by benefits to Tranz Rail in the form of operational cost savings and enhanced revenues, vis a vis staying at Picton with the new regulations in place. Therefore such a move does not imply additional costs to those already identified. Furthermore, the analysis by Tranz Rail's witnesses at the resource consent hearing for the Clifford Bay port development indicated significant benefits for users both in terms of at-sea and on-land cost reductions.

From a local Picton or Marlborough regional viewpoint the economic costs identified at the national level can be pro rated. In addition there is the loss of expenditure in Picton and the region, which will result in lower profits, rents and wages and salaries even allowing for some redeployment of capital and labour. A very approximate order of magnitude estimate for the economic cost at the local Picton and Marlborough regional level is $0.5 million to $1.5 million per annum, assuming as Tranz Rail claims, both conventional ferries would be required to slow down. Should Tranz Rail respond by relocating its Picton Terminal to Clifford Bay, there would be a further loss of expenditure, although to some extent expenditure would be transferred within the region from north to south.

Should both the current ferries in fact be able to continue travelling at their current speeds under the regulations, then the economic costs would just be the forgone benefits associated with faster speeds and/or larger vessels in the future, which may not comply with the regulations. Such costs would not be insignificant but would only involve additional travel time costs. It is unlikely that time savings of future faster vessels would enable schedule improvements.

Offsetting economic benefits from the regulations could possibly involve increased tourism activity for Picton and the Marlborough region resulting from environmental and safety improvements in the Sounds and any consequent property price increases and savings in property maintenance costs. However the inclusion of any such economic benefits must be done in a way, which avoids double counting. Also any economic benefits from increased tourism activity are likely to be small relative to deceases in economic activity from reduced ferry related trade.

In summary, from both a national and local regional viewpoint, the proposed regulations would have substantial ongoing economic costs if they require the current conventional ferries to reduce speeds in the Sounds to 15 knots. These costs would fall upon Tranz Rail, its customers and the local businesses and residents of Marlborough. Some reduction in these costs (but not their elimination) may be possible if the proposed regulations were phased in gradually, allowing less disruptive responses by Tranz Rail and perhaps other shippers, or if the ferries are able to meet the wave height formulae and travel at 18 knots.

Technical Analysis of the Speed Rules Proposed by the Draft Variation in Terms of Wake and Wave Characteristics

The Council commissioned Drs Richard Croad and Kevin Parnell, to provide a technical assessment[26] of the rule framework that had been included in the draft variation, for the purposes of satisfying certain elements of section 32 of the RMA.

Their report includes discussion on the various environmental effects of differing significance caused by ship waves in the Marlborough Sounds, and that these environmental effects are also now widely recognised and managed at various sensitive sites around the world. Examples of where these effects are being experienced are described, as well as the various regulatory or legal approaches adopted, to manage environmental effects from ship waves. These include examples from Denmark, Sweden, the United Kingdom and the USA.

The report presents a technical analysis of the characteristics of ship waves and the dependency of these characteristics on various ship properties. The basis of the rules in the variation are described

[26] Croad, RN and Parnell, KE. 2002. Proposed Controls on Shipping Activity in the Marlborough Sounds - A Review under s.32 of the Resource Management Act. Produced by Opus International Consultants Limited and Auckland UniServices Limited for the Marlborough District Council.

with particular reference to a 'wash rule', which is a standard that operators have to achieve in order for a ship to be able to exceed specified speed limits. The wash rule is:

$$H \leq 0.5\sqrt{\frac{4.5}{T}}$$

in which H is the wave height in metres, and T is the corresponding wave period in seconds, of the wave created by the vessel in 3 metres depth of water near the shoreline. This rule, as applied in the variation, and its method of enforcement, is the same as the approach adopted in the Navigation Bylaw 2000 that deals with safety issues in the Marlborough Sounds. The wash rule is the same (with improved definitions for H and T) as that adopted for similar purposes by the Danish and Swedish Maritime Authorities. The rule is based on assuming that the wave effects caused by conventional ships up to 2001 are generally acceptable and tolerated by the public, with one exception – the Aratere. It is considered that it would probably be unacceptable and inefficient to base the rule on a much lower benchmark of natural wave effects in the Sounds.

Croad and Parnell's report provides an analysis that demonstrates or explains:

- How the wash rule has been derived and has been benchmarked against the wave effect of conventional ships that have operated in the Marlborough Sounds during the period 1982-2001 (noting that the benchmark excludes the Aratere).

- Why the form of the wash rule is appropriate to manage ship wave environmental effects such as wave breaking, wave run-up on beaches, beach face stability and long-shore transport.

- How the wash rule compares with alternative forms of rules such as the "no harm" rule applied in the Rich Passage of Puget Sound, Washington, USA.

- The details and accuracy of the method of transforming measured ship waves from the point of measurement to a standard depth of 3 metres, used for monitoring purposes.

The basis of the 15 knot and 18 knots speed limits for permitted and controlled shipping activities respectively is discussed and the report finds that:

- All conventional and high speed craft that currently operate, or have operated, in the Marlborough Sounds will comply with the wash rule for speeds up to 15 knots (the speed up to which ships are permitted to operate without constraint, i.e. a permitted activity).

- Most ships will comply with the wash rule for speeds up to 18 knots (the speed up to which ships may operate as a controlled activity, i.e. operate provided that they comply with the wash rule), including the currently operating high speed craft, the Lynx (Incat 057). However, the Aratere has measurably more severe wave effects than earlier conventional ferries operating in the Sounds and will sometimes exceed the wash rule at 18 knots.

- Increasing levels of non-compliance with the wash rule is generally observed for larger ships and high speed craft for speeds above 18 knots (at which speed, ship operations are a discretionary activity requiring a resource consent under the proposed variation to the Plan). The currently operating ships, Aratere and Lynx (Incat 057), will probably not comply with the wash rule at speeds above 18 knots; there is no available data to assess if this will be the case for the Arahura.

Croad and Parnell consider regulation to be the most effective option for managing the environmental effects from ship wake, with ship speed being one of the most important parameters to control, and also being the easiest to monitor. Their report concludes that setting a speed limit is the most efficient approach for both shipping operators and for the Council, subject to operators having the ability to seek a resource consent to operate above specified speed limits if it can be demonstrated that the environmental effects will be acceptable.

Biological Monitoring Report

Biological monitoring of boulder and cobble shores in Queen Charlotte Sound and Tory Channel has been ongoing since 1995. The most recent report[27] introduces data collected by Davidson Environmental Limited on three sampling occasions (November 2000, May 2001 and February 2002). The latter two sampling events occurred after the introduction of the Navigation Bylaw 2000, which imposed the 18 knot speed restriction on the operation of fast ferries inside the Marlborough Sounds (i.e. post 15 December 2000).

This most recent report also includes data on rocky intertidal and shallow subtidal invertebrate abundance, which had not been previously investigated. Invertebrate abundance from cobble and boulder shores has been appended to the existing database collected by Davidson Environmental Ltd. since July 1995. Data collected during the present study used the same methodology so that the results would be comparable.

The results from the 2002 report show the following:

Cast Animals

- The variety and abundance of species washed ashore at control and impact sites remained at comparable low levels throughout most of the 2369 day monitoring study. The exceptions were November 1996, when the number and density of species washed ashore at impact sites peaked, while a smaller pulse occurred in February 2000. The peak and the period of elevated abundance recorded in November 1996 and February 2000, coincided with the

[27] Davidson, RJ. August 2002. Biological monitoring of Tory Channel and Queen Charlotte Sound in relation to the 18 knot speed restriction. Prepared by Davidson Environmental Limited for the Marlborough District Council. Research, Survey and Monitoring Report No. 423.

summer season of the fast ferry and the high boat loading due to the holiday period. The number of species and their abundance remained relatively low in relation to the imposition of the 18 knot speed restriction.

Intertidal Cobble Shores

- Overall, the numbers of species and number of individual molluscs recorded from under and on cobble and small boulders at control locations remained relatively consistent over the duration of the 2504 day study. Relatively small fluctuations did, however, occur at particular times of the study. At impact sites on most sample occasions, the number of species and number of individual molluscs were lower compared to control sites. As control and impact sites were environmentally comparable, the only plausible explanation for this difference was the waves generated from ferries at impact sample sites. No other environmental differences between impact and control areas could account for the substantial differences recorded during the present study.

The number of species and the number of mobile mollusc individuals on and under cobble and small boulders increased following the imposition of the 18 knot speed restriction. This phenomenon was more obvious for the number of species data than for the number of individual animals. Observations at the impact sites suggest that the cobble and small boulder substrata have become more stable following the introduction of the speed restriction. This is most apparent at the lower tidal levels where algae is now often found growing on the surface of cobble and small boulders where it was not previously. It should be noted that these results are preliminary as the speed restriction had only been in place a period of approximately 400 days during the February 2002 sampling event.

Shallow Subtidal Cobble Shores

- Kina densities at pooled impact sites at cobble shores were lower than pooled control sites. The reason for this phenomenon is probably related to ferry wakes. Kina were one of the most regularly recorded species from cast animal quadrats at impact locations. Further, kina appear to be intolerant of large waves that result in animals being dislodged and washed up the shore. No obvious change in kina abundance was recorded in relation to the imposition of the 18 knot speed restriction.

- No obvious differences between paua populations living on cobble habitat at impact and control sites were detected during the study. This was probably due to the very low numbers of paua present at most of sites investigated during the present study.

- In contrast to impact sites, large-scale variation in cats eye snail abundance occurred at all impact sites during the early period of the monitoring programme. Following January 1997, the abundance of cats eye snails declined at impact sites to a level comparable to control sites. Previous to January 1997, the density of cats eyes was dramatically higher at impact

sites compared to control sites. These densities declined following this period and remained comparable between impact and control treatments. Cats eye snail densities increased at impact and control sites following the imposition of the 18 knot speed restriction. It is too early to tell whether the increase at impact sites is due to the speed restriction.

Intertidal Bedrock Shores

- Pooled intertidal bedrock control sites supported more species than at the impact sites. Impact sites with relatively vertical shore topography and close to the ferry route supported the lowest number of intertidal bedrock species. Observations at these sites suggest that the mobile species such as topshells, whelks and snails were rare or uncommon, often being restricted to small cracks and fissures. In contrast, these species inhabited open surfaces as well as cracks and fissures at control sites.

- More cats eye snails were recorded from intertidal bedrock control sites, but this difference was only significant on two of the three sampling occasions. Their virtual absence or low abundance from some impact and control sites suggests that factors other than waves may also be operating that influence their abundance. Cats eye snail abundance increased at the impact treatment over the duration of the 442 day study. It is too early to tell if this increase was due to the imposition of the 18 knot restriction.

- The topshell (*M. aethiopos*) was consistently uncommon at intertidal bedrock impact sites compared to control sites. Topshell abundance increased to a small degree at the impact treatment over the duration of the 442 day study. It is too early to tell if the increase at impact sites was due to the imposition of the 18 knot restriction.

- Significantly more oyster borer whelks were recorded from intertidal bedrock shores away from the ferry route on all sampling occasions. Oyster borer abundance increased at both impact and control treatments over the duration of the 442 day study. It is too early to tell if the increase at impact sites was due to the imposition of the 18 knot restriction.

Subtidal Bedrock Shores

- The number of mobile species recorded from two subtidal bedrock depth strata (i.e. 0-0.5 m and 1.5-2.0 m) was higher at control sites compared to impact sites. This difference was not significant at the deep strata, but was significant at the shallow strata on the first two of the three sampling occasions.

