M135-12-10

MARLBOROUGH
DISTRICT COUNCIL

MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN

Variation 3

It is hereby certified that the attached amendments to the Marlborough Sounds Resource Management Plan arising from an Environment Court's decision on Variation 3, have been adopted by the Marlborough District Council on 8 February 2008 (recorded in Minute E.07/08.399).

The Common Seal of the Marlborough District Council was affixed on the 8th day of February 2008 in the presence of:

THE MARLBOROUGH DISTRICT COUNCIL
The Common Seal of

ALISTAIR SOWMAN
MAYOR

ANDREW BESLEY
CHIEF EXECUTIVE

It is hereby certified that the attached changes to the Marlborough Sounds Resource Management Plan arising from an Environment Court decision on Variation 3 was approved by the Minister of Conservation by signing it on the 24TH day of July 2008.

Hon Steve Chadwick
Minister of Conservation

Date Operative

MARLBOROUGH DISTRICT COUNCIL
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MARLBOROUGH DISTRICT COUNCIL

Public Notice of Operative Date for Variation 3 and the Port Noise Provisions for the Marlborough Sounds Resource Management Plan

Pursuant to Clause 20 of the First Schedule to the Resource Management Act, the Marlborough District Council advises that Variation 3 – Ship Wake and the Port Noise provisions for the Marlborough Sounds Resource Management Plan shall be operative from 21 August 2008:

Copies of the operative provisions can be viewed after the 21 August 2008 at any of the following locations at any time that these places are open to the public:

- The Council's Office, Seymour Street, Blenheim
- The Marlborough Library, Arthur Street, Blenheim
- The Havelock, Seddon, Ward and Rai Valley Community Libraries
- The Council's Picton Office and the Picton Library, High Street, Picton
- Elma Turner Library, Halifax Street, Nelson
- Tasman District Library, Queen Street, Richmond
- The Wellington Public Library, Victoria Street, Wellington
- The Kaikoura Public Library, Kaikoura
- The Christchurch Public Library, Gloucester Street, Christchurch

Alternatively, free copies of the operative provisions can be downloaded from Council's 'What's New page' on the website at www.marlborough.govt.nz.

Any enquiries should be directed to Tania Bray, Phone 03 520 7400, or tania.bray@marlborough.govt.nz.

Dated at Blenheim this 14th day of August 2008.

ANDREW BESLEY
CHIEF EXECUTIVE

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Decision No. W 1/2008

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of three references pursuant to Clause 14 of the First Schedule to the Act

BETWEEN **TRANZ RAIL NEW ZEALAND LIMITED**

(RMA 209/98)

NEW ZEALAND SHIPPING FEDERATION OF NEW ZEALAND

(ENV W 33/05)

STRAIT SHIPPING LIMITED

(ENV W 34/05)

TOLL NZ CONSOLIDATED LIMITED

(ENV W 35/05)

Referrers

AND **MARLBOROUGH DISTRICT COUNCIL**

Respondent

BEFORE THE ENVIRONMENT COURT

Environment Judge S E Kenderdine (presiding)
Environment Commissioner J R Mills
Environment Commissioner W R Howie

FINAL SUBMISSIONS: completed by the parties by 19 December 2007.

COUNSEL/APPEARANCES:

1. P Nicholas for New Zealand Shipping Federation
2. D Allen for Strait Shipping Limited
3. J Stephen Kos and J Winchester for Toll NZ Consolidated Limited
4. C Owen for the Department of Conservation
5. S Browning for Friends of Nelson Haven
6. M Radich for Marlborough District Council

RECORD OF DETERMINATION OF REFERENCES

[1] These references concern a decision of the Marlborough District Council (MDC) in relation to Variation 3 to the Marlborough Sounds Resource Management Plan. Variation 3 is known under the heading *Shipping Activity in the Marlborough Sounds*.

[2] Friends of Nelson Haven and Tasman Bay Incorporated (Friends) and the Minister of Conservation are involved in the references as s274 parties.

[3] In an Interim Decision of 29 May 2006, the Court found that a Wash/Energy Rule component of Variation 3 was appropriate in an amended form for application to the relevant shipping in the Marlborough Sounds. Meanwhile we directed the parties to meet and seek to resolve other aspects of Variation 3 in issue.

[4] We are now advised that there have been extensive discussions and the parties have participated in mediation through an Environment Court-appointed mediator. As a result, all parties (other than the Friends), have agreed that, subject to our approval, the references are able to be finally resolved. Particularly, the parties have agreed by way of a memorandum to the Court that Variation 3 should be amended in terms of the Schedule of Changes dated 12 December 2006 filed with the memorandum. A copy of the schedule is attached to this determination marked in Appendix A.

[5] The parties to the memorandum apprehend that the Friends' only objection to Variation 3, as amended in terms of the Schedule of Changes, relates to the 'grandfathering issues'[1]. But the Court's Further Interim Decision of 24 May 2007 on jurisdiction to consider the grandfathering clauses found that the scope of these references does not allow the issue to be considered at all.

