

# Revision of the Hector's and Māui Dolphin Threat Management Plan: Fisheries Measures

Advising agencies	<i>Fisheries New Zealand (business unit of the Ministry for Primary Industries – MPI)</i>
Decision sought	<i>Authorise the Minister of Fisheries to submit drafting instructions to PCO for new fisheries measures to manage the effects of fishing-related mortality on Hector's and Māui dolphins.</i>
Proposing Ministers	<i>Hon Stuart Nash Minister of Fisheries</i>

## Summary: Problem and Proposed Approach

### Problem Definition

**What problem or opportunity does this proposal seek to address? Why is Government intervention required?**

New science information demonstrates that human-induced threats to the Māui dolphins (classified as Nationally Critical) and Hector's dolphins (classified as Nationally Vulnerable) are preventing the populations from achieving the desired population outcomes and objectives for each subspecies as set out under their Threat Management Plan.

The population outcomes and objectives are designed to support the populations to achieve levels close to what they would be without human-induced impacts, and to ensure that population connectivity and dispersal are supported for the whole species. Population trends are uncertain, but the subspecies remain vulnerable to any human-induced deaths. It is important that human-threats are managed to allow the population outcomes and objectives to be achieved.

The three main human-threats to the dolphins that are preventing the outcomes and objectives from being achieved are set-net fishing, trawl fishing and the disease toxoplasmosis.

Further measures are required to address the fishing threats in order to support achieving the outcomes and objectives. However, the other major lethal threats to the dolphins (i.e. toxoplasmosis) must also be addressed, as fisheries measures alone will not deliver the desired outcomes.

This RIA focuses only on fishing-related threats to the dolphins as managed by the Minister of Fisheries.

### Summary of Preferred Option or Conclusion (if no preferred option)

**How will the agency's preferred approach work to bring about the desired change? Why is this the preferred option? Why is it feasible? Is the preferred approach likely to be reflected in the Cabinet paper?**

The preferred option is to put in place regulatory interventions to extend the current restrictions, or create new ones, on the use of commercial and recreational set-netting, commercial trawling, and drift netting. These interventions will significantly reduce the remaining risk of fishing-related deaths of the Hector's and Māui dolphins so that it is below the levels that the scientific information indicates are required to protect the dolphins and help achieve the desired outcomes. The preferred option is made up of a matrix of measures across the different subpopulations of Hector's and Māui dolphins and these are discussed in detail later in the paper.

This is the best option because it:

- provides the most comprehensive means of implementing spatially targeted risk reduction measures across both recreational and commercial fishing activities; and
- allows commercial and recreational fishing activities to continue in the marine environment, subject to limits.

This approach is reflected in the Cabinet paper.

## Section B: Summary Impacts: Benefits and costs

**Who are the main expected beneficiaries and what is the nature of the expected benefit?**

The main expected benefits (primarily non-monetised) of the preferred options are to the Hector's and Māui dolphin subpopulations, general public and marine users:

**Hector's and Māui dolphin subpopulations:** Reduced fisheries-related deaths are expected to support the maintenance of, or increases in, local and subpopulation dolphin numbers, and to support maintaining and/or enabling connectivity between local and subpopulations to support genetic biodiversity, noting however that benefits may not be realised if other human-induced threats are not also managed.

**General public:** Providing New Zealanders the reassurance and confidence that our fisheries and the impacts of fishing on the marine environment, particularly on protected species such as dolphins, are properly and responsibly managed.

**Marine users:** Improved certainty about the extent and type of fishing activities and use allowed in key habitat areas for the dolphins.

**Tourism:** Improved public confidence in marine mammal protection from fisheries impacts may bring indirect benefits to domestic tourism, specifically the tourism operators in the South Island who have existing concessions to undertake dolphin watching activities.

**Government:** Improving Hector's and Māui dolphins' threat classification statuses, recognising they are subspecies unique to New Zealand would enhance our reputation as a country seeking to improve the environmental performance of its primary industries.