- Cats eye snail abundance was lowest at bedrock impact sites in the shallow strata and highest of the two treatments at the deep strata. These data suggest that cats eye snail abundance in the shallow strata have been reduced probably due to wave action from ferries. A small increase in cats eye snail abundance was recorded over the duration of the study at shallow impact sites.

- The density of topshell was higher at bedrock subtidal control sites at both depth strata compared to impact sites.

- Kina were more abundant in the shallow strata compared to the deep strata for both treatments. This may be due to a greater abundance of palatable algae in the shallow habitats. Although the abundance of kina varied both between treatments and within individual sites, the overall densities for all control and impact treatments were not significantly different.

- The abundance of 11 arm seastars was relatively low from both impact and control treatments. This species was also often widely spaced and patchily distributed. As a consequence there was little or no difference in the statistical terms between the two treatments.

- The abundance of sea cucumber was relatively low from both impact and control treatments. This species was also often widely spaced and patchily distributed. On all occasions they were more abundant from the pooled control treatment. This difference was significant in the shallow strata on one occasion, whereas they were consistently more abundant in the deep strata.

The report concludes that based on two sampling events following the imposition of the speed restriction, it is impossible to conclude that the 18 knot speed restriction has resulted in a recovery of bedrock and cobble shore communities. It was considered clear, however, that at particular intertidal and subtidal sites and for particular species, there was an increase in the number of species and their abundance. While the results are preliminary, they have occurred at too many sites to be coincidental. Davidson concludes by strongly recommending that bedrock and cobble shore sites be monitored into the future to determine if the speed restriction will result in a recovery of biological life along the ferry passage route.

Part G: Assessment Against Section 32 of the RMA

As set out at the beginning of this report, section 32 of the RMA sets out a duty that the Council has to discharge before adopting any variation to the Proposed Marlborough Sounds Resource Management Plan. The duty under section 32 has to be carried out before the Council adopts any objective, policy, rule or other method in undertaking a variation to the Plan and has the following requirements:

1. It has to be carried out in the context of achieving the purpose of the RMA.

2. The Council has to have regard to:

    - the extent (if any) to which the objective, policy, rule or other method is necessary in achieving the purpose of the RMA;

    - other means that may be used; and

    - the reasons for and against the proposed objective, policy, rule or other method, the principal alternatives and taking no action where the RMA does not otherwise require.

3. An evaluation is required by the Council of the likely benefits and costs of the principal alternative means, including in the case of any rule or other method

    - the extent to which it will be effective in achieving the objective or policy;

    - the likely implementation costs; and

    - the likely compliance costs.

4. The Council has to be satisfied that any objective, policy, rule or other method is

    - necessary to achieve the purpose of the RMA; and

    - is the most appropriate means of exercising the function relative to other means, having regard to efficiency and effectiveness.

The Ministry for the Environment's guide to using section 32 of the Resource Management Act 1991, "What are the options?", states that the purpose of the section 32 process is to help councils make better resource management decisions. The guide sets out three important aspects of that process, which are as follows:

- achieving better environmental outcomes;

- ensuring that the costs borne by affected parties are the least practicable, consistent with achieving the purpose of the RMA; and

- clarifying why a council considers that the plan provisions it has adopted are necessary, and are more appropriate (efficient and effective) than the alternatives.

The Council considers that the process it has gone through in identifying the resource management issue and the various steps it has taken in considering how to deal with that issue, have assisted in reaching a more robust decision that will ultimately achieve better environmental outcomes for the community. This section of the report then, draws together the various steps in the process, against the technical background of the requirements of section 32 of the RMA.

The Resource Management Issue

The Council has identified and validated a resource management issue. The issue has been expressed in the variation as follows.

> *"Ships capable of generating a significant wake in enclosed waters have the potential to conflict with the range of other coastal users and values and generate adverse environmental effects."*

The reasons for considering this to be a resource management issue that should be addressed through the Plan are as follows.

- Evidence shows, that the use of waterways within Tory Channel and Queen Charlotte Sound by certain forms of shipping activity, has not been managed within the existing framework of the Plan in a way that achieves the purpose of the RMA. This view is supported by the live references to the Environment Court on the existing Plan provisions.

- As a consequence of the evidence gathered, the Plan does need to make provision for shipping activity in some form given the presumptions in sections 12(1)(c) and (e) and 12(3) of the RMA.

- The waters of the Marlborough Sounds where the national transportation route is situated, is a natural resource that needs to be sustainably managed. The route provides an important link between the North and South Islands.

- Shipping activity using the Marlborough Sounds contributes to the social and economic wellbeing of people and communities.

- There has been widespread community concern as to the more recent effects of shipping activity, initially from the fast ferries and more latterly from the newer conventional ferry, the Aratere.

- The environment is potentially at greater risk if is not appropriately managed given the likely technological advances in ship design that point to larger and faster ships operating in the

Sounds' environment. The Council believes that this contributes to a significant need for a framework to deal with the unknown potential effects of shipping activity to be implemented through the Plan.

- The RMA can deal with wider environmental effects whereas one of the principal alternatives, the Navigation Bylaw 2000, can only consider the narrower issues of safety.

- Addressing the issue in the Plan will be effective in making a significant contribution to sustainably managing the coastal marine area, particularly in the Tory Channel and inner Queen Charlotte Sound area.

The Necessity Test

In achieving the sustainable management purpose of the RMA, the Council:

- must recognise and provide for matters of national importance as set out in section 6;

- shall have particular regard to other matters in section 7; and

- shall take into account the principles of the Treaty of Waitangi in accordance with section 8.

Necessity then in terms of section 32 of the RMA, needs to be considered in the context of the purpose in section 5 of the RMA, but also in terms of the principles set out in sections 6, 7 and 8. The following assessment canvasses those aspects of section 6, 7 and 8 of particular relevance to this issue.

Natural Character

The preservation of the natural character of the coastal environment and its protection from inappropriate subdivision, use and development is a matter of national importance that the Council shall recognise and provide for in achieving the purpose of the RMA. Chapter One of the NZCPS expresses ways in which the natural character of the coastal environment can be preserved. It links natural character preservation with a number of elements, which in themselves or in combination, are essential or important parts of the natural character of the coastal environment. These key elements include coastal landforms; indigenous flora and fauna, and their habitats; water and water quality, including marine ecosystems; scenic or landscape values; and cultural heritage values. All parts of the Marlborough Sounds have some or all of these qualities and to that extent, all have some degree of natural character.

The Plan identifies a number of natural character areas for land and water in the Sounds. These areas are described in Appendix Two of Volume One. The Plan directs, in its Methods of Implementation 2.3 for Chapter Two – Natural Character, that those undertaking changes to the Plan are to have regard to these natural character areas.

The natural character areas are based on a range of biophysical and ecological parameters, which collectively describe the distinctiveness of the natural character within each natural character area. (The parameters condense the natural character components described in Chapter One of the NZCPS.) For the Tory Channel and Queen Charlotte Sound marine natural character areas[28], the near-shore marine communities are identified as being very 'depressed', where exposed to the effects of wakes from some large vessels.

As much as the ecology of the coastal marine area contributes to the overall natural character of the area, the variation contributes to preserving that natural character by offering potential for restoration of near shore communities. This is supported to some extent in Davidson's report on the monitoring of boulder and cobble shores subsequent to the imposition of the Navigation Bylaw 2000[29]. While that report concluded it was too early to say that the 18 knot speed restriction had resulted in a recovery of bedrock and cobble shore communities, there were particular sites where an increase in the number of species, and their abundance, had been recorded.

The Tory Channel and Queen Charlotte Sound natural character areas are also characterised in the Plan by clear waters with low turbidity and sedimentation levels. The variation assists in retaining these aspects given the reduced energy environment in near shore areas. The speed at which the high speed ships previously travelled in the Sounds, resulted in poor water clarity in the near shore area with the wake energy disturbing sediment.

The collective characteristics described in the Plan for the Tory Channel natural character area are as follows:

> *"Sheltered; clear, cool waters; strong currents; narrow cobble fringe bordered by clean sands in channel; kelp and sea lettuce"*

The redistribution of sediments from the shoreline in Tory Channel, at the time the high speed ships were operating at faster speeds, and the removal of sea lettuce from the shoreline appear to have altered the description of natural character for the Tory Channel area. To what extent these aspects may return to what was previously considered an important part of the natural character of Tory Channel, is too early to determine. However, putting in place a management regime to monitor and adapt to increased understanding of the cause and effect relationship of ship wake on these elements is more consistent with the overall precautionary approach appropriate in the coastal marine area.

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[28] Proposed Marlborough Sounds Resource Management Plan - Volume One: Appendix Two. Natural Character Areas G. Marine – Tory Channel and H. Marine Queen Charlotte Sound.

[29] Davidson, RJ. August 2002.

Human perceptions of what constitutes natural character will obviously differ from person to person and from location to location in the Sounds. However, there is strong correlation between those elements that the NZCPS considers contribute to natural character and the characteristics associated with the Sounds that were identified by those taking part in the Corydon nationwide survey. In this survey, four of the first six characteristics associated with the Sounds, can be considered to be natural character elements: scenic beauty, high water quality, distinct landforms and native bush. These characteristics also bore a strong relationship to the qualities of the Sounds most valued by respondents to the survey. When asked what human activities could potentially damage the qualities most valued in the Sounds, respondents cited 13 different types of activity. The activity that registered the highest level of concern in terms of its potential to damage every one of the qualities most valued, including natural character elements, was ferry operations[30].

The variation is therefore seen as necessary in retaining the collective elements of natural character of Tory Channel and Queen Charlotte Sound as described in the Plan and to enhance these characteristics by way of restoration where practicable.

Public Access

Public access to and along the coastal marine area is another matter of national importance that must be recognised and provided for by the Council. New Zealanders have a high expectation that there will be free and unrestricted access to and along the coastal marine area.[31] This is reflected in the NZCPS, which includes as one of the general principles, the following:

> *"People and communities expect that lands of the Crown in the coastal marine area shall generally be available for free public use and enjoyment" - General Principle 5*

The Plan states that the RPS advocates the continued recreational use of marine resources as being essential to the continued social wellbeing of the community. In this context it is appropriate that the Council places a high priority on maintaining public access for recreational purposes in the Sounds.

The social impact assessments and surveys undertaken by Corydon Consultants Ltd, the Aratika Associates report[32] and the comments received to the Council's two discussion

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[30] See Appendix 3 – Activities seen to be potentially damaging to the Sounds: Table 23 from Corydon Consultants Ltd. August 2000.

[31] The New Zealand Coastal Policy Statement commentary has taken "along the coastal marine area" to mean along the landward edge of the coastal marine area and within the coastal marine area itself.

[32] Aratika Associates. October 2001. The Impacts of Fast Ferry Wash on Te Atiawa. Prepared for Te Atiawa Manawhenua Ki Te Tau Ihu Trust.

documents, clearly indicate that public access within and along the margins of the coastal marine area, has been affected by the operation of high speed ships, in particular. The Corydon report[33] noted that the ways in which people have had to change their previous patterns of behaviour to accommodate or minimise the effects of the fast ferries, and the degree to which these changes inhibit freedom of choice and social interaction, are measures of social impact. Respondents to the survey undertaken by Corydon in 2000, showed that many people organised their daily schedules (especially boating activities, but also use of the foreshore) so as to avoid fast ferry sailings. The report notes that activities that were particularly affected included launching and taking in of boats, loading and unloading boats at jetties, sailing, diving and fishing in Tory Channel, and swimming or walking along beaches. The fast ferry wash had also had a negative impact on shore based and near shore activities, including picnicking and swimming.