[6] Thus the parties to the memorandum agree that there appears to be no legal avenue available to the Friends to pursue its grandfathering objections further. There is, the other

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[1] The 'grandfathering' provision was inserted by the MDC at the time of its decisions on submissions. Rule 35.1.2.10.1 provided that the use of surface water by ships in the NTR and Queen Charlotte Sound is a permitted activity, provided that where the ship is a high speed ship, or exceeds 500 gross registered tonnes, it shall not exceed a ship speed of 15 knots. The so-called grandfathering rule provided an exception for certain ships as follows: Rule 35.1.2.10.2 provides that the use of surface water by the M.V. *Aratere* and M.V. *Arahura* and the M.V. *Kent* shall be a permitted activity and shall be exempt from the condition specified in rule 35.1.2.10.1 provided that their individual ship speed shall not exceed 20 knots (paragraph a); and (paragraphs b – j) contain speed and other data recording conditions.

parties say, no reason for the resolution of these references to be prolonged any further. They wish the references to be finally resolved and to this end filed proposed draft orders with the memorandum.

[7] In response to the major parties' memorandum, the Friends responded with one of its own dated 18 December 2007. The Friends say that: -

- they are in agreement with the parties in respect of all matters except the grandfathering provision in Variation 3 saying that the Wash/Energy Rule as determined by the Court cannot meet their (stricter) requirements;
- they acknowledge the 'grandfathering' clause as sought by them is beyond the scope of the reference and therefore they cannot pursue the matter any further;
- they will pursue other options outside these proceedings to resolve matters;
- *unless opposed by any of the parties by way of memorandum*, in their opinion, the final sentence in Clause 9.5.3 *Advisory Group* should read:

  > *Members will be appointed by the Council and will include representatives from Friends of Nelson Haven & Tasman Bay Inc, and Guardians of the Sounds Inc, or their chosen successors, and representatives from community groups, the shipping industry, iwi and the Council.*

[8] Toll objected to this naming of different interests in the Advisory Group in a brief memorandum dated 19 December 2007. Toll is concerned that membership of the Advisory Group should be at the MDC's discretion depending on the facts and circumstances at the relevant time and that it is unnecessary to single out any specific organisations at this stage (quite apart from any jurisdictional issue about the Court's ability to direct such changes to the Variation).

Discussion

[9] We do not consider it is appropriate to amend Section 7 *Advisory Group* of Variation 3 for the following reasons: -

- the Friends submit that *unless opposed by any of the parties by way of memorandum* to the Court...the final sentence should read as identified in paragraph [7] above. Toll have opposed the way the Friends have drafted the wording of the advisory group reference and we intend to take the Friends'

caveat at its face value. For the reasons given by Toll we agree with Toll's reasons for its objection ;

- the Friends have indicated they are seeking a further Variation to the reference in question from the MDC;
- to tie the Advisory Group to 'named' parties is inadvisable as the named groups may well change, assume different roles or stances on the speed of ships in the Marlborough Sounds and any council plan is likely to remain in force for at least ten years.

Result

[10] The three references detailed in the Court's first decision of 29 May 2006 are now resolved for the following reasons: -

- the continued opposition by Friends to the resolution of these references on the basis of issues of grandfathering is untenable in circumstances where the Court has determined that such matters are outside the scope of the references;
- there is no legal basis therefore for objection by any party to the Marlborough Sounds Resource Management Plan (MSRMP).

[11] The MSRMP is to be amended as set out in the Schedule attached. References RMA 209/98, ENV W 33/05, ENV W 34/05 and ENV 35/05 are otherwise dismissed.

[12] Costs are to lie where they fall.

Dated at Wellington this 22nd day of January 2008.

For the Court

S E Kenderdine
Environment Court Judge

File M135-15-03

APPENDIX A

MARLBOROUGH
DISTRICT COUNCIL

PROPOSED MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN

Variation 3 - Shipping Activity in the Marlborough Sounds

As amended by decisions on submissions and further submissions and

As further amended by negotiation and mediation as a consequence of the Environment Court's interim decision

As at 04 October 2006

Grandfathering clauses identified in accordance with the Environment Court's direction of 20 March 2007

Variation 3 to the Marlborough Sounds Resource Management Plan

VOLUME ONE: OBJECTIVES, POLICIES AND METHODS

9.0 Coastal Marine

9.2.1 Objectives and Policies

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.~~

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.~~

9.2.2 Methods of Implementation

Delete Area Identification method.

~~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.~~

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 waves 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.) Other iwi, besides Te Atiawa, who establish manawhenua through the courts, or other processes, may in time also be appropriately recognised in managing the ship wake issue.

It 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 . (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.

In managing the effects of the wake generated by conventional ships in Tory Channel and Queen Charlotte Sound, it is accepted that shipping operators have certain operating parameters that affect ship speed that need to be accounted for. In particular, the operators of conventional inter-island shipping services, have relied on an ability to operate their fleets of conventional ships at speeds of up to 20 knots in Tory Channel and inner Queen Charlotte Sound. This operating speed has been necessary historically to enable conventional vessels to achieve a sufficient number of daily crossings of Cook Strait to maintain a generally accepted level of service and for these services to remain socially and economically viable, from the perspective of the wider community.

The operation of the fast ferries has been controlled within Tory Channel and Queen Charlotte Sound by a Navigation Bylaw since 15 December 2000. This bylaw resulted in fast ferry operators being required to slow the speed of their ships from up to 40 knots to 18 knots within the confines of Tory Channel and Queen Charlotte Sound. Whilst the bylaw was primarily intended to manage navigation safety issues within the waters of the Sounds, evidence obtained from monitoring carried out by the Council indicated that the ship speed reduction had resulted in environmental benefits as well. Prior to the fast ferry speed restrictions being put in place there was wide community concern about the adverse effects being created by the waves generated by these ships operating in the Sounds. Some residual concerns remain about the effects of ship-generated waves on marine biology, shoreline geomorphology, shoreline structures, recreational values, small boat safety and Maori cultural values. The Council continues to monitor these values and effects. Recent indications are that, since the introduction of the fast ferry speed restrictions, there has been some improvement and recovery in the condition of the environment, particularly around the coastal margin of the Sounds.