**Industry:** A secondary benefit will be in New Zealand's international reputation in conservation of marine mammals and their habitat. This may have consequential trade benefits with countries that consider the environmental performance of our fisheries when accepting exports of New Zealand fish and fish products.

## Where do the costs fall?

The most significant monetised and non-monetised costs would fall on:

- Regional commercial, recreational and customary fishers, licensed fish receivers<sup>1</sup> and employees, and local communities in the most affected regions, including:
  - loss or restricted access to fisheries resources (reduced catch/revenue);
  - costs to travel to more distant fishing grounds, or transition to different fishing methods;
  - impact on the ability of commercial fishers and licensed fish receivers to provide iwi with fish for hui and tangi (pātaka);
  - reduced business profitability or exit from the fishing industry; and
  - potential rationalisation of the commercial fleet in these areas.
- For government and Fisheries New Zealand as the administrator of the Fisheries Management System, there are expected to be short-term costs, including:
  - increased monitoring and compliance activities; and
  - revised educational and promotional material regarding the fisheries changes.

There are no mandatory compensation costs to Government for regulatory measures taken for the purposes of sustainability under the Fisheries Act 1996. However, there is a proposal for a fund for transitional support to affected commercial fishers (this is discussed later).

## What are the likely risks and unintended impacts, how significant are they and how will they be minimised or mitigated?

### Litigation

- The Government is likely to face opposition to some of the proposed restrictions, which presents an implementation risk and could raise the Government's costs if action is taken through the Court. A legal challenge may be driven from the fishing industry, iwi and/or environmental interests that consider the measures either go too far or not far enough to address fisheries risk to the dolphins.

### Effectiveness

- Effort displacement may increase risk to dolphins in areas that remain open. Regular monitoring will enable Fisheries New Zealand to reassess risk and respond if necessary.
- Changing fishing practices to dolphin-safe methods may have unintended impacts on catch composition or catchability of target species, making it difficult for fishers to avoid unwanted fish species. Government will work with industry and try to identify ways that minimise unintended impacts.
- Benefits may not be realised if other human-induced impacts are not also managed. Fisheries New Zealand will continue to work with Department of Conservation to

<sup>1</sup> Only licensed fish receivers (LFRs) are allowed to receive fish for sale. They can also trade fish with other LFRs. Commercial fishers must sell their catch to an LFR. This restricts fishers' options for landing their catch, and means that fish can be tracked.



ensure agencies are aligned in efforts to manage human-threats and support achieving the objectives.

#### **Environmental**

- Transition to dolphin-safe fishing methods can have unintended consequences for other protected species. For example, some alternative methods may increase bycatch of seabirds. Seabird mitigation devices may mitigate this risk.

#### **Reputational**

- The proposed measures may improve the reputation of New Zealand's fisheries management system both domestically and internationally.

#### **Impacts on individuals**

- The proposed measures will likely significantly affect some fishers and the businesses that support them (and their employees), despite efforts to minimise impacts on use of fisheries resources. We have recommended transitional support, including ex-gratia payments where appropriate.

#### **Impacts on Māori interests**

- The measures may impact on the ability of commercial fishers and licensed fish receivers to provide Taranaki iwi with fish for hui and tangi (pātaka) as done under current arrangements. There may be ability for iwi to enter into alternative arrangements, but it is uncertain how many fishers or opportunities will remain. Fisheries New Zealand notes that tangata whenua may still authorise customary fishing to be carried out by commercial fishing vessels using any type of fish gear or method. We will work with iwi to identify, consider and support alternative options (for example, with other commercial fishers that continue to operate other fishing methods in the region).

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## **Section C: Evidence certainty and quality assurance**

### **Agency rating of evidence certainty?**

We have a reasonable confidence about the evidence base for the size of the problem, effectiveness of the policy options, and associated cost and benefits. The revised policy and regulatory proposals are supported by:

- Revised dolphin population and subpopulation estimates;
- New sightings and spatial distribution information of the dolphins;
- Updated information from fisheries observers;
- Updated bycatch and fishing activity information;
- Information from the Department of Conservation's necropsy programme; and
- A spatial risk assessment of threats to Hector's and Māui dolphins (the risk assessment), commissioned by Fisheries New Zealand and the Department of

Conservation, and provided by a team of independent and academic scientists led by NIWA, and

- Socioeconomic modelling of the costs/impacts of fisheries measures.