The Aratika Associates report[34] describes the unhindered access that Te Atiawa iwi members had to Queen Charlotte and Tory Channel prior to the establishment of the fast ferry. The report states that:

> *"With a safe, quiet, peaceful enjoyment, the ability to gather kaimoana was normal. Kaimoana gathering was dependent on weather, tides and cultural knowledge. However, since the fast ferries have been in operation, it is the ferry wake that has governed the use of the area. This has a direct impact on the cultural relationship with the area. From a guardianship point of view access to the area is no longer considered safe, thus diminishing the tangata whenua's access to the area."*[35]

The post bylaw survey undertaken by Corydon Consultants Ltd, indicated that while some people still modify their use of the coastal marine area and its margins to avoid fast ferry sailings, most of those who had made changes in response to the fast ferries initially, have now readjusted since the ferries were slowed.

The community ability to use the coastal marine area and its margins is important in the context of the Council's role of recognising and providing for the maintenance and enhancement of public access in terms of section 6(d) of the RMA. The Plan has not otherwise restricted public access for the matters it is able to in terms of the NZCPS and the RPS. Some restrictions do exist around port and marina activities, and to some locations (which are generally islands), to protect special values such as endangered wildlife but, by and large, there is unhindered public

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[33] Corydon Consultants Ltd. August 2000.

[34] Aratika Associates. October 2001.

[35] Ibid. p.20

access to and along the coastal marine area of the Marlborough Sounds. Although it can be argued that from a strictly physical sense, the public is not restricted from using the coastal marine area and its margins along the ferry route, the reality is that many people have changed their use of and activities along this route. These changes as indicated through the various surveys and community consultation, suggest that public access is not being maintained or enhanced as envisaged by section 6(d) of the RMA. Accordingly, the Council considers that the variation is necessary to ensure that public access is maintained and enhanced in the area to which the speed controls will apply.

Maori Culture

Consideration of Maori issues is both a matter of national importance under section 6 of the RMA and also a matter that must be had regard to under section 7.

The Plan describes the tangata whenua as being kaitiaki of coastal resources. As such tangata whenua have the responsibility for ensuring that the mauri (or life essence) of these resources is protected. The mauri of the resource embodies a spiritual as well as physical essence. From the Maori perspective, damage to resources also carries spiritual damage. Protecting the mauri, maintains the integrity of a particular resource, and ensures that it is protected for future generations. The concept of mauri therefore, imposes a discipline on tangata whenua as kaitiaki, to ensure that the mauri of the resource is protected. In this sense, the Plan recognises the role of tangata whenua as kaitiaki for the coastal environment and this is advocated through the Objectives and Policies in 6.1.2 of Volume One.

The Aratika Associates report[36] provides a brief history of Te Atiawa, stating that in the early 1820s many Te Atiawa people moved south from their ancestral lands at Taranaki, and that by 1831 a great number had settled in Queen Charlotte Sound. Early settlement by Te Atiawa was mainly in and around Arapawa Island. There were a number of villages through the length of Tory Channel and a Te Atiawa Chief, Huriwhenua, occupied Moioio Island. The island was abandoned following his death in about 1845. He was buried on the island and the island was, accordingly, made tapu.

Over the time Te Atiawa have been in the Tory Channel / Queen Charlotte area, they have established customary use rights which the Aratika Associates report[37] identifies as remaining central to the cultural identity and wellbeing of the Te Atiawa in Te Tau Ihu. The Plan also recognises this area as being of significance for Te Atiawa.

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[36] Aratika Associates. October 2001.

[37] Ibid.

Ever since the arrival of the high speed ships in the Marlborough Sounds, iwi, most notably Te Atiawa, have voiced concerns as to the effects of the high speed ships on the following:

- The ability to gather kaimoana;
- A decline in the availability of kaimoana;
- Shoreline safety and safety in boats;
- Damage to waahi tapu sites; and
- A loss of cultural knowledge and mana.

In the recommendations of the Aratika Associates report, it is considered that the variation to the Plan, to control the adverse effects of ferry wake, offers an opportunity to uphold the issues that Te Atiawa consider significant and ensure that the cultural sustainability of the iwi will be there for future generations. The Council therefore, in considering section 6(e) of the RMA, believes that the variation is necessary to recognise and provide for the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga.

Maintenance and Enhancement of Amenity Values and Maintenance and Enhancement of the Quality of the Environment

Maintenance and enhancement of amenity values and maintenance and enhancement of the quality of the environment are matters that the Council shall have particular regard to under section 7 of the RMA.

The social impact assessment work undertaken by Corydon Consultants Ltd has quite clearly shown that amenity values[38] and the quality of the environment in Tory Channel and Queen Charlotte Sound has been affected by the operation of the ferries. Several of these assessments have been undertaken with specific regard to the operation of the ferries, however, in 2000 the Council commissioned Corydon Consultants to design and carry out a national survey that would provide the Council with information on the following:

- The extent to which the Sounds can be considered a recreational area of national importance;
- The level of importance people attach to the Sounds as a national icon;

[38] Amenity values are defined in section 2 of the RMA to mean:
"Those natural or physical qualities and characteristics of an area that contribute to peoples' appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes".

- The particular qualities that people value about the Sounds; and
- The types of development that people consider pose a threat to the qualities which they particularly value in relation to the Sounds

While the survey was undertaken to determine the perceptions of the Marlborough Sounds in relation to the impacts of marine farming, it does provide very useful insight on the extent and ways in which the Marlborough Sounds contribute to the wellbeing of residents of Marlborough and New Zealanders as a whole.

The survey showed that New Zealanders as a whole attribute a high degree of importance to the Marlborough Sounds, both as a recreational resource and as a contributor to New Zealand's image, both at home and overseas. A high degree of concern about activities in the Sounds, which are seen to be potentially damaging to the natural environment, was also evident.

As indicated in Part F of this report the impact of ferry operations on the Sounds was the primary concern of respondents to the survey - see Appendix 3. This shows, that the most commonly mentioned threat to the attributes that respondents most valued in the Sounds was ferry operations, cited by 308 of the 828 respondents who considered there were threats. Ferry operations were seen as a threat by 39% of respondents who placed high value on water quality, by 35% of those who valued the peace and tranquillity of the Sounds, and by 27% who valued water-based recreation. The next most commonly cited threats were residential subdivision (99 respondents, or 12%) and resort development (85 or 10%).

The qualities of scenic beauty, peace/tranquillity, wilderness/naturalness, remoteness, pristineness, high water quality, native bush, restfulness/retreat, water-based recreation that were described by respondents as being those most valued in the Sounds, all contribute to both amenity value and the overall qualities of the Sounds' environment.

Respondents to the Council's two discussion documents also discussed how the fast ferries particularly, have affected their use and enjoyment of Queen Charlotte Sound and Tory Channel and detracted from the quality of life. This aspect has been discussed to some extent under the matters of national importance concerning public access.

Adoption of the variation will contribute in ensuring that amenity values and the quality of the Sounds' environment are maintained and enhanced.

Section 8 Treaty of Waitangi

Although not specifically referred to previously, consideration of the principles of the Treaty of Waitangi has been taken into account in the development of the variation. Consultation with iwi, most particularly Te Atiawa, has occurred through the various stages of developing the variation. Te Atiawa have been active in the issue of ship wake and ship speed since the

introduction of the fast ferries in the Sounds and have highlighted their concerns on a number of occasions and through various forums including the 1995 Planning Tribunal case, the Fast Ferry Reference Group meetings, subsequent meetings with Council staff and correspondence. The Council is well aware of the concerns of iwi and in promoting the variation has attempted to redress some of these concerns.

Means Considered and the Reasons For and Against Adopting Them

Before deciding to include provisions within the Plan to address the resource management issue, the Council considered a range of means (or options) to achieve the purpose of the RMA. This was against the background of the following parameters:

- The RMA specifically requires the preparation of the regional coastal plan.
- The RMA also provides that the Council has the functions of controlling activities on the surface of water in relation to the coastal marine area. It further provides that provision for such activities can be included within regional coastal plans (Second Schedule to the RMA).
- The Council has to have some provision within the Plan for shipping activity, in terms of the presumptions in section 12(1)(c) and (e) and 12(3) of the RMA against a background of the adverse effects that have been experienced as a result of shipping activity in the Sounds.
- In setting out the various means the Council knew that it had to resolve or settle references to the Plan that had been lodged on provisions controlling the "*use of surface waters*".

The Council considered that given these parameters and the validation of the issue through the various initiatives and monitoring etc undertaken, this is a situation where the RMA does require action to be taken.

Various options for considering how to deal with issues concerning shipping activity were discussed in the first discussion document prepared by the Council on this matter and included:

- Maintaining the status quo;
- No regulatory controls;
- Regulatory methods;
- Use of economic instruments;
- Self regulatory methods;
- Central government action; and

- Establishing a passenger port in a new location.

In addition, the use of the Navigation Bylaw 2000 established under the Local Government Act 1974, was considered as an option.

These options were considered individually and in combination.

5 After completing the first community consultation phase and considering certain legal ramifications, a number of the options were discarded. The reasons against adopting these was addressed in Part C and are summarised as follows:

Maintain the Status Quo	The reason the Council did not adopt this method was that the existing Plan provisions were considered to be inadequate in that they could not be enforced and had been referred (appealed) to the Environment Court. The Plan needed to be changed in some way to deal with the matters raised in the references. The reference process was not considered the most appropriate way of introducing new provisions into the Plan, given the extensive community interest in the issue, both at a local and national level and given their limited scope. The status quo as an option in terms of using the Navigation Bylaw 2000 is discussed later.
No Regulatory Control	This method allowed for new provisions to be introduced into the Plan to allow ships to operate unrestricted anywhere in the Marlborough Sounds. No regulatory control under the RMA would have relied on use of the Navigation Bylaw 2000. The method was not adopted as it was considered from the studies and the consultation undertaken, that there were adverse environmental effects arising from shipping activity in the enclosed waters of the Marlborough Sounds that ought to be addressed under the RMA. These effects were wider than those that could be dealt with under the Navigation Bylaw 2000.
Self Regulatory Methods	The Council considered the possibility of a self regulatory regime, where the operators managed the effects of their activities on the environment, to standards set by the regulatory body. Operators of the faster vessels, in particular, do not consider that there is an issue that needs to be dealt with through the RMA as they believe there are no adverse environmental effects from ship wake. Consequently the operators believe that there should be no controls on their activities. Given this, the strong community opposition and the Council's view that there are adverse effects from some forms of shipping activity, the Council did not adopt self regulation as an

	option. It did however, consider a degree of self regulation could be encouraged, through participation in community forums, monitoring and information sharing.
Central Government Action	The main way in which central government was seen as being able to be involved was through the development of national policy statements or national environmental standards through the RMA. However, the Ministry for the Environment did not support the development of these, for shipping activity. Nor did it seem likely that central government would introduce other legislation to take the matter out of the Council's jurisdiction. Although the inter-island ferry route between the North and South Islands is a significant resource, the Council considered that it had sufficient tools under the RMA to address the issue.
Establish a Passenger Port in a New Location	The only way in which operators could be forced to move away from the Marlborough Sounds would be to have a prohibited activity rule that prevented shipping activity taking place within the Sounds. The Council considered this would be an extreme response, which could not be supported by the available evidence.