The potentially adverse effects of ship-generated waves need 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. International regulations for roll-on roll-off passenger ferries have introduced enhanced safety requirements regarding ship stability for vessels carrying more than 400 people. This will ultimately mean that larger ships are expected to be operating along the inter-island ferry route. This along with 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-generated waves and speed are managed so that potential conflict with other coastal users and values is avoided, remedied or mitigated.
Policy 1.1	Enable as a permitted activity the continuing use of the National Transportation Route and Queen Charlotte Sound by ships travelling up to 15 knots.
Policy 1.2	Enable as a permitted activity the continuing use of the National Transportation Route for existing inter-island shipping services up to speeds that reflect the operating regime that was current at 14 November 2002.
Policy 1.3	Apply controls to shipping activity in Queen Charlotte Sound and Tory Channel, based on the amount of energy produced by ship-generated waves, which may cause adverse environmental effects.
Policy 1.4	When considering applications for consent for ships that are expected to propagate waves having energy levels in excess of limits specified in the Plan, to have particular regard to the potential for adverse effects on:

	– Places and cultural values of importance to Te Atiawa; – The shoreline and lawfully-established shoreline structures; – Amenity values enjoyed by residents; – People's use and enjoyment of the foreshore and coastal marine area for recreational activities; and – The natural character of the coastal environment of the Sounds.
Policy 1.5	Work with the community and the shipping industry to continually assess the appropriateness of the overall framework for shipping activities in light of environmental and technological changes or the occurrence of unforeseen effects from shipping activity.
Policy 1.6	Undertake monitoring to assist in developing appropriate approaches to managing the effects of shipping activity in Queen Charlotte Sound and Tory Channel.
Policy 1.7	Work in partnership with Te Atiawa in managing the effects of ship-generated waves in Queen Charlotte Sound and Tory Channel.
Policy 1.8	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 1.9	Maintain the life supporting capacity of coastal ecosystems by avoiding, remedying or mitigating the adverse effects of ship-generated waves and speed.
Policy 1.10	Maintain people's ability to safely use the foreshore and the coastal marine area for a range of recreational activities.
Policy 1.11	Maintain people's ability to effectively use any lawfully established structure for that structure's intended purpose.

The policies set out a framework that provides certainty for all existing users of the Sounds as to an accepted level of effects within Queen Charlotte Sound and Tory Channel where the adverse effects of ship-generated waves and speed have been apparent. The policies seek to achieve an acceptable balance between the positive benefits that flow from inter-island shipping activity and the need to appropriately manage the adverse effects of inter island shipping activity on the coastal environment.

The policies enable certain inter-island ships to continue to operate at speeds through the National Transportation Route, consistent with the operating parameters that existed as at 14 November 2002, being the date variation 3 to the Plan was notified, to include the issue of ship wake and speed.

The controls for managing the effects of shipping activity in Queen Charlotte Sound and on the National Transportation Route are based on ship-generated wave energy. The Environment Court has determined that the amount of energy appropriate for the National Transportation Route is to be founded on the environmental effects associated with conventional ships operating prior to the introduction of the M.V. Aratere in 1999. The energy limits included in the Plan are therefore based on the need to ensure that damage or change at the shore is minimised, that cultural values of Te Atiawa and the amenity values enjoyed by residents are provided for and that the natural character of the Sounds environment is protected.

The Council will continue to monitor the state of the Sounds environment and the impact of ship-generated waves on the environment. It is envisaged that the methods currently included in the Plan for addressing the issues arising from ship-generated waves will be used until such time as more is learned about the type and wave-generating characteristics of future ships to be introduced to service on the National Transportation Route. Plan policies and methods will be adapted in future where changes in the type, scale or intensity of shipping result in the need for a different response to worsened environmental effects associated with ship-generated waves.

The provision of accurate and up to date information on the environmental effects of waves 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. It is envisaged that the existing operators of inter-island ships will be a key contributor to this process, so that future endeavours to manage the issue will be based on the best available information and will best represent the interests of stakeholders. This is strongly preferred over an approach where the Council is required to act on its own in regulating shipping activity in the Sounds.

This is consistent with the adoption of an adaptive management approach that is responsive to new information and better understanding. This is based on a collaborative approach, which becomes available through the monitoring and shared analyses of existing and future shipping activities, state of the environment monitoring and future technological advances in ship design.

The Sounds' community, and those who use the Sounds for recreational use, have Tory Channel and Queen Charlotte Sound specifically managed in respect of ship-generated waves. 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 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. The shipping industry will be encouraged to contribute to this research and monitoring work and to assist in devising ways of managing the effects of shipping activity into the future.