The spatial risk assessment is a substantive advance on risk assessments that have been undertaken previously, enabling more refined estimates of the spatial overlap of dolphin distribution with fishing activities and some non-fishing threats. The risk assessment has been subject to peer review, including by an international panel of experts.

Nonetheless, assumptions and uncertainties remain within the risk assessment, particularly on effects from non-fishing activities, including disease, seismic exploration and potential effects of seabed mining. Assumptions and uncertainties have been addressed qualitatively throughout the development of proposals.

Fisheries New Zealand accepts that the risk assessment does not provide complete certainty, but considers that it provides the best scientific evidence that is available.

An independent assessment of the methodology used to estimate the socioeconomic costs and wider impacts of fisheries measures was undertaken by the New Zealand Institute of Economic Research (NZIER). NZIER confirmed the methodology used by Fisheries New Zealand was fit for purpose, subject to minor adjustments that were incorporated into the final analyses.

Overall, the regulatory initiatives and the associated costs and benefits are based on projections from a comprehensive assessment of available data, and applying accepted scientific principles in assessing risk to marine mammals.

*To be completed by quality assurers:*

Quality Assurance Reviewing Agency:

MPI/Department of Conservation Regulatory Impact Analysis Panel

Quality Assurance Assessment:

The review team considers that the Regulatory Impact Analysis "*Revision of the Hector's and Māui Dolphin Threat Management Plan: Fisheries Measures*" **fully meets** the Quality Assurance criteria.

Reviewer Comments and Recommendations:

# Impact Statement: Revision of the Hector's and Māui Dolphin Threat Management Plan: Fisheries Measures

## Section 1: General information

### 1.1 Purpose

Fisheries New Zealand, a business unit of the Ministry for Primary Industries, is solely responsible for the analysis and advice set out in this Regulatory Impact Statement, except as otherwise explicitly indicated.

This analysis and advice has been produced for the purpose of informing key policy decisions to be taken to Cabinet.

### 1.2 Key Limitations or Constraints on Analysis

Limitations and constraints underpinning the analysis fall within the following categories:

- Scope;
- Interdependencies;
- Evidence of the problem;
- Quality of data used for impact analysis; and
- Consultation and testing.

#### Scope

Decision-making is constrained to the proposals that were consulted on in 2019 and focused on removal of fisheries risk via the banning of certain fishing methods (set-netting, trawling, and drift netting) in specific spatial areas. It also considered allowing the use of commercial ring-netting in west coast North Island harbours that was considered to be a dolphin-safe fishing method in those harbours.

Options that prohibited all set-net or trawl fishing within the known or predicted range of Hector's and Māui dolphins were not consulted on and are out of scope for decision-making. This relates to designing measures to meet the population outcomes for Hector's and Māui, which are 90% and 95% respectively of the maximum number of dolphins the environment can support, not 100%.

Also, in some areas the risk of fishing-related deaths from these methods was estimated to be very low as there was low fishing effort in locations where dolphins occur (e.g. west coast of the South Island for Hector's dolphins). In these locations no additional or new measures were proposed.

Options that considered alternative means of risk management (e.g. risk reduction via gear modification, or mitigation technology) were not consulted on. However, as a result of submissions received during consultation such options have been considered by



Fisheries New Zealand and will be part of a future consultation process (discussed in more detail in Section 5.1).

### **Interdependencies**

Interdependencies include future decisions on how to manage non-fishing-related threats to the dolphins, which is led by the Department of Conservation.

The need to manage the adverse effect of fishing-related mortality is independent of any other adverse effect on the population. However, the overall population outcomes for Hector's and Māui dolphins require all human-induced threats, particularly from toxoplasmosis, to be managed appropriately. If these other risks are not managed then they will undermine, in part, or completely, the benefits stemming from controls and associated costs placed on the fishing industry.