Other means that were explored in more detail but then not adopted, included use of the Navigation Bylaw 2000, environmental partnership agreements and some aspects of economic instruments. For each of the methods considered by the Council, a brief summation of the reasons against adopting each is set out below.

Navigation Bylaw 2000	The Navigation Bylaw 2000 was introduced in December 2000 under the provisions of the Local Government Act 1974, a separate process distinct from the RMA. The provisions of the Bylaw control the speed of ships such as fast ferries in Queen Charlotte Sound and Tory Channel only in terms of generated wake height. (The Bylaw does not affect the conventional ferries currently operating.) Ships cannot exceed a speed limit of 18 knots unless they meet a wave height standard set out in the Bylaw. Any operator wishing to exceed this speed level must apply to the Council but before a permit can be granted, the operator must be able to demonstrate that the ship complies with the wave height standard. Through the assessments undertaken by Corydon Consultants Ltd, it is apparent that introduction of the Bylaw has brought significant improvements for the people who live and or recreate in the Sounds.

Corydon Consultants also concluded that the controls proposed through the Plan would bring about further environmental benefits to the Sounds over and above those already achieved by the slowing of the Lynx, but that these would not be of the same magnitude as those accruing from the Navigation Bylaw 2000.

The indications from biological monitoring undertaken since the introduction of the Bylaw, are that at some sites and for particular species, there was an increase in the number of species and their abundance. However, the conclusions in the monitoring report indicated that it was impossible to tell at this early stage whether or not the 18 knot restriction has resulted in a recovery of biological communities. The report recommended ongoing monitoring to determine if the continuation of the speed restriction will result in a recovery of biological life along the ferry route.

Notwithstanding the results from the social impact assessments and the biological monitoring undertaken, the Council did not consider use of the Bylaw, as a method by itself, was sufficient to address all of the environmental effects of shipping activity for a number of reasons. These include the following:

- The Bylaw can only address safety issues whereas the RMA is able to deal with a broader range of environmental issues under the purpose and principles set out in sections 5, 6, 7 and 8. (Safety issues are also valid issues to consider in the context of section 5.) Although it seems that there are environmental benefits arising from the imposition of the Bylaw, those benefits (other than the safety benefits) are incidental consequences of the Bylaw rather than its purpose.

- There is a concern that a shift to larger and faster ships may bring effects of a similar nature experienced with the advent of the fast ferries. The Council wants to be in a position to manage all of these effects should they occur, not just effects related to safety.

- Although the Council has state of the environment monitoring responsibilities under the RMA for the coastal marine area, those who create adverse effects on the environment should also contribute to the ongoing monitoring of these effects. There is no ability within the Bylaw to require monitoring of the effects by individual operators of their shipping activities. By having rules

	within the Plan to address adverse effects of shipping activity, there can be monitoring requirements imposed on shipping operators to contribute to the costs of monitoring. • The sanctions for non-compliance under the provisions of the Bylaw are generally weaker than those under the RMA. • The use of the RMA also allows for wider rights of public participation and community consultation, requires assessments in terms of the costs and benefits of imposing regulations and allows for recourse to the Environment Court and beyond. The Bylaw does not have the same rights of consultation and challenge. The Council is not only concerned with managing the adverse effects of shipping activity now, but also into the future. The Bylaw is considered to be too restrictive and limited in purpose to allow the Council to effectively and efficiently manage these effects into the future, whereas the overall adaptive management regime proposed through the variation, is considered to be more responsive.
Environmental Partnership Agreements	The Council envisaged that environmental partnership agreements would be formed between consent holders and the Council to assist in establishing an ongoing monitoring programme, a key element of an adaptive management regime, and would provide a forum to review the effectiveness of the controls imposed (as consent conditions) at regular intervals. This was a non-regulatory method intended to complement the regulatory components of the variation, such as rules governing speed and wave height. The method was also considered to be consistent with the participatory intent of the RMA. It was considered that very little financial cost would be involved in setting up the agreements. They were viewed more as a vehicle for managing matters such as monitoring protocols that would already be required by the Council as consent conditions. The agreements may allow for a more participative approach to the monitoring programmes and their adaptation as more is learned about the effects of ship wake on the environment. However, this can also take place without the formal agreements being established through review conditions on consents (although this would occur at the sole discretion of the Council). To only encourage the formation of such groups was considered possibly a little meaningless, as this would not provide the Council with any real teeth

	to require consent holders to participate and issues of consistency would arise if there were a number of consent holders, some participating, some not. To not develop the agreements at all would rely on the Council to carry out and require monitoring in terms of the monitoring provisions of the RMA (in the form of consent conditions), and set out review conditions. This would still allow the Council to implement coordinated monitoring programmes but would impinge upon the ability of consent holders to assist with the management of such matters in a less formal way. On balance, it was concluded that while environmental partnership agreements would enable the details of the monitoring programmes envisaged to be set out, it might be that the agreements are not necessary for achieving the purpose of the RMA. It may be that these objectives could be met through the ability of the Council to require monitoring of consents and consent conditions, in terms of sections 35 and 36 of the RMA.
Use of economic instruments	The Council did not adopt in a broad sense the use of economic instruments to manage the environmental effects of shipping activity as it considered there were a lack of methods available to directly manage such effects. It is difficult to address the intangible environmental effects such as loss of recreational amenity values with economic instruments. The Council did however, consider that financial contributions as a method could be used to offset some of the unavoidable adverse effects of shipping activity and also for research and monitoring. In this sense, the Council has adopted some elements of economic instruments in the overall framework for dealing with the issue.

The reasons for adopting the various methods and objective and policies set out in the variation, are as follows:

Objective and Policies	The objective and policies provide the framework for the Council to manage the adverse environmental effects from ships that are capable of travelling at speed or generating significant wake in enclosed waters and which have the potential to conflict with a range of other coastal users and values. Although very little comment was received on the objective and policies from those responding to the draft variation, some changes have been made to the policies as a number were considered to be methods

	rather than policies. It is intended that the policies will now provide a more robust base on which any subsequent resource consent applications can be assessed. The reasons for considering that the objective and policies need to be adopted are as follows: • The actual and potential adverse environmental effects of some ships are considered to be significant. • The public has expressed concerns about the operation of ships within the enclosed waters of the Marlborough Sounds in terms of the effects on the environment and public safety issues. • It has been demonstrated that the operation of some ships in the Sounds has had an effect on tangata whenua values, particularly on Te Atiawa's long association with Tory Channel and Queen Charlotte Sound. Te Atiawa are also concerned about the effect that some of these ships have had in terms of access to traditional food sources. • It is considered necessary to provide for the operation of large high-speed ships as they contribute to the social, cultural and economic wellbeing of people and communities in terms of section 5 of the RMA. Section 5 also requires the Council to avoid remedy or mitigate the adverse effects of activities on the environment. The objective seeks to achieve these dual goals. • The operation of some ships in the enclosed surface waters of the Marlborough Sounds may have an impact on the natural character of the coastal environment and on indigenous flora and fauna. These are matters of national importance, which need to be addressed. • The objective is necessary in order for the Council to fulfil its responsibilities in terms of section 30(d)(vii) of the RMA. • The objective and policies are also considered necessary in order to be consistent with resource management documents such as the NZCPS, the RPS and the Plan.
Other Legislation	The inclusion of this method simply provides information on other legislation relevant to navigation and safety issues, which are under the control of the Council's Harbourmaster. Although it is not absolutely

	necessary to be included within the variation, it is a method that can also be used to address navigation and safety aspects specifically. It also signals that there may be occasions where additional constraints can be imposed on shipping activity e.g. an inner harbour speed limit of 5 knots.
Rules and Area Identification	The regulatory method initially looked at 2 options to control the effects of certain types of shipping activity. The first was to prohibit ships travelling faster than a certain speed. This option was considered to have potential if applied to particularly sensitive areas of the Sounds that were not able to sustain even minor adverse effects. While this would have provided certainty and is easy to administer, it was not thought sufficiently flexible to provide for shipping activity everywhere in the enclosed waters of the Marlborough Sounds. The Council did, however, adopt a prohibited approach to ships over a certain speed and wake threshold in Queen Charlotte Sound outside of the national transportation route. The second approach was to assess each ship on its merits when travelling faster than a certain speed. Assessment by application was seen as enabling an assessment of the environmental effects generated by a specific ship. Restrictions could be placed on the operation of ships so that the environmental effects would be minimised and ships with low environmental impacts could operate at higher speeds. This option was developed further to incorporate a wave height standard as a basis for resource consent requirements. A number of those responding to the draft variation raised concerns over the consequences of introducing rules to control the speed of ships. The concerns included the economic implications of slowing ships, the resulting availability of sailings and the degree to which national interests should prevail over any local or regional benefits to the environment. Of those supporting the rules proposed in the draft variation, there was widespread support for a combination of controls based on speed, ship type, area control and wake generated. The reasons why these were specifically adopted are as follows: **Area Control** The areas to which the controls apply are where the resource management issue has been most significant. This area coincides with the major transportation route between the North and South Islands with a national and international port established in Picton and at Shakespeare Bay. Research and monitoring on shipping activity in Tory Channel and Queen

Charlotte Sound has been extensive over a period of several years as this is where the larger and faster ships operate. By comparison, no such monitoring or research has taken place within Pelorus Sound as the vessels in this area are generally smaller and there have not been any widespread concerns expressed regarding ship wake and ship speed. If such issues do arise then the Council would need to undertake monitoring and research to determine their extent and how they should be managed.

Ship Type

The initial concerns regarding shipping activity in Tory Channel and Queen Charlotte Sound were related to the effects from the fast ferries. However there has been growing concern, highlighted particularly through the social impact surveys and responses to the Council's discussion documents, of effects from the newer conventional ferry, the Aratere. (Monitoring of ship wake by the Council's technical advisers has shown that the Aratere does produce measurably more severe wave effects than earlier conventional ferries operating in the Sounds.) The Council recognises that there is a trend towards larger and faster ships that may be either conventional or fast, and which may have different or greater impacts than previously or currently experienced. It is appropriate therefore that there is a framework in place to manage any such effects if they arise.

Speed

There was widespread community support for the introduction of controls to regulate the speed of ships in the Sounds, with many commenting on the positive effect that the Navigation Bylaw 2000 had had on the environment since its introduction, particularly on safety matters. There were a variety of upper and lower speeds suggested by the community. However, on the advice of its technical advisers and on the basis of monitoring and research undertaken, the speed limits adopted in the variation when used in conjunction with a wave height standard, are considered by the Council to be one of the most effective and efficient methods for managing the adverse effects of shipping activity.