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 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 waters in these areas is subject to maximum speed limits and for controlled activities, a maximum wave energy limit as well. The areas to which speed limits apply are defined in Volume Three Maps.
Other Legislation	Navigation and public safety within the harbour limits are also the responsibility of the Council as a harbour authority. The Council's Harbourmaster, under Harbour Bylaws, the Navigation Bylaw 2000, the Maritime Transport Act and associated Maritime Rules, (or any successor to the above bylaws or regulations) carries out these functions. Harbour bylaws may impose additional constraints on speed eg; the 5 knot harbour speed limit.
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	The Council will monitor the effect of ship-generated waves as part of its responsibilities for state of the environment monitoring. A monitoring framework and programme were established by the Council in collaboration with the Department of Conservation following the introduction of the fast ferries in late 1994. This framework will form the basis for ongoing monitoring and will be amended as may be appropriate over time. The monitoring framework includes: – Near shore benthic and shoreline biological monitoring; – Shoreline monitoring of beach profiles; – Ongoing monitoring of land slip activity along the National Transportation Route; and – Periodic assessment of the community's views of the effects of ship-generated wave activity in the Sounds. Ship generated waves will also be measured and monitored from time to time. Monitoring of the effects of the impacts of waves generated by individual ships may also be a requirement imposed as conditions of resource consent for discretionary activity shipping activity. In addition, the Council will support Te Atiawa initiatives to monitor cultural, and ecological effects from the wake of ships eg; the effects on access to waahi tapu and other sites of significance, the passing of tikanga Maori to future generations and the effects on the gathering of kaimoana. The results of the monitoring may be used to assist in the review the overall framework for managing the effects of shipping activity, or where there is a need to review the conditions of resource consents. The results of monitoring will be made available for consideration of the Advisory Group.
Advisory Group	An advisory group will be established by the Council whose functions shall be to: • Review available monitoring information from shipping operators 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). • Assist the Council in determining the optimal course of action for the

	future management of shipping in the Sounds. • Facilitate voluntary action to avoid, remedy or mitigate any unforeseen effects of shipping activity. • Seek input from another person (or persons), should the group consider it necessary, 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, in particular that of Te Atiawa, in managing the effects of shipping activity. Members will be appointed by the Council and will include representatives from community groups, the shipping industry, iwi and the Council.
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.

The methods enable ships to travel in the National Transportation Route and Queen Charlotte Sound subject to controls on speed and ship-generated wave energy. The methods do not restrict the use of surface water by ships elsewhere in the Sounds or smaller boats. Ships are able to exceed the permitted activity speed limit provided a resource consent is obtained for either controlled activity or discretionary activity depending on whether or not the vessel's wave energy exceeds the maximum wave energy standard. Existing conventional ships that were in operation at the time Variation 3 was included in the Plan (being 14 November 2002) are permitted to continue to travel in the National Transportation Route up to 20 knots maximum speed.

Monitoring will be important in the ongoing management of the effects of shipping activity. The Council intends to continue with and enhance its current monitoring as necessary. The type and extent of monitoring will be reviewed as the types of ships and level of shipping activity changes over time.

The Plan encourages all of the key stakeholders to assist in ultimately determining an appropriate approach to managing the effects of shipping in the future. The Advisory Group is intended to bring the key stakeholders together in the management of shipping issues.

9.5 Anticipated Environmental Results

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

19.0 Water Transportation

19.2 Issue

Insert between paragraphs 9 and 10 of 19.2 the following:

In addition, there have been a range of adverse environmental effects experienced from ship-generated waves and speed, through the operation of fast and large ships within Tory Channel and Queen Charlotte Sound, in particular. While some aspects of their operation are dealt with in this chapter, a more comprehensive policy framework addresses the issues surrounding ship-generated waves and speed at 9.5 of the Coastal Marine chapter.

19.3 Objectives and Policies

Delete Policy 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.~~

Insert the following new policies as 19.3.1.4, 1.5 and 1.6:

Policy 1.4	Achieve an appropriate balance between water transportation and other users of the coastal marine area.
Policy 1.5	Identify and enable the use of water transport corridors which form a significant part of the transport network.
Policy 1.6	Provide for surface water transportation activities which do not have a significant adverse effect on the coastal environment.

Renumber the following policies accordingly.

Amend the second paragraph of the explanation of the Objective and Policies as follows:

Policies 19.3.1.7 and 19.3.1.8 recognise those facilities (such as jetties and community landing areas) which are essential to the transportation network of the Marlborough Sounds.

19.4 Methods of Implementation

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.~~

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 Volume Three. The National Transportation 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	Rules relating to the use of surface waters by ships apply to Queen Charlotte Sound and Tory Channel. The use of surface waters in these areas is subject to maximum speed limits and for controlled activities, a maximum wave energy limit as well. The areas to which speed limits apply are defined in Volume Three Maps. 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 also the responsibility of the Council as a harbour authority. The Council's Harbourmaster, under Harbour Bylaws, the Navigation Bylaw 2000, the Maritime Transport Act and associated Maritime Rules, (or any successor to the above bylaws or regulations) carries out these functions. Harbour bylaws may impose additional constraints on speed e.g. the 5 knot harbour speed limit.