### **Evidence of the problem**

Limitations and constraints underpinning evidence of the problem:

- Modelling of spatial estimates of dolphin density are most reliable in locations with more dolphins.
- Modelling spatial distribution based on suitable habitat for dolphins was limited by factors the model could not consider (e.g. physical barriers like sandbars in harbours).
- Public sightings (used as an independent validation of the habitat model) are considered an imperfect way of estimating dolphin densities.
- In areas with low densities of dolphins the estimates of population size, distribution, and overlap with fisheries are less reliable.
- In areas where there are fewer people on the water there will be fewer sightings, but this does not mean there are fewer dolphins.
- Uncertainty in the extent and location of fishing-related mortalities of dolphins due to generally low levels of independent monitoring (via observer coverage), except in a few areas.

We consider the limitations to be of minor/moderate significance. All scientific information and associated estimates that use this information are subject to uncertainty. The power of the methodology that is used is that we are able to account for most of this uncertainty (for example using confidence intervals in estimates of risk reduction). Where this uncertainty cannot be included explicitly within the modelling it is described qualitatively and has been taken into account in analysing options and making final recommendations.

### **Quality of data used for impact analysis**

Limitations and constraints underpinning cost benefit analysis:

- Estimated impacts on commercial fishers rely on assumptions about potential loss of catch, including the diversity in species and value of fish caught.
- Estimated impacts on commercial fishers do not take into account any adjustments that may be able to be made in relation to fishing using alternative method or locations.
- The estimates of annual revenue loss and total economic costs are subject to a range of assumptions, given that we do not have access to the specific business

accounts of individual fishers and licensed fish receivers. Therefore the estimates are not a definitive measure of net costs.

- There is sparse data and information on the level of recreational set-net effort and catch in areas that would be affected by the proposals.
- Much of the qualitative data is derived from information received during public consultation. There is potential bias in the information provided and uncertainty in the magnitude of unquantified costs and benefits.

We consider these limitations to be of minor significance. Areas of uncertainty have been considered during options analysis. Further information will be assessed prior to any support being delivered to affected industry stakeholders (section 5.3).

### **Consultation and testing**

Limitations and constraints underpinning regulatory and non-regulatory intervention options:

- The Government sought to complete the review of the Hector's and Māui Dolphin Threat Management Plan by the end of 2019. Some stakeholders, particularly iwi, submitted that ideally we could have consulted for a longer period, which would have allowed more opportunity for discussion of the nature and extent of the problem and collective determination of possible options.
- We note that there was an 8 week consultation with numerous public meetings and hui, which we consider provided adequate time for all parties to have input and submit their views.
- We therefore do not consider this to have been a significant limitation or constraint on the analysis and development of the preferred set of options.
- We also note that as a result of submissions received through the consultation process Fisheries New Zealand intends to consult in 2020 on some new proposals concerning gear restrictions and tow speed that will provide further reduction of risk of fishing-related mortality.

### **1.3 Responsible Manager (signature and date):**



Stuart Anderson  
Director Fisheries Management  
Fisheries New Zealand  
Ministry for Primary Industries  
17 March 2020



## Section 2: Problem definition and objectives

### 2.1 What is the current state within which action is proposed?

#### Environmental state

Hector's dolphins are endemic to the coastal waters of New Zealand. In 2002, Hector's dolphins were identified as two subspecies – the Māui dolphin and Hector's dolphin. This identification is the result of genetic and bone structure analysis. Hector's and Māui dolphins are together considered to be one of the world's rarest dolphin species.

Hector's and Māui dolphins are most prevalent close to shore (within four nautical miles), but are known to range further offshore in locations where their preferred habitat extends beyond 4 nautical miles (e.g. Pegasus Bay, where preferred habitat correlates better with the 50 m depth contour rather than distance offshore).