Wave Height

The wave height standard, used in the Navigation Bylaw 2000, measures wave height in relation to wave period. The standard has to be met in order for a ship to be able to exceed specified speed limits. Use of the wave height standard is based on an assumption that the community generally accepts the effects caused by the conventional ships up to 2001 (although there is one exception to this – the Aratere). Although there

	were some reservations from respondents to the draft variation regarding the use of the wave height standard, there is currently no other recognised method of addressing the effects of ship wake that can be easily measured. In addition since the use of the this method through the implementation of the Navigation Bylaw 2000, there have been indications through the social impact surveys and the responses to the Council's discussion documents, that the bylaw has been effective in improving the quality of life, most noticeably safety. Therefore the wave height standard has been adopted as the most appropriate method at this time.
Advisory Group	A feature of the framework proposed by the Council is the establishment of an advisory group to act as a reference group to address issues on the effects of shipping activity in the Marlborough Sounds and to also review the effectiveness of controls imposed on operators. The advisory group is considered to be a key component of the adaptive management approach of the variation. When this method was initially promoted, it was envisaged that this group would take its membership from iwi, the community, the tourism industry, commerce, the shipping industry, the Department of Conservation and the Council. The use of an advisory group is a non-regulatory method intended to complement the regulatory components of the variation. The issue of vessel speeds/size and the associated effects from ship wake influence a wide range of coastal values, and it is envisaged that the advisory group comprises one method of assisting the community to have an ongoing, coordinated role in the management of these effects and influences. In the light of feedback received, it is considered that the concept of the group is generally regarded to be consistent with the adoption of an integrated approach to the management of the effects of shipping activity in the Sounds over time. It assists in allowing the community to have an input into the management of these effects without constant recourse to regulatory methods and enables actions to be initiated in response to a greater collective understanding about these effects.
Te Atiawa Partnership	The RMA already sets up a special relationship between local government and the tangata whenua of an area. It requires that the Council recognise and provide for the relationship of Maori with their ancestral lands, water, sites, waahi tapu and other taonga. It further requires the Council to have particular regard to kaitiakitanga, and to take into account the principles of

	the Treaty of Waitangi. The partnership on this particular issue recognises the special role of Te Atiawa as kaitiaki within Queen Charlotte Sound and Tory Channel, the area in the Sounds currently most affected by shipping activity. The partnership extends beyond being represented on the advisory group that will be established for managing this issue. It involves working with Te Atiawa on emerging issues, environmental enhancement and protection projects and monitoring in relation to the effects of shipping activity in Queen Charlotte Sound and Tory Channel. The Council believes in adopting this aspect of the variation that it will strengthen its overall relationship with Te Atiawa and further assist in giving recognition to the requirements in sections 5, 6, 7 and 8 of the RMA.
Monitoring Compliance and Enforcement	The Council considers that monitoring is a fundamental method to be used in managing the effects of shipping activity, particularly in view of the overall adaptive management regime being adopted. Monitoring is intended to take several forms. It will include monitoring required through conditions of consent, through the Council's state of the environment monitoring responsibilities under the RMA and in support of Te Atiawa's initiatives to monitor cultural and ecological effects on kaimoana from the wake of ships. The community's support for monitoring was evident through the responses to the draft variation. Many thought that ongoing monitoring was important in a number of areas including: • reviewing the wave height standard to ensure that it remains an appropriate method to manage environmental effects; • monitoring of both impact and control sites for effects on the shoreline, ecology and beach stability; and • ensuring that consent holders comply with speed requirements. Given the uncertainty in completely understanding the effects of activities on the coastal environment, collecting and analysing information will enable an assessment to be made with regard to the effectiveness and efficiency of the framework being established through this variation to assess the effects of shipping activity. In this regard ongoing monitoring is

	essential.
Financial Contributions	Clause 5 of Part I to the Second Schedule of the RMA provides that the Council may set out in its Plan, the circumstances when a financial contribution of money or land may be imposed, the manner in which the level of the contribution that may be imposed will be determined, and the general purposes for which the contribution may be used. Section 108(2)(a) of the Act provides that a resource consent may include a condition requiring that a financial contribution be made. Section 108(9) provides that a financial contribution made be required in the form of money or land (including an esplanade strip or esplanade reserve). Section 108(10) provides that a Council may not attach such a condition to a consent unless (a) the condition is imposed in accordance with the purposes set out in the plan; and (b) the level of contribution is determined in the manner described in the Plan. Accordingly, if the Council wishes to have the option of requiring a financial contribution, then it is necessary to set out the purposes for the taking of contributions, and the manner that contributions will be determined in the Plan. The aims of the financial contributions requirements included in the variation are to fund research and monitoring and the advisory group, and to offset unavoidable adverse effects of shipping activity. For the Council to take a financial contribution to 'offset' adverse effects generated by shipping activities, the 'public good' of the Sounds must be valued in some way. Academics have debated the issue of how to place a value on a public good for decades. The difficulty with the coastal environment, is that it is even more difficult to value it (than say land) as the benefits for each person are likely to differ markedly in both nature and scale depending on their specific value set. In addition, values will differ markedly depending on time and place. In short, it is not feasible to simply value the coastal environment as the amount someone would be prepared to pay to use it (or in fact preserve it). Accordingly, it becomes problematic to place a value on the adverse effects on the environment an activity might generate, and therefore how much to require in a contribution as a 'trade off' to those effects. Some effects are so intangible, that to place a monetary value on them would be difficult or impossible. Further, it is often difficult to 'prove' a causal link

between an activity and an outcome, where so many natural processes might give rise to the same or similar outcomes.

In terms of the feedback received on this issue, opinions appeared to vary between the view that financial contributions should not be used as a 'trade off' in order to allow the generation of adverse effects, to the view that contributions could be used for many uses, including repairing any damage caused by the activities consented to. Some considered that financial contributions were little more than a tax and that if the levels were set too high then these costs would be passed onto users.

It is considered that it is generally inappropriate to attempt to offset *some* adverse effects generated by the taking of financial contributions, as some adverse effects should either be completely avoided or mitigated in some other way. However, it may be appropriate in some circumstances for the Council to take a contribution where a decision is made to grant a resource consent with the knowledge that a certain effect will be generated, but on balance, that effect is acceptable given the countervailing positive effects e.g. the national benefit derived from the shipping industry within the Sounds.

Accordingly, provision has been included for such contributions in the variation, as well as contribution requirements for monitoring, research and the running of a Council established advisory group.

The Likely Benefits and Costs of the Principal Alternative Means

The Council's first discussion document *"Use of Large, High Speed Vessels in the Marlborough Sounds"* described a number of alternatives for managing the effects of large and high speed vessels. The consideration of benefits and costs of the various alternatives was undertaken through the consultation and submission process and the subsequent development of the methods to be included in a draft variation. The draft variation, which was also the subject of consultation and submissions, saw further refinement of the available alternatives and again the benefits and costs of adopting these. The preceding section of this Part of the report set out the alternatives considered and the reasons why these were or were not adopted.

The benefits and costs of those alternatives adopted, has also been explored through the additional investigations commissioned by the Council and which were discussed in Part F of this report. The Council is satisfied that the rules and other methods adopted will be effective in achieving the objective and policies set out in the variation. The Council has made an investment in science to determine

appropriate limits for the ongoing management of the effects of shipping activity, particularly in relation to the rules that have been developed.

The Likely Implementation and Compliance Costs

Te Atiawa Partnership

The costs of implementing a partnership role with Te Atiawa and ongoing costs associated with this are not considered to be significant. Consultation with Te Atiawa involves a commitment in terms of staff time to discuss issues. There would possibly be some costs associated with supporting specific monitoring of cultural impacts resulting from shipping activity in Queen Charlotte Sound and Tory Channel.

Advisory Group

It is envisaged that costs associated with the advisory group's activities would be imposed on consent holders. These costs are unlikely to be excessive and would effectively cover the costs associated with convening and managing such a group. A risk with the group would be to allow it to become too large, or it to become too cumbersome thereby restricting its effectiveness. This might arise from an attempt to draw membership too widely in an effort to ensure all groups within the community were represented. In order to offset these concerns clear direction guiding the membership of the group and defining its role has been included within the variation.

Monitoring/Research

With respect to monitoring and research, it is considered appropriate that the Council is able to recover costs for these tasks, when they are directly related to the activity and/or consent itself. This is envisaged in the RMA (sections 35 and 36). Although it is probably unnecessary to specifically provide for such charges in the variation as section 36 allows the imposition of such charges anyway, the Council has decided that it will include a requirement for contributions to cover monitoring within the financial contributions' provision so operators are aware of the full extent of what they might be required to contribute to.

The Council also undertakes state of the environment monitoring in the Sounds that will continue regardless of whether the variation proceeds or not. This is a cost to existing ratepayers.

Financial Contributions

The costs of implementing the recommended policy and methods are that the consent holder bears the financial cost of effects monitoring, research and remediation of adverse effects. It is possible (probable) that this cost will be passed to the users of the services. The benefit would be that those who hold the consents (and therefore those who use the service) are liable for the financial costs, rather than ratepayers of Marlborough, and/or individual property owners in the Sounds.

The alternative option is to not require contributions, or use a different method or ratio of determining the level of contribution than that promoted in the variation.

Retaining the ability to levy a contribution to offset adverse effects holds some advantages. Clearly there are national interest considerations in retaining an inter-island shipping route. Some effects from this activity may be unavoidable and an ability to provide a financial offset will be appropriate in some circumstances. The variation specifies when contributions will (or are likely to be) imposed, the manner in which the level will be determined and purpose for which they will be obtained. The actual dollar amount is not prescribed and this is a change from the draft variation.

Regulation

There are a number of costs associated with implementing the rules of the variation and the compliance costs. Mike Copeland has canvassed the economic costs of introducing the regulations in his report "Economic Assessment of Proposed Regulations of Shipping Within Marlborough Sounds to Manage the Effects of Ship Wake on the Environment". Corydon Consultants Ltd has assessed the social costs of introducing the regulations in its report "Social Impact Assessment of Proposed Regulation of Shipping Speeds within Marlborough Sounds". A summary of the findings from each of these reports is contained in Part F to this section 32 report.

Summary

The approach to the variation has been to introduce a co-regulatory approach where a mix of regulatory and non-regulatory measures is put in place to assist the ongoing management of effects from shipping activity. The approach relies at least in part on principles of adaptive management. This is important given that current industry trends are towards the use of larger, and faster ships which means that there will be potential to generate greater uncertainty about the nature and scale of environmental effects generated by shipping activity.

The framework of the variation provides certainty for all users of the Sounds as to an accepted or tolerated level of effect within a defined area where issues concerning shipping activity have been apparent. The proposed framework seeks to, where possible, avoid the adverse effects of shipping activity in these areas and where this is not possible, to mitigate these by, amongst other things, the imposition of regulations. In so doing, the life supporting capacity, particularly of coastal ecosystems is safeguarded and the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations is sustained.

The framework enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety but also ensures that inter-island ferry services are able to continue, which recognises the significance of the route between the North and South Islands.

The Sounds' community, and those who use the Sounds for recreational use, have Tory Channel and Queen Charlotte Sound specifically managed in respect of effects from shipping activity. This also

includes protecting their health and safety. In terms of cultural matters, the proposed framework also recognises the significance of the national transportation route and its surrounding area to Te Atiawa and ensures that their involvement in this matter is ongoing.

The Council's role in promoting the sustainable management of the natural and physical resources of
5 the coastal marine area carries the onus of ensuring that these resources and the qualities associated with them remain available for the use, enjoyment and benefit of future generations. Having regard to the preceding analysis the Council considers that the variation to the Plan is necessary to achieve the purpose of the RMA and is the most appropriate means of achieving the purpose of the RMA in managing the adverse effects of ship wake in the Marlborough Sounds.

10 (Appendix 4 sets out the variation to the Marlborough Sounds Resource Management Plan.)