THE SEAL OF THE ENVIRONMENT COURT OF NEW ZEALAND

VOLUME TWO: RULES

25. Definitions

Insert the following:

AUTOMATIC IDENTIFICATION SYSTEM OR 'AIS'	means a Data Recording Device installed on-board ship that is operated in accordance with the requirements of SOLAS (Safety of Life at Sea, which is a convention of the International Maritime Organisation).
DATA RECORDING DEVICE	means a device or equipment installed on-board ship that automatically records and stores navigation, ship speed and related data.
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: $3.7\ \sigma^{0.1667}$ where σ = 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 ENERGY	means the maximum Wave Energy in any Wave Record.
NATIONAL TRANSPORTATION ROUTE	means that area of Queen Charlotte Sound and Tory Channel as shown in Volume Three.
NZGD2000	means the New Zealand Geodetic Datum 2000 as defined by Land Information New Zealand.
NZTM	means the New Zealand Transverse Mercator projection as defined by Land Information New Zealand.
SET INTERVAL	means the time interval at which the Data Recording Device shall record and store data.
SHIP SPEED	means speed of a ship measured relative to the speed of the adjacent water averaged over a period of approximately 5 minutes as determined from an accurate, appropriately calibrated and maintained hull-mounted instrument or, where such an instrument is not available or is faulty, calculated in accordance with Appendix K.
SIGNIFICANT WAVE	means the spectral definition of significant wave height as specified further in

HEIGHT	IAHR (1989).
WASH RULE	means a Maximum Wave Energy of 9 kilojoules per metre, which may be exceeded no more than once in 10 sequential Wave Records. The sequence of Wave Records need not be contiguous where instrument or system failure or presence of non-calm conditions or missed passage of ships would make any particular Wave Record unusable or unavailable.
WAVE ENERGY	means the excess of total energy of progressive waves over the energy of still water integrated over a wave length per unit of wave-crest length assessed at a 3 metre water depth at sites that comply with the parameters specified in Appendix K.
WAVE RECORD	means any record of the ship-generated vertical displacement of the seawater surface as a function of time derived at any location within the National Transportation Route that meets the requirements of Clause 3 of Appendix K.
WGS84	means World Geodetic System 1984, and is a definition for the shape of the earth and geocentric coordinates (i.e. latitude and longitude) based on a geocentric origin (i.e. the exact centre of the earth).

35. Coastal Marine Zones 1 and 2

35.1 Permitted Activities

Delete the following bullet point from 35.1:

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

Insert the following new bullet point in 35.1:

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

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

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.~~

Insert a new Rule 35.1.2.10 as follows:

35.1.2.10 Use of Surface Water by Ships

35.1.2.10.1 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 gross registered tonnes;

shall not exceed a ship speed of 15 knots.

35.1.2.10.2 The use of surface water by the M.V. Aratere and the M.V. Arahura and the M.V. Kent shall be a permitted activity and shall be exempt from the condition specified in rule 35.1.2.10.1 above provided that:

a) Their individual ship speed shall not exceed 20 knots; and

b) The ship shall carry Data Recording Devices which shall be operated at all times whilst the ship is travelling in the National Transportation Route and which shall record:

(i) date and time (to the nearest second);

(ii) the ship's plan position based on either WSG84, NZGD 2000 or the NZTM projection datum;

(iii) the speed of the ship over the ground;

(iv) Ship Speed through the water; and

c) Data shall be recorded in the Data Recording Devices at a Set Interval of not more than 60 seconds; and

d) Plan position shall be accurate to within 30 metres and shall be recorded to a precision of 5 metres or better; and

e) Ship's speed over the ground and Ship Speed through the water shall be accurate to within 0.5 knots and shall be recorded to a precision of 0.1 knots or better; and

f) The data recorded by the Data Recording Devices shall be retained and archived on board the ship in an electronic format readable by the Council for a period of no less than 6 months except where that data is available to the Council via an Automatic Identification System; and

g) The Data Recording Devices shall be of a type that ensures no data can be manually tampered with and all archived records shall be stored in a manner that prevents manual adjustment of data; and

h) Where the ship is fitted with equipment capable of transmitting the data recorded in the Data Recording Devices instantaneously to a compatible receiving device held by the Council, the data specified in (b) (i) to (iv) above shall be transmitted instantaneously to that receiver for the duration of the ship's passage through the National Transportation Route; and

i) Where any fault or technical problems occur in the operation of the Data Recording Devices or any related equipment or systems, the ship operator shall immediately arrange for the equipment or systems to be serviced and shall advise the Council of the fault or problem and the intended programme and time frame to effect the service and any necessary repairs; and

j) Where a fault or technical problem affecting the Data Recording Devices or any related equipment or systems results in the Data Recording Devices being inoperable for a period of more than two weeks, the maximum Ship Speed shall be limited to 15 knots.

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

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;~~

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 35.1.2.10.1 and 35.1.2.10.2 shall only be a Permitted Activity provided that the ship speed does not exceed the maximum speed specified in those rules.

35.2 Controlled Activities

Amend Rule 35.2 as follows:

...

All Controlled Activities shall be subject to the general conditions applicable to Permitted Activities. An application for resource consent may be considered without notification or the need to obtain the written approval of affected persons unless otherwise specified.

...

Insert the following new bullet points:

- **Except as provided for in Rule 35.1.2.10.2, use of surface water within the National Transportation Route by high speed ships, or ships that exceed 500 gross registered tonnes, which are travelling at a ship speed exceeding 15 knots, including any associated disturbance of the foreshore and seabed.**

- **Use of surface water by high speed ships or ships that exceed 500 gross registered tonnes which are travelling at a ship speed exceeding 15 knots in the National Transportation Route for the purposes of undertaking measurements of Wave Energy, including any associated disturbance of the foreshore and seabed.**

Insert the following new section as 35.2.6:

35.2.6 Except as provided for in Rule 35.1.2.10.2 , use of surface water within the National Transportation Route by high speed ships, or ships that exceed 500 gross registered tonnes, which are travelling at a ship speed exceeding 15 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 Wash Rule in the National Transportation Route.