The Māui dolphin population (found off the west coast of the North Island), is estimated at around 63 individuals above 1 year of age, and is classified as *Nationally Critical*.<sup>2</sup> Scientific models estimate that the Māui dolphin population has declined in the past 20 years. The decline can be explained by a combination of commercial and recreational fishing impacts, and other non-fishery threats such as disease. Science information suggests the greatest threats to Māui dolphins are set-net fisheries, trawl fisheries, and the disease toxoplasmosis, with toxoplasmosis outweighing fisheries in terms of estimated risk. Current population trends are uncertain, but the population remains vulnerable to any human-induced deaths. There is a possibility of extinction if the decline continues.<sup>3</sup>

The Hector's dolphin population (found mainly around the South Island) is estimated to consist of around 15,700 individual dolphins and is classified as *Nationally Vulnerable*. The greatest estimated threats to Hector's dolphins are set-net fisheries, trawl fisheries, and toxoplasmosis. Risk from toxoplasmosis is estimated to be greatest on the west coast South Island, but may outweigh fisheries risk in all locations. Population trends are uncertain.

Genetic evidence supports the presence of distinct subpopulations of Hector's dolphins. The largest subpopulations are along the east and west coasts of the South Island, with a relatively small subpopulation along the south coast. Hector's dolphins on the north coast may comprise a fourth subpopulation, but this is uncertain (refer to map in **Appendix One**).

#### Societal expectations

A context for proposing further action is the increasing societal expectations both domestically and internationally for fishing to be as low impact as possible on the aquatic environment. New Zealand's reputation for providing for a thriving marine ecosystem requires, in part, improved environmental performance in the management of bycatch

<sup>2</sup> Both Hector's and Māui dolphins are classified as threatened species, which have the greatest risk of extinction. Māui dolphins are ranked as Nationally Critical, which are the most severely threatened, and face an immediate high risk of extinction. Hector's dolphins are ranked as Nationally Vulnerable, and face a risk of extinction in the medium term.

<sup>3</sup> Supporting scientific evidence for both Hector's and Māui dolphins can be found at this link: <https://www.fisheries.govt.nz/news-and-resources/consultations/hectors-and-maui-dolphins-threat-management-plan-review/>

levels of protected species. The general public is increasingly seeking reassurance and confidence that our fisheries, and the impacts of fishing on the marine environment (particularly on protected species such as dolphins), are properly and responsibly managed.

### **Current management framework**

The framework for identification and management of human-induced threats to the Hector's and Māui dolphin sits within a Threat Management Plan, first developed in 2007. The Threat Management Plan is led by both Fisheries New Zealand and the Department of Conservation. It is the Department of Conservation's role and responsibility to manage the dolphin populations overall. It is Fisheries New Zealand's role and responsibility to manage the effects of fishing on the dolphins.

The current suite of regulatory and non-regulatory mitigation measures reflect the different threats facing the dolphins (fishing-related and non-fishing-related), and were based on the knowledge and tools available (about the dolphins and threats) at the time they were put in place. These measures were designed to meet the legislative obligations in the Fisheries Act 1996, and the goals and outcomes of the Threat Management Plan.

Historically, fishing using set-nets (commercial and recreational) and trawl nets has been regarded as the greatest human-induced threat of death of Hector's and Māui dolphins. Measures to manage the fishing-related mortality of Hector's and Māui dolphins include set netting and trawling area-based restrictions to avoid entanglement of dolphins that have been set using powers under the Fisheries Act 1996. The total area covered by regulatory restrictions has increased over time, reflecting improved information on the nature and extent of the risks. Currently, approximately 8,000 square kilometres of coastline has restrictions on trawling and 15,000 square kilometres is closed to set-netting (refer to maps in **Appendix Two**).

Monitoring of interactions between commercial fishing activity and Hector's and Māui dolphins is carried out by fisheries observers, and in the Maui dolphin core area of distribution, also by the use of on-board cameras on approximately 20 vessels since November 2019.

There are also five marine mammal sanctuaries in dolphin habitat around the North and South Islands. These sanctuaries, established by the Department of Conservation under the Marine Mammals Protection Act 1978, restrict a variety of activities, including fishing, acoustic seismic surveying, and seabed mining.

## 2.2 What regulatory system(s) are already in place?

### Regulatory system for managing the effects of fishing on protected species

The primary regulatory systems for managing the effects of fishing on protected species includes the Fisheries Act 1996 (Fisheries Act) and the Marine Mammals Protection Act 1978 (MMPA).