Appendices

1. Supporting documentation and list of references

2. Matrix developed by Fast Ferry Reference Group

3. Table 23 from “Perceptions of the Marlborough Sounds and the Impacts of Marine Farms - Results of a Nationwide Survey”

4. Variation 3 to the Marlborough Sounds Resource Management Plan

Appendix 1

Supporting documentation and list of references

Supporting Documentation and List of References

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Appendix 2

Fast Ferry Reference Group Matrix

Ferry Effects Matrix

ISSUE	EFFECTS	Mitigation Required?	What Can Be Done?	What Information is Required?
Recreational Impacts				
DIVING SAFETY	Bodily displacement in surf zone causing impacts and abrasions	Yes	Modify generated wash Diver education	Survey divers Consult operators Wave attenuation studies
	Loss of visibility through entrained sediment causing separation of buddies and individual disorientation	"	"	"
BOATING SAFETY	Collision risk	"	Operator education Speed control	Survey owners
	Channel space restriction	"	Speed control Traffic limitations	"
	Regulation infringement	"	Enforcement	
	Loss of freedom	?	Operator education	
	Nodal compounding causing unexpected boat reaction.	Yes	Modify generated wash Owner education	Survey owner/operators
	Moored boats disturbance damaging boats and physical injury of occupants	"	Public education Speed control	Survey public Consult operators Wave attenuation studies
SHORE LINE SURF	Dumping of smaller persons and risk of their drowning	"	Public education Speed control	"
	Loss of personal effects including sweeping away of untended boats and equipment	"	"	"
	Reduced or lost access to the shoreline for reasons of potential hazard	"	"	"
Geomorphic Impacts				
BEACH MORPHOLOGY	Sediment grading alteration diminishing recreational amenity values	Yes	Modify generated wash	Research historical records Comparative studies
	Backshore / Foreshore Aggradation degradation	"	"	"
	Catchment damming	"	"	"
OTHER MORPHOLOGY	Retreat of bluffs and consequent upper slope instability	"	"	"
	Subsurface stability	"	"	Wave attenuation studies
BUILT INFRASTRUCTURE	Erosion of protective works , damage to jetties	"	"	"

Ecological Impacts

ENERGY CHANGE	Habitat alteration, biota loss or displacement	Yes	Modify generated wash	Comparative studies
	Sediment entrainment, extended periods of turbidity with negative impacts on biota	"	"	"

Cultural Impacts

EROSION	Loss / damage to waahi tapu sites	Yes	Modify generated wash	Research records, anecdotal data comparative studies
	Physical protection	"	"	"
HABITAT ALTERATION	Loss / reduction / accessibility of kaimoana	"	"	"
ECONOMIC	"	"	"	"
SOCIAL	Inability to sustain cultural heritage Loss of mana Improved transit times and tourism	"	"	"

Appendix 3

Table 23 from "Perceptions of the Marlborough Sounds and the Impacts of Marine Farms - Results of a Nationwide Survey"

Table 23: Activities seen to be potentially damaging to the Sounds

Attribute valued	No. of respondents	Percentage of respondents listing each attribute who mentioned each activity as potentially damaging												
		Residential Subdivision	Marine farming	Forestry	Ferry operations	Other commercial boats	Motorised recreation boats	Yachting	Port activities	Resort development	Bush clearance	Pollution	"Over-commercialisation / industrialisation	Other*
Scenic beauty	410	9.8%	5.1%	6.8%	30.0%	7.1%	8.5%	0.5%	0.5%	7.8%	5.1%	8.0%	4.6%	6.3%
Peace/tranquillity	263	6.5%	4.9%	4.2%	35.0%	12.9%	21.3%	0.4%	1.1%	6.8%	2.7%	5.3%	6.8%	8.0%
Wilderness/natural	192	13.0%	4.2%	5.7%	30.7%	9.9%	15.1%	1.0%	1.0%	13.5%	6.3%	10.4%	6.3%	7.8%
Remoteness	123	17.9%	5.7%	5.7%	22.8%	7.3%	14.6%	0	1.6%	15.4%	5.7%	5.7%	10.6%	12.2%
Pristineness	107	11.2%	4.7%	5.6%	29.0%	11.2%	18.7%	0.9%	1.9%	10.3%	6.5%	11.2%	3.7%	10.3%
High water quality	87	4.6%	8.0%	4.6%	39.1%	9.2%	20.7%	0	0	4.6%	5.7%	14.9%	4.6%	8.0%
Native bush	60	15.0%	8.3%	6.7%	28.3%	5.0%	16.7%	1.7%	0	11.7%	5.0%	5.0%	5.0%	8.3%
Restfulness/retreat/ holiday	55	9.1%	12.7%	5.5%	23.6%	10.9%	16.4%	0	0	3.6%	5.5%	3.6%	9.1%	10.9%
Water-based recreation	52	5.8%	13.5%	5.8%	26.9%	7.7%	9.6%	0	0	3.8%	1.9%	7.7%	3.8%	17.3%

*Other includes: over-crowding, over-fishing, excessive tourism activity, farming, mining, reclamation of land, logging, air traffic, oil drilling

Appendix 4

Variation 3 to the Marlborough Sounds Resource Management Plan

Variation 3 to the Marlborough Sounds Resource Management Plan

VOLUME ONE: OBJECTIVES, POLICIES AND METHODS

9.0 Coastal Marine

1. **Delete** Policy 9.2.1.1.8. **Renumber** subsequent policies accordingly.

~~Policy 1.8~~	~~Identify and enable the use of water transport corridors which form a significant part of the transport network.~~

2. **Delete** Policy 9.2.1.1.11. **Renumber** subsequent policies accordingly.

~~Policy 1.11~~	~~Provide for surface water activities which do not have a significant adverse effect on the coastal environment.~~

3. **Delete** 9.2.2 Methods of Implementation - Area Identification.

~~Area Identification~~	~~The Plan identifies areas for use by certain types of water transportation activity and consequently limits them in other areas of the Sounds. Refer to Chapter 19: Water Transportation.~~

4. **Insert** the following new section after 9.4.2 and before the current 9.5 Anticipated Environmental Results:

9.5 Issue

Ships capable of travelling at speed or generating significant wake in enclosed waters have the potential to conflict with a range of other coastal users and values and generate adverse environmental effects.

9.5.1 Discussion

The amount of energy contained in the wake generated by ships adds substantially to the natural energy levels in the environment and these increased energy levels are responsible for generating

adverse effects on the environment including changes to shoreline morphology, sub-tidal and inter-tidal zone habitats, impacts on public safety, public access and enjoyment of the coastal environment and the amenity values of the area. The speed at which some ships travel also has implications for the safety of those using the coastal marine area.

The tikanga Maori (customary values and practices) of Te Atiawa have been adversely affected by the operation of ships, particularly the fast ferries, with a decline in kaimoana and associated mana. The need for iwi to practice kaitiakitanga and ensure that Queen Charlotte Sound and Tory Channel are available for future generations is paramount. (This issue is partially covered in Chapter 6.)

However, it also needs to be recognised that shipping activity contributes to the social and economic wellbeing of people and communities by providing an important link between the North and South Islands and also by providing a means of transport for goods within the Sounds such as timber and livestock. (This issue is also covered in Chapter 19 Water Transport.) Tory Channel and inner Queen Charlotte Sound in particular comprise a transportation route of national significance for shipping activity and, as such, it is important to recognise this route as a resource that needs to be sustainably managed in the Plan.

Ship wake arising from shipping activity on the route needs to be managed in a manner that provides for the continued economic, social and cultural wellbeing of all people and communities, while sustaining the coastal environment. This is particularly so for the future as it is likely that shipping activity within Tory Channel and Queen Charlotte Sound will increase. Industry trends towards the use of larger, faster ships means that there is potential to generate greater effects in future than those experienced presently.

Shipping activity in other areas of the Marlborough Sounds such as Pelorus and Kenepuru Sounds is different to that of Queen Charlotte Sound and Tory Channel. The majority of shipping within Pelorus and Kenepuru Sounds is coastal or local in nature and relates to the transport of tourists, logs, livestock as well as fishing and marine farming fleets. These vessels are generally smaller and travel at speeds that are slower than ships such as the fast ferries and conventional ferries. It is considered unlikely that other areas of the Sounds will develop the type or extent of shipping experienced in Tory Channel or Queen Charlotte Sound given the lack of, or potential to, develop a deep water port within these other areas. At this stage therefore, there is currently little justification for the regulation of shipping activity in these areas.

In addition there is an increasing number of larger recreational vessels using the Sounds waters, some of which travel at speeds similar to the fast ferries. Although it is not proposed to control these vessels at this stage, the potential for adverse effects from their wake may need to be assessed in the future in light of their growing numbers.

9.5.2 Objective and Policies

Objective 1	To ensure that the environmental effects of ship wake and speed are managed so that potential conflict with other coastal users and values is avoided, remedied or mitigated.
Policy 1.1	Apply controls to shipping activity in Queen Charlotte Sound and Tory Channel, which may cause adverse environmental effects.
Policy 1.2	Use an adaptive management regime to continually assess the appropriateness of the overall framework for managing the issue as well as specific provisions, in light of environmental and technological changes or the occurrence of unforeseen effects from shipping activity.
Policy 1.3	Monitor individual and cumulative effects of ship wake and speed in Queen Charlotte Sound and Tory Channel.
Policy 1.4	Work in partnership with Te Atiawa in managing the effects of ship wake in Queen Charlotte Sound and Tory Channel.
Policy 1.5	Recognise and provide for Te Atiawa's continued access to, and use of, traditional coastal resources in Tory Channel and Queen Charlotte Sound and in particular, recognise the value of Tory Channel for Te Atiawa, in terms of the concepts of mauri, mana and manaakitanga that this area brings to this iwi.
Policy 1.6	Maintain the life supporting capacity of coastal ecosystems by avoiding, remedying or mitigating the adverse effects of ship wake.
Policy 1.7	Ship wake should not affect people's ability to safely use the foreshore and the coastal marine area for recreation activities.
Policy 1.8	Maintain people's ability to effectively use any lawfully established structure for that structure's intended purpose.
Policy 1.9	Use financial contributions to offset the adverse effects from shipping activity after all means of avoiding, mitigating or remedying adverse effects have been addressed (including situations where effects are considered appropriate due to the benefits of shipping activity). Where contributions are required, these will be assessed on a case-by-case basis.
Policy 1.10	Require, on a case-by-case basis, financial contributions to support research associated with the actual and potential effects of shipping activity, and the operating costs of an advisory group as part of the adaptive management regime.

The policies set out a framework that provides certainty for all users of the Sounds as to an accepted or tolerated level of effect within a defined area of the Sounds where the adverse effects of ship wake

and speed have been apparent. The policies seek to, where possible, avoid the adverse effects of shipping activity in these areas and where this is not possible, to mitigate these by, amongst other things, the imposition of regulations. In so doing, the life supporting capacity, particularly of coastal ecosystems is safeguarded and the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations is sustained. The framework enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety but also ensures that inter-island ferry services are able to continue, which recognises the significance of the route between the North and South Islands.

The provision of accurate and up to date information on the environmental effects of wake generated by shipping activity is the foundation of an adaptive management regime that continually assesses the overall framework established to manage the issue. The direction established by the above policies is based on the assumption that the effects of ships can be effectively and efficiently managed. Information will need to continue to be collected, analysed and an assessment made with regard to the effectiveness and efficiency of the regulatory framework. This process is fundamental to an adaptive management regime, which recognises the uncertainty of understanding the effects of change in the coastal environment.