35.2.6.2 Terms

a) The duration period of any consent shall not exceed 20 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 ship shall carry Data Recording Devices which shall be operated at all times whilst the ship is travelling in the National Transportation Route.

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d) Whilst operational, the Data Recording Device shall record:

(i) date and time (to the nearest second);

(ii) the ship's plan position based on either WSG84, NZGD2000 or the NZTM projection datum;

(iii) the speed of the ship over the ground;

(iv) Ship Speed through the water; and

e) Data shall be recorded in the Data Recording Devices at a Set Interval of not more than 60 seconds.

f) Plan position shall be accurate to within 30 metres and shall be recorded to a precision of 5 metres or better.

g) Ship's speed over the ground and Ship Speed through the water shall be accurate to within 0.5 knots and shall be recorded to a precision of 0.1 knots or better.

h) The data recorded by the Data Recording Devices shall be retained and archived on board the ship in an electronic format readable by the Council for a period of no less than 6 months except where that data is available to the Council via an Automatic Identification System.

i) The Data Recording Devices shall be of a type that ensures no data can be manually tampered with and all archived records shall be stored in a manner that prevents manual adjustment of data.

j) Where the ship is fitted with equipment capable of transmitting the data recorded in the Data Recording Devices instantaneously to a compatible receiving device held by the Council, the consent holder shall ensure that the relevant data specified in (d) (i) to (iv) above is transmitted instantaneously to that receiver for the duration of the ship's passage through the National Transportation Route.

k) Where any fault or technical problems occur in the operation of the Data Recording Devices or any related equipment or systems, the consent holder shall immediately arrange for the equipment or systems to be serviced and shall advise the Council of the fault or problem and the intended programme and time frame to effect the service and any necessary repairs.

l) Where a fault or technical problem affecting the Data Recording Devices or any related equipment or systems results in the Data Recording Devices being inoperable for a period of more than two weeks, the maximum Ship Speed shall be limited to 15 knots.

35.2.6.3 Matters Over Which Control is Reserved and For Which Conditions May Be Imposed

The Council reserves its control over and may impose conditions in respect of the following matters:

a) The duration of the consent;

b) The spatial limits of defined navigation corridors within which a ship shall be permitted to travel provided that these shall not interfere with the safe navigation of the Ship and shall be consistent with national and international regulations;

c) Maximum values of Ship Speed over defined areas within the National Transportation Route;

d) Approved method(s), frequency and certification of calibration of the Data Recording Device(s) required by this Plan to measure Ship Speed;

e) The Set Interval for data recorded in the Data Recording Devices;

f) The format, storage method, mode of transmission and frequency of transmission to the Council of the data recorded in the Data Recording Devices;

g) The purpose, timing and criteria for review of any of the conditions of consent;

h) The administrative charges payable.

35.2.6.4 Applications for resource consent under Rule 35.2.6 will be publicly notified.

Insert the following new section as 35.2.7:

35.2.7 Use of surface water by high speed ships or ships that exceed 500 gross registered tonnes which are travelling at a ship speed exceeding 15 knots in the National Transportation Route for the purposes of undertaking measurements of Wave Energy, including any associated disturbance of the foreshore and seabed.

35.2.7.1 Terms

a) 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;

b) The ship shall carry Data Recording Devices which shall be operated at all times whilst the ship is travelling in the National Transportation Route.

c) Whilst operational, the Data Recording Devices shall record:

(i) date and time (to the nearest second);

(ii) the ship's plan position based on either WSG84, NZGD2000 or the NZTM projection datum;

(iii) the speed of the ship over the ground;

(iv) Ship Speed through the water;

d) Data shall be recorded in the Data Recording Devices at a Set Interval of not more than 60 seconds.

e) Plan position shall be accurate to within 30 metres and shall be recorded to a precision of 5 metres or better.

f) The Data Recording Devices recording of ship speed over the ground and Ship Speed through the water shall be accurate to within 0.5 knots and shall be recorded to a precision of 0.1 knots or better.

g) The data recorded by the Data Recording Devices shall be retained and archived on board the ship in an electronic format readable by the Council for a period of no less than 6 months except where that data is available to the Council via an Automatic Identification System.

h) The Data Recording Devices shall be of a type that ensures no data can be manually tampered with and all archived records shall be stored in a manner that prevents manual adjustment of data.

i) Where the ship is fitted with equipment capable of transmitting the data recorded in the Data Recording Devices instantaneously to a compatible receiving device held by the Council, the consent holder shall ensure that the relevant data specified in (d) (i) to (iv) above is transmitted instantaneously to that receiver for the duration of the ship's passage through the National Transportation Route.

j) Where any fault or technical problems occur in the operation of the Data Recording Devices or any related equipment or systems, the consent holder shall immediately arrange for the equipment or systems to be serviced and shall advise the Council of the fault or problem and the intended programme and time frame to effect the service and any necessary repairs.

k) Where a fault or technical problem affecting the Data Recording Devices or any related equipment or systems results in the Data Recording Devices being inoperable for a period of more than two weeks, the maximum Ship Speed shall be limited to 15 knots.