#### *Fisheries Act 1996*

The purpose of the Fisheries Act is to provide for the utilisation of fisheries resources while ensuring sustainability, which includes avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment. The Fisheries Act gives the Minister of Fisheries powers to manage the effects of fishing-related mortality on protected species, such as seabirds and marine mammals (e.g. Hector's and Māui dolphins), in the absence of a Population Management Plan<sup>4</sup>. The Fisheries Act defines the relevant considerations the Minister must take into account when making decisions. These include New Zealand's international obligations and specific environmental and information principles.

Relevant fisheries case law concerning the management of the fishing-related mortality of protected species concludes that this requirement should be considered at a population level, not at an individual level.

The Fisheries Act also allows the Minister to use various tools to manage the fishing-related mortality of protected species. These include making regulations, setting fishing-related mortality limits, and applying emergency measures. The Minister must decide the measures that are necessary to avoid, remedy, or mitigate the effects of fishing-related mortality on any protected species.

#### *Marine Mammals Protection Act 1978*

The MMPA provides the Minister of Conservation the ability to administer and manage marine mammals and marine mammal sanctuaries, including approving Population Management Plans. The Minister of Conservation can vary an existing marine mammal sanctuary and define what activities are, and are not, allowed to occur within these areas. For example, sanctuaries enable the Minister of Conservation to also manage fishing-related threats, and the sub-lethal threats to dolphin from seismic surveying and sea-bed mining activities. The consent of the Ministers with control of any Crown-owned land, foreshore, seabed or waters of the sea is required to vary any marine mammal sanctuary.

### Government regulation

Government regulation is generally the preferred approach to managing the human-induced threats to Hector's and Maui dolphins due to the:

- wide range of human-induced threats that pose a risk to the dolphins;
- breadth of people/communities/industries that may be affected by protection measures for the dolphins; and
- geographic spread of protection measures that are required.

These variables require a level of coordination and high degree of compliance to be successful. An over-reliance on voluntary measures would make it difficult to ensure the

<sup>4</sup> The Minister of Conservation can approve a Population Management Plan for a marine mammal species under the Marine Mammals Protection Act

<http://www.legislation.govt.nz/act/public/1978/0080/latest/whole.html#DLM25314>



objectives of the Threat Management Plan can be achieved, unless there is a supporting compliance framework to assess the effectiveness of non-regulatory interventions. Also when managing risk of low likelihood but high consequence there is a need for a greater level of certainty about effectiveness than can generally be provided by voluntary measures, particularly when incidents can result in significant public scrutiny and risk of more government intervention. This can result in people having a perverse incentive not to voluntarily report or take action

The need to manage the adverse effect of fishing-related mortality is independent of any other human-induced impacts on the population. We note that the overall population outcome for Hector's and Māui dolphins will not be achieved unless all human-induced lethal threats, particularly from toxoplasmosis, are managed appropriately. If these other risks are not managed then they will undermine, in part, or completely, the benefits stemming from controls and associated cost placed on the fishing industry.

### **Fitness-for-purpose of the system**

#### *Regulatory stewardship*

The Ministry for Primary Industries (MPI) monitors the ongoing performance of the regulatory systems it is responsible for (which includes fisheries) to ensure they remain fit for purpose.

The aim is to have regulatory systems that are well designed, well understood, and well operated. Stewardship involves carrying out regular system reviews and assessments to help identify what is working well, potential areas for future work, and system gaps that need attention. The regulatory systems are assessed against 4 measures: efficiency, effectiveness, durability and resilience, and fairness and accountability. The fisheries system description can be found here <https://www.mpi.govt.nz/about-us/our-structure/regulatory-stewardship/>.

## **2.3 What is the policy problem or opportunity?**

### **The problem**

Hector's and Māui dolphins remain vulnerable to any human-induced deaths. The dolphins currently face a range of fishing-related and non-fishing related threats, both of which can be a direct cause of death. These threats were assessed against the revised Threat Management Plan goals, population outcomes and fisheries objectives for the dolphin sub-species and sub-populations.