The adaptive management approach in this case is one that will be responsive to new information that becomes available through the monitoring and analyses of specific consents, state of the environment monitoring and technological advances in ship design.

The Sounds' community, and those who use the Sounds for recreational use, have the Tory Channel and Queen Charlotte Sound specifically managed in respect of ship wake. This also includes protecting their health and safety. In terms of cultural matters, the proposed framework also recognises the significance of the National Transportation Route and its surrounding area to Te Atiawa and ensures that their involvement in this matter is ongoing.

In terms of section 108 of the Act, financial contributions in the form of money or land can be imposed as conditions on consents in accordance with the purposes specified in the Plan (including the purpose of ensuring positive effects on the environment to offset any adverse effect), with the level of contribution being determined in the manner described in the Plan. The New Zealand Coastal Policy Statement directs that plans should specify purposes for which financial contributions should be sought in cases where there will be unavoidable adverse effects from any use or development in the coastal environment.

In providing for a National Transportation Route for shipping activity, it is recognised that there will inevitably be unavoidable adverse effects on the environment of Queen Charlotte Sound and Tory Channel. Ongoing research and monitoring will be required so that appropriate action can be taken in a timely way. Financial contributions will be applied to the research and monitoring work and the operating costs of an advisory group as part of the adaptive management regime. All reasonable efforts will be made to avoid, remedy or mitigate the adverse effects of ship wake, but it is expected in

some circumstances that there may be residual unavoidable adverse effects. In order to generally maintain or enhance the Marlborough Sounds' environment, financial contributions will be applied to measures ensuring positive effects in Queen Charlotte Sound and Tory Channel to offset these unavoidable adverse effects of shipping activity.

It is not possible to completely avoid present and future adverse environmental effects generated by ships using Tory Channel and Queen Charlotte Sound without imposing very restrictive controls. Such controls are not regarded as being a realistic or justifiable option given the important regional and national economic benefits derived from the operation of ships using this transportation route.

There are other policies in the Plan that further address the environmental effects of shipping activity and, which need to be considered in conjunction with those above. Refer particularly to Chapter 6: Tangata Whenua and Heritage; Chapter 8: Public Access and Chapter 19: Water Transportation.

9.5.3 Methods of Implementation

Area Identification	Tory Channel and part of Queen Charlotte Sound have been identified as a National Transportation Route – see Map 107 in Volume Three. The National Transportation Route is located in Tory Channel and extends into inner Queen Charlotte Sound (between West Head, Ruakaka Bay, and a point southwest of Kaitapeha Bay) to the Port of Picton (excluding Grove Arm). Queen Charlotte Sound (excluding the National Transportation Route) has also been defined as being part of an established shipping route.
Rules	Rules relating to the use of surface waters by ships apply to Queen Charlotte Sound and Tory Channel. The use of surface water by ships in these areas is permitted subject to speed limits and in certain cases meeting a wave height standard. The areas to which speed limits apply are defined in Volume Three Maps – see Map 107.
Other Legislation	Navigation and public safety within the harbour limits are the responsibility of the Council as a harbour authority. The Council's Harbourmaster, under Harbour bylaws, the Navigation Bylaw 2000, and General Harbour Regulations, (or any successor to the above bylaws or regulations) carries out these functions. Harbour bylaws may impose additional constraints on speed e.g. harbour speed limit (5 knots).
Compliance and Enforcement	The Council will monitor the activity of ships in Queen Charlotte Sound and Tory Channel for compliance purposes to ensure that ships do not exceed permitted speed levels and also to monitor for compliance with individual

	consent conditions.
Monitoring	Consent holders will be required to have monitoring plans that will include stages, locations and methods of monitoring, timing of reporting monitoring results, and details regarding the availability of monitoring information to the Council. Costs associated with this monitoring will be borne by the consent holder. "State of the Environment" monitoring will also be carried out by the Council to monitor the effects of all activities, including shipping activity, in the Marlborough Sounds. In addition, the Council will support Te Atiawa initiatives to monitor cultural, and ecological effects on kaimoana, from the wake of ships.
Advisory Group	An advisory group will be established by the Council whose functions shall be to: • Review available monitoring information from shipping consent holders and the Council and any other expert reports lodged with the Council with respect to the effects of shipping (including research carried out as part of the Council's state of the environment reporting). • Be available to the Council for consultation purposes on any determination by the Council on whether to: - attach specific conditions to resource consents; and - activate any review conditions of consents. • Facilitate voluntary action to avoid, remedy or mitigate any unforeseen wake effects of consented shipping activity. • Should the group consider it necessary, it may wish to seek input from another person (or persons) to provide advice relating to the above issues. Prior to seeking advice from such a person, the group must obtain approval from the Council if funding is needed. • Provide a manawhenua iwi perspective to managing the effects of shipping activity. Members will be appointed by the Council and will be drawn from those groups with an interest in the shipping activity issue.
Te Atiawa Partnership	The Council will work in partnership with Te Atiawa on matters relating to: • Emerging issues;

	• Environmental enhancement and protection projects; and • Monitoring with regard to the operation of ships in Queen Charlotte Sound and Tory Channel.
Financial Contributions	Financial contributions will be required to offset adverse environmental effects where all reasonable means of avoiding, mitigating or remedying adverse effects have been addressed, and significant unavoidable adverse effects remain. They will also be required to fund research into the effects generated by shipping activity in the Sounds and to fund the activities of the advisory group. **(i) Circumstances when a financial contribution may be imposed** As a condition of a resource consent, where the Council has identified that further research is required with respect to a specific matter that relates to the subject consent, including, but not limited to: • Wave dynamics; • Marine life; • Shoreline and seabed morphology; • The relationship of Maori with the resources of the coastal environment; • Cultural values; • The social and economic assets of other users and occupiers; • Amenity values. As a condition of a resource consent to assist in funding the activities of the advisory group. As a condition of a resource consent where the Council is satisfied that unavoidable actual or potential effects will be generated on a specific matter listed above and it is appropriate to offset these effects through the imposition of a financial contribution. **(ii) The manner in which the level of the contribution that may be imposed will be determined**

The amount of the financial contribution will be determined at the time of the consent being issued, with the option of reviewing that amount by way of a review condition being imposed on the resource consent.

The amount of contribution will be determined for each of the following aspects that are relevant, having regard to the purposes set out in (iii) below:

- research required into the effects of shipping activity in the Sounds;
- to offset specific effects in relation to matters as described in (i) above; and
- to fund the activities of the advisory group.

The amount levied will reflect the anticipated actual and reasonable cost to: carry out the research required; to offset unavoidable adverse environmental effects; and an appropriate proportion of the annual administrative and operating costs of the advisory group.

(iii) The general purposes for which the contribution may be used

To fund research into the potential for and nature of any effects of consented shipping activity on the Queen Charlotte Sound and Tory Channel coastal environment.

To assist in funding the establishment and operation of the advisory group.

Contributions may be required with respect to:

Seabed and foreshore – to fund the costs of planting or maintaining vegetation, sediment replenishment, kaimoana enhancement, erosion protection works, foreshore development or reinstatement, litter control and other activities that will protect, maintain and enhance the foreshore and seabed.

Sites of historic or cultural interest – to fund the costs of works to protect or restore the site or offset such effects by contribution to the costs of the protection, maintenance or restoration of some alternative historic or cultural site within the coastal environment in or adjacent to Queen Charlotte Sound or Tory Channel.

Location – Council will attempt to offset effects in the general locality in which they occur.

	Affected people and communities – Council will endeavour to identify people and communities most directly affected by adverse effects and will try to ensure that they benefit from the positive environmental effects that result from financial contributions.

The methods enable ships to travel in Tory Channel and Queen Charlotte Sound subject to controls on the speed at which ships operate. (The methods do not restrict the use of surface water by ships elsewhere in the Sounds or smaller boats.) Operators of ships are able to exceed defined speed limits provided a resource consent is obtained and a standard regarding wave height is met.

The Plan recognises that advances in ship building technology may lead to the development of ships that are able to travel at high speeds but have limited impact in terms of wake generation.

From a safety perspective, it is also considered important to ensure that there is a case-by-case assessment process for ships that exceed certain speed levels in order to take into account concerns that may arise in relation to the operation of a particular ship.

Even when ships exceeding the defined speed threshold comply with standards or assessment criteria, it is reasonable to expect that there will be some adverse environmental effects, and that the consent holder will contribute to offsetting these effects.

9.6 Anticipated Environmental Results

Renumber 9.5 Anticipated Environmental Results to 9.6 to take into account the change in numbering.

19.0 Water Transportation

19.3 Objectives and Policies

1. **Delete** Policy 19.3.1.4 as follows:

~~Policy 1.4~~	~~Avoid conflicts between water transportation and other users of the coastal marine area by providing routes for navigation purposes through the Northern Entrance of Queen Charlotte Sound and Tory Channel.~~

2. **Insert** the following new policy as 19.3.1.2:

Policy 1.4	Avoid conflicts between water transportation and other users of the coastal marine area.

19.4 Methods of Implementation

3. **Delete** the following from 19.4 Methods of Implementation:

~~Vessel Routes~~	~~The following water transport corridors are identified on the planning maps:~~ ~~• Northern Entrance, Queen Charlotte Sound.~~ ~~• Tory Channel, Queen Charlotte Sound.~~
~~Rules~~	~~Water transportation for which the corridors have been established, is permitted as of right in these areas and consequently some restrictions are placed on the use of other areas in the Sounds.~~ ~~In the Northern entrance corridor, large freight ships are permitted. The Tory Channel corridor is designed to accommodate the Picton - Wellington ferry route, including the operation of this by high-speed ferries.~~ ~~Other forms of water transportation are provided for as of right.~~ ~~Performance standards relating to foreshore and seabed disturbance arising from water transportation activities are included.~~
~~Other Legislation~~	~~Council will use its powers and functions under the Harbours Act 1950 and the General Harbour Regulations to control navigational conflicts between~~

	~~water transportation and other coastal activities.~~

4. **Insert** the following new Methods of Implementation at 19.4:

Area Identification	Tory Channel and part of Queen Charlotte Sound have been identified as a National Transportation Route - see Map 107 in Volume Three. The National Route is located in Tory Channel (between East and West Head) and extends into inner Queen Charlotte Sound (between West Head, Ruakaka Bay, and a point southwest of Kaitapeha Bay) to the Port of Picton (excluding Grove Arm). Queen Charlotte Sound (excluding the National Transportation Route) has also been defined as being part of an established shipping route.
Rules	Shipping activity in Queen Charlotte Sound and Tory Channel is permitted subject to a speed limit. Ship operators are able to exceed this speed limit provided resource consent is obtained. Other forms of water transportation and shipping in other areas of the Sounds are provided for as of right.
Other Legislation	Navigation and public safety within the harbour limits is the responsibility of the Council as a harbour authority. The Council's Harbourmaster, under Harbour bylaws, the Navigation Bylaw 2000, and General Harbour Regulations, (or any successor to the above bylaws or regulations) carries out these functions. Harbour bylaws may impose additional constraints on speed e.g. harbour speed limit (5 knots).

VOLUME TWO: RULES

25. Definitions

Insert the following:

AUTOMATIC LOCATION DEVICE	means equipment installed on and supported by a ship for the purpose of recording speed, average ship speed and location of the ship, and which delivers the recorded information to the Council for its purposes.
AVERAGE SHIP SPEED	means the arithmetic mean of all speed values calculated by an automatic location device for the set interval.
HIGH SPEED SHIP	means a ship which has a registered length exceeding 30 metres and is capable of a maximum speed, in metres per second (m/s), equal to or exceeding: $3.7 \nabla^{0.1667}$ where ∇ = displacement corresponding to the design waterline (m^3).
IAHR (1989)	means the paper entitled "List of Sea-state Parameters" written by the International Association of Hydraulic Research (IAHR) Working Group in Wave Generation and Analysis and published in the Journal of Waterway, Port, Coastal and Ocean Engineering, American Society of Civil Engineers, Volume 115, Number 8, November 1989, pp 793–808.
MAXIMUM WAVE HEIGHT	means the maximum wave height a wave can reach while still in compliance with the formula: $H \leq 0.5 \times \sqrt{\frac{4.5}{T}}$; in which *H* = the wave height (measured in metres) and *T* = the corresponding wave period (measured in seconds). Matters relating to the determination of wave height and compliance with maximum wave height are detailed in Appendix K.
MEAN WATER LEVEL	means the average vertical displacement in the wave record.
NATIONAL TRANSPORTATION ROUTE	means that area of Queen Charlotte Sound and Tory Channel as shown on Map 107 in Volume Three.
SET INTERVAL	means the time span for an automatic location device to make successive recordings of speed, average ship speed and location.
SHIP SPEED	means speed of a ship from point to point over ground.

SIGNIFICANT WAVE HEIGHT	means the average of the highest one-third of the wave heights in a surface elevation record.
SURFACE ELEVATION RECORD	means the wave record relative to the mean water level.
WAVE HEIGHT	means the wave height, *H* (measured in metres), determined from the surface elevation record between any two successive zero down-crossings as defined in *IAHR (1989)*.
WAVE PERIOD	means the time period *T* (measured in seconds) between two successive zero down-crossings in the surface elevation record as defined in IAHR *(1989)*.
WAVE RECORD	means any record of vertical displacement of the seawater surface as a function of time derived at any location within the National Transportation Route under calm conditions at a standard water depth of 3 metres.

35. Coastal Marine Zones 1 and 2

35.1 Permitted Activities

1. **Delete** the following bullet point from 35.1:

- ~~**Use of surface water by non-exclusive users**~~

2. **Insert** the following new bullet point in 35.1:

- **Use of surface water by ships.**

3. **Delete** the word "Minor' from the bullet point in 35.1 that reads **Minor disturbance of foreshore and seabed**.

Conditions for Permitted Activities

35.1.2 Specific Conditions

4. **Delete** Rule 35.1.2.10 as follows:

~~**35.1.2.10 Use of Surface Water by Non-Exclusive Users**~~

~~**35.1.2.10.1 Defined Navigation Route and Beyond Pelorus Sound and Queen Charlotte Sound.**~~

~~Beyond the enclosed waters of the Sounds, being beyond straight lines drawn between:~~

- ~~Te Akaroa (west entry point) and Kitira (east entry point);~~
- ~~Cape Jackson and Cape Koumaru; and~~
- ~~East Head and West Head~~

~~and in any national route defined by notation on the Planning Maps for navigational purposes the use of surface water by shipping, ferries or other ships shall be a Permitted Activity provided the ships are operated:~~

~~a) In accordance with the safety requirements of the Maritime's Safety Authority; and~~

~~b) As hydrodynamically efficiently as possible so as to avoid any unnecessary wake effects.~~

~~**35.1.2.10.2 Undefined Enclosed Surface Waters**~~

~~The use of any stretch of enclosed water within Pelorus Sound and Queen Charlotte Sound (including Tory Channel) being within straight lines drawn from:~~

- ~~Te Akaroa (West Entry Point) to Kaitira (East Entry Point);~~
- ~~Cape Jackson to Cape Koumaru; and~~
- ~~East Head to West Head, and~~

~~not defined as a national route for navigational purposes by any ship, ferry or other ship shall be a Permitted Activity provided that this rule shall not apply to ships greater than 500 gross registered tons travelling in excess of 18 knots.~~

5. **Insert** a new Rule 35.1.2.10 as follows:

35.1.2.10 Use of Surface Water by Ships

The use of surface water by ships in the National Transportation Route and Queen Charlotte Sound shall be a permitted activity, provided that ships which:

a) Are high speed ships; or

b) Exceed 500 UMS gross registered tonnes;

shall not exceed a ship speed of 15 knots.

6. **Delete** the word 'Minor' from **35.1.2.11 Minor Disturbance of Foreshore and Seabed.**

7. **Delete** the following text from **35.1.2.11 ~~Minor~~ Disturbance of Foreshore and Seabed**:

~~b) The activity shall not lead to any adverse effect on any foreshore or wetland area;~~

~~d) The activity shall not significantly adversely affect the flora and fauna of the coastal marine area;~~

8. Add the following text to **35.1.2.11 ~~Minor~~ Disturbance of Foreshore and Seabed**:

35.1.2.11.1 Disturbance of Foreshore and Seabed Associated with the Use of Surface Water by Ships

Any foreshore or seabed disturbance associated with the use of surface water by ships shall be a Permitted Activity provided that disturbance associated with any ship subject to Rule 35.1.2.10, shall only be a Permitted Activity where the ship speed does not exceed 15 knots.

35.2 Controlled Activities

9. Insert the following new bullet point:

- **Use of surface water within the National Transportation Route by high speed ships, or ships that exceed 500 UMS gross registered tonnes, which are travelling at a ship speed exceeding 15 knots and not more than 18 knots, including any associated disturbance of the foreshore and seabed.**

10. Insert the following new section as 35.2.6:

35.2.6 Use of surface water within the National Transportation Route by high speed ships, or ships that exceed 500 UMS gross registered tonnes, which are travelling at a ship speed exceeding 15 knots and not more than 18 knots, including any associated disturbance of the foreshore and seabed.

35.2.6.1 Standard

a) The ship shall not propagate waves that exceed the maximum wave height.

35.2.6.2 Terms

a) The duration period of any consent shall not exceed 10 years.

b) A resource consent will apply only to the ship for which consent has been obtained and will be distinguished by the International Maritime Organisation number and name;

c) The Council will undertake a regular review of the conditions of consent, reserving the right to review conditions annually;

d) The ship shall carry and support operationally at all times an automatic location device that will record the following information at 30 second intervals (or other time interval if set as a condition of consent):

- A unique ship identifier;
- Date and time;
- Spatial location;
- Instantaneous ship speed; and
- Average ship speed for the preceding interval.

35.2.6.3 Matters Over Which Control is Reserved

The matters over which the Council will exercise its control are:

a) The duration of the consent;

b) Monitoring requirements;

c) The timing of and criteria for the review of resource consent conditions;

d) The administrative charges payable;

e) The level and type of financial contributions as set out in 9.5.3 Methods of Implementation, Financial Contributions.

35.4 Discretionary and where applicable Restricted Coastal Activities

11. Insert the following new bullet point in 35.4:

- **Use of surface water within the National Transportation Route by high speed ships, or ships that exceed 500 UMS gross registered tonnes, and are travelling at a ship speed greater than 18 knots, including any associated disturbance of the foreshore and seabed**

12. Insert the following new section as 35.4.2.13.

35.4.2.13 Use of surface water within the National Transportation Route by high speed ships, or ships that exceed 500 UMS gross registered tonnes, and are

travelling at a ship speed greater than 18 knots, including any associated disturbance of the foreshore and seabed

35.4.2.13.1 Any ship in the National Transportation Route travelling at a ship speed greater than 18 knots that:

a) Is a high speed ship or exceeds 500 UMS gross registered tonnes; and

b) Propagates waves that do not exceed the maximum wave height

is a discretionary activity.

35.4.2.13.2 Assessment Criteria

a) The effects on coastal and marine ecology;

b) The effects on physical coastal processes;

c) The effect the activity has on the relationship with Maori and their culture and traditions with resources, in particular the effects on:

- Kaimoana
- Areas of historical and traditional importance
- Urupa

d) The effects on people and communities including:

- Navigational safety
- Property
- Recreation
- Public access
- Amenity values
- Other users of the marine environment

e) Assessment of monitoring requirements.

35.6 Prohibited Activities - being activities for which no resource consent shall be granted

13. Insert the following new bullet point:

- **Use of surface water within the National Transportation Route and Queen Charlotte Sound by high speed ships, or ships that exceed 500 UMS gross registered tonnes,**

which are travelling at ship speeds greater than 15 knots, and are not provided for as Controlled or Discretionary Activities

Appendices

14. Insert the following new Appendix after new **Appendix J** in Volume Two:

Appendix K: Determination of Wave Height

1. Technical Information to be provided with applications for consent

1.1 To demonstrate that a ship will comply with the requirements of the maximum wave height, resource consent applicants shall submit technical information based on either:

1.1.1 Accepted and properly calibrated computational or analytical analysis allowing for the specific characteristics of the ship concerned and the conditions within the National Transportation Route taking account of shoaling, refraction and diffraction effects; or

1.1.2 Direct measurements of wave height and wave period specific to the ship concerned; or

1.1.3 Combinations of the approaches outlined above.

2. Requirements for Direct Measurement of Wave Height

Measurements shall be based on surface elevation records derived under calm conditions with a water depth in the range 1 to 5 metres. Such measurements shall be made by, or under the supervision of, a competent expert experienced in the measurement of waves. Any site at which direct measurements of wave height are carried out shall, in the opinion of the competent professional, not be significantly influenced by the effects of diffraction.

Calm conditions at any measurement point shall be deemed to exist where, immediately prior to and during the time of measurement, the ambient waves caused by wind and other vessels (other than the vessel under evaluation) do not exceed a significant wave height of 0.5m assessed over a 5 minute duration or more.

Any wave height assessed at the measurement site shall be adjusted to determine the wave height applicable in the maximum wave height equation at a standard depth of 3 metres by applying shoaling and refraction analysis. This analysis shall be based on the following methods and assumptions:

(a) Shoaling analysis shall be based on linear wave theory (also known as Airy wave theory).

(b) Refraction analysis shall be based on Snell's law assuming that the seabed contours are parallel with the direction of travel of the vessel and that the

angle between the wave crest and the seabed contours in very deep water is 55°.

(c) In order to allow for non-linear effects, an effective water depth of D + ½H, where D is the average water depth and H is the wave height, shall be adopted in the shoaling and refraction analysis where appropriate.

(d) The effects of bottom friction, viscous effects and turbulence shall be ignored in any shoaling and refraction analysis.

(e) No adjustments shall be made to the wave periods assessed at the measurement site.

3. Compliance Monitoring

The compliance of ships with the maximum wave height shall be assessed by direct measurement of wave height and may be carried out at any location within the National Transportation Route in terms of the requirements of 2 above.

4. Physical Parameters of Factors Affecting Measurement

For the purposes of any calculation to assess wave characteristics under this Plan the following are to apply:

(a) The density of seawater shall be taken as 1025 kg/m^3;

(b) The kinematic viscosity of seawater shall be taken as 1.15×10^{-6} m^2/s;

(c) The acceleration due to gravity shall be taken as 9.806 m/s^2; and

(d) Other physical parameter values shall be those applicable at a temperature of 15°C.

VOLUME THREE: MAPS

15. **Remove** reference to the **"National Route for Navigation Purposes"** from the Legend on Volume Three - Maps.

16. **Remove** the notation "**National Route for Navigation Purposes"** from all Maps in Volume Three.

17. **Insert** a new map (107) showing the location to which speed rules apply.