35.2.7.2 Matters Over Which Control is Reserved And For Which Conditions May Be Imposed

The Council reserves its control over and may impose conditions in respect of the following matters:

a) The duration of the consent;

b) The spatial limits of defined navigation corridors within which a ship shall be permitted to travel provided that these shall not interfere with the safe navigation of the Ship and shall be consistent with national and international regulations;

c) Maximum values of Ship Speed over defined areas within the National Transportation Route;

d) Approved method(s), frequency and certification of calibration of the Data Recording Device(s) required by this Plan to measure Ship Speed;

e) The Set Interval for data recorded in the Data Recording Devices;

f) The format, storage method, mode of transmission and frequency of transmission to the Council of the data recorded in the Data Recording Devices;

g) The administrative charges payable;

35.2.7.3 Applications for resource consent under Rule 35.2.7 will be publicly notified.

35.4 Discretionary and where applicable Restricted Coastal Activities

Insert the following new bullet point in 35.4:

- **Use of surface water within the National Transportation Route**

Insert the following new section as 35.4.2.13.

35.4.2.13 Use of surface water within the National Transportation Route

35.4.2.13.1 Except as provided for in Rule 35.1.2.10.2, use of surface water within the National Transportation Route by high speed ships, or ships that exceed 500 gross registered tonnes, which propagate waves that exceed the Wash Rule and are travelling at a ship speed greater than 15 knots, including any associated disturbance of the foreshore and seabed, is a Discretionary Activity.

35.4.2.13.2 Applications for resource consent under Rule 35.4.2.13 will be publicly notified.

35.4.2.13.3 Assessment Criteria

a) The effects of waves propagated from the ship that exceed the Wash Rule on:

(i) coastal and marine ecology;

(ii) physical coastal processes;

(iii) the relationship that Maori, and in particular Te Atiawa, and their culture and traditions have with coastal resources including effects on:

- Kaimoana
- Waahi tapu

(iv) people and communities including on:

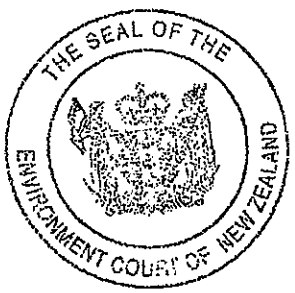
- Navigational safety
- Property
- Recreation
- Public access
- Amenity values
- Other users of the marine environment

b) The need for and appropriateness of measures for monitoring the effects of the waves expected to be generated by the ship.

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

Insert the following new bullet point:

- Use of surface water within that part of Queen Charlotte Sound not on the National Transportation Route by high speed ships, or ships that exceed 500 gross registered tonnes, which are travelling at ship speeds greater than 15 knots.



Appendices

Insert the following new Appendix after Appendix J in Volume Two:

Appendix K: Determination of Wave Energy

1. Technical Information to be provided with applications for consent

1.1 To demonstrate that a ship will comply with the Wash Rule, resource consent applicants shall submit technical information prepared by a competent professional based on either:

1.1.1 Accepted and properly calibrated computational models, physical models, analytical or empirical analysis allowing for the specific characteristics of the ship concerned and all the relevant operating conditions, navigation tracks, physical effects and conditions within the National Transportation Route; or

1.1.2 Direct measurements specific to the ship concerned covering relevant operating and physical conditions; or

1.1.3 Combinations of the approaches outlined above.

1.2 Wave Energy shall be calculated according to linear wave theory (also known as Airy wave theory), as outlined further below, based on the maximum zero down-crossing wave height and the corresponding zero down-crossing wave period in any Wave Record, as defined further in IAHR (1989).

1.3 Wave Energy shall be determined at a standard depth of 3 metres for sites at which, in the opinion of a competent professional, are not significantly influenced by the effects of diffraction due to bathymetry and objects.

1.4 Applications for consent shall include information detailing the following:

(i) The Data Recording Device(s) intended for recording ship navigation details;

(ii) The intended format, mode of transmission and frequency of transmission to the Council of data recorded by the Data Recording Device(s) including any proposed protocols or arrangements for access to the Data Recording Device(s);

(iii) The intended format, method and location of storage of data generated by the Data Recording Device(s) that is held by the consent holder as archived information including any proposed protocols or arrangements for access to that archived information;

(iv) The intended maximum Ship Speed through the National Transportation Route including spatial definition of any areas of the National Transportation Route within which maximum Ship Speed is to be varied;

(v) For applications made under Rule 35.2.7, details of the location, timing, duration and frequency of events for measuring Wave Energy;

(vi) For applications made under Rule 35.4.2.13, a description of any measures proposed for monitoring the effects of waves generated by the ship on the coastal environment;

(vii) The International Maritime Organisation number and name of the ship to which the application relates.

2. Approved Measurement Sites

2.1 For the purposes of assessing compliance with the Wash Rule under any of the methods listed in clause 1.1 above, Wave Energy shall be calculated from assessments and measurements at a minimum of two sites in Tory Channel from the list of the Approved Measurement Sites in Table 1 below. Applicants are free to determine which of the Approved Measurement Sites are to be used, and shall specify in the application which of the Sites have been adopted for assessment purposes. However, applicants shall also ensure that a site from Table 1 is adopted that best represents conditions throughout each area in the National Transportation Route for which particular values of maximum Ship Speed and limits to the navigation corridor are proposed.

2.2 Where an applicant proposes differential speeds for identified areas within the National Transportation Route, the application shall specify which Approved Measurement Sites are proposed to be used to determine the compliant speed for that area. The sites from Table 1 that are specified for this purpose should be representative of conditions within the areas identified in the application.