The fisheries objectives inform whether (and where) action is required to reduce fisheries threats to the dolphins to ensure that fisheries impacts are managed below the level necessary to support the population outcomes (refer to Section 2.5). These objectives form part of the criteria used to assess the options to address fisheries risk and are described in Section 3.2.

Best available information indicates that further fisheries measures are required to reduce the level of fishing-related mortality sufficiently to support the recommended

outcomes and objectives of the Threat Management Plan. That is, the scientific assessment suggests that risk is too high in some locations.<sup>5</sup>

As outlined in Section C, Fisheries New Zealand is confident in the evidence that has been used to support this assessment.

### **Need for further action**

Fisheries risk is too high for the fisheries objectives to be achieved for some of the Hector's and Māui dolphin subpopulations, and local populations:

- West coast North Island (Māui dolphin habitat zone, and the southern habitat/transition zone)
- North coast South Island (Hector's dolphins)
- East coast South Island (Hector's dolphins), and in particular around Kaikōura, Pegasus Bay and South Canterbury Bight to Timaru; and
- South coast South Island (Hector's dolphins).

For its part, the Government recognises its obligations to co-ordinate the actions of multiple parties, notably commercial fishing, recreational fishing, and iwi. No voluntary or industry group can achieve the level of co-ordination that is required to address the conservation status of Hector's and Māui dolphins across all human-induced threats that have been identified.

### **The counterfactual**

The counterfactual assumes that there would be no new regulatory measures to further mitigate the threats of fisheries-related mortality to Hector's and Māui dolphins. The latest risk assessment indicates that under current management measures:

- fishing-related risks to dolphins have been significantly reduced in many areas where restrictions on fishing activity were put in place between 2003 and 2012;
- fishing still poses a risk to Hector's and Māui dolphins in some areas;
- in fisheries where most set-net deaths occur, a typical set-net is 20 times more likely to capture or kill a dolphin than a single trawl in the same location;
- toxoplasmosis has emerged as a significant risk to Māui dolphins and some Hector's dolphin subpopulations in areas where high water runoff from land results in contamination in the marine environment; and
- risks from noise pollution and other industrial activities, and subsequently the cumulative impact on Hector's and Māui dolphins, are less well understood.

Given the current status of the dolphin populations, if the identified threats are not further mitigated then there is a risk that their conservation status will not improve, and the population outcomes and objectives as set out under the Threat Management Plan will not be achieved.

Māui dolphins remain vulnerable to any human-induced deaths, and there is a significant risk of extinction for this subspecies unless human-induced deaths are reduced to near as practicable to zero. Fishing-related threats, particularly from set-net, exceed the level of risk that would enable the population outcome to be achieved.

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<sup>5</sup> "Risk" is a numerical output of the scientific risk assessment; if the fisheries risk estimate is greater than 1, fisheries risk is too high to achieve the fisheries objective.

For Hector's dolphins, scientific models estimate that the current level of estimated fishing-related mortality exceeds the level required to achieve the subpopulation objectives, and local population objectives in some areas.

## 2.4 What do stakeholders think about the problem?

The main stakeholders are commercial fishers, environmentalists, independent experts, recreational fishers, regional councils, and the general public. Tangata whenua also have a key interest in the protection of Hector's and Māui dolphins and the activities that may impact on the dolphins.

### Consultation

Public consultation on the review of the Threat Management Plan ran from 17 June to 19 August 2019.<sup>6</sup>

Over 370 people attended 8 public consultation meetings held in the most affected regions of New Zealand. A number of targeted meetings with affected stakeholders and environmental non-governmental organisations (eNGOs) were also held during the consultation period.

Fisheries New Zealand, both before and during public consultation, held a number of hui with iwi from the regional areas most affected by the proposed options, as well as the relevant iwi fisheries forums, and met with Te Ohu Kaimoana (refer to "Māori Interests" below for further description).

Over 15,200 submissions were received across nine key stakeholder groups. This included: 255 from commercial