2.3 Once the representative sites have been determined then the Council's evaluation of the assessments and proposed maximum speed limits and navigation corridors shall be confined to those sites.

2.4 Applicants shall ensure that the analysis of effects at the selected sites covers the full range of ship operating conditions expected to be encountered over the life of the resource consent. Such conditions shall include the full range of tidal flows, navigation paths, and the amount and distribution of hull displacement.

Table 1. Approved Measurement Sites

Channel	Location Description	NZGD2000 Coordinates	
Tory Channel	Ngaionui Point West, Arapawa Island	174° 10′.782 E	41° 14′.462 S
	Te Weka Bay	174° 11′.396 E	41° 14′.983 S
	Wiriwaka Point West, Arapawa Island	174° 12′.287 E	41° 14′.192 S

	Tipi Bay West	174° 17'.001 E	41° 13'.699 S
Queen Charlotte Sound	Picton Point	174° 02'.177 E	41° 15'.283 S
	East Kahikatea	174° 07'.095 E	41° 14'.170 S

3. Direct measurement of wave properties

3.1 Wave properties used to calculate Wave Energy from a directly measured Wave Record shall be determined according to the following conditions and assumptions:

(a) Measurements shall be made by, or under the supervision of, a competent professional experienced in the measurement of waves using an appropriate, calibrated wave measurement instrument and accepted data analysis methodologies.

(b) Measurements shall be made at any of the sites identified in Table 1 above and shall be undertaken only in conditions when those sites are substantially clear of kelp and other obstacles.

(c) Measurements shall be made in depths of water of between 1 and 5 metres. In order to calculate Wave Energy, the wave properties determined from the Wave Record at the point of measurement shall be transformed to a standard depth of 3 metres using the following methodology or assumptions:

(i) Shoaling and refraction analysis to calculate a transformed wave height shall be based on Snell's law assuming that the seabed contours are parallel with the direction of travel of the ship, and that the angle between the wave crests of the waves generated by the ship in deep water and the seabed contours is 55°.

(ii) A local water depth of $D + \frac{1}{2}H$, where D is the average water depth and H is the measured wave height applicable to the Wave Record, shall be adopted in the shoaling and refraction analysis for the purpose of calculating group wave celerity and wave length.

(iii) The effects of bottom friction, viscous effects and turbulence shall be ignored.

(iv) Wave period shall be unadjusted from that determined at the point of measurement.

(d) Measurements shall be made only under calm conditions which shall be deemed to exist where the Significant Wave Height related to wind and other disturbances (other than the ship under evaluation) at the measurement site does not exceed 0.05 metres based on a Wave Record recorded for a duration of not less than 5 minutes immediately prior to recording ship Wave Energy.

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(e) For the purposes of calculating wave characteristics under this Plan, the density of water shall be taken as 1025 kilograms per cubic metre, the gravitational acceleration shall be taken as 9.806 metres per second squared, and any other physical parameters required shall be those applicable at a temperature of 15°C.

4. Assessment of speed through the water

4.1 The following method is an accepted methodology to determine Ship Speed where an appropriate instrumental approach is not available or where the hull-mounted instruments are faulty.

The speed through the water, V_W, is calculated from the speed over the ground, V_G, according to:

$$V_W = V_G - \lambda \times U_T \qquad (1)$$

in which λ is an index that describes the direction of travel of the ship (λ = 1 for ships travelling towards Picton, and λ = -1 for ships travelling away from Picton), and U_T is the speed of the tidal stream. The convention for the speed of the tidal stream is that it is positive for the flooding phase (i.e. tide level is rising) and negative for the ebbing phase (i.e. tide level is falling).

For the purposes of calculating the speed of the tidal stream, the Marlborough Sounds is deemed to consist of three zones. Each zone is named after the tidal stream data point marked B, C and D that is located within each zone as shown on Marine Chart NZ 6153. The speed of the tidal stream in each zone is calculated from:

$$U_T = A \cos\left(\frac{2\pi}{12}(t - t_{HT} + t_L)\right) \qquad (2)$$

in which A is the amplitude of tidal stream speed (see Table 2 below), t is the time in hours since midnight, t_{HT} is the time of the nearest high-tide in Wellington, and t_L is the lag between the tidal stream and the high-tide at Wellington (see Table 2 below). The times use for t and t_{HT} must be to a consistent standard, either New Zealand Daylight Saving time (NZDT) or New Zealand Standard time (NZST) depending on the time of year. Equation 2 is a cosine fit to the tidal stream with a semi-diurnal period of 12 hours. The time of high tide is based on the figures published in the New Zealand Almanac (or an equivalent source). The tidal zones, their definitions, and values for the coefficients in equation 2, are given in Table 2 below.

Table 2. Tidal zones and tidal speed parameters that might be adopted to assess speed through the water under Variation 3.

Zone	Description of Limits of Zone	A (knots)	t_L (Hour)
B	Zone anywhere in Queen Charlotte Sound, and separated from	0.3	-0.4

Zone	Description of Limits of Zone	A (knots)	t_L (Hour)
	Tory Channel along latitude 41°14′ S at Dieffenbach Point.		
C	Zone in Tory Channel between latitude 41°14′ S at Dieffenbach Point at its western end and longitude 174°18′ E in Tory Channel at its eastern end.	1.8	-0.4
D	Zone near the Heads in Tory Channel located east of longitude 174°18′ E.	6.7	0.0

VOLUME THREE: MAPS

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

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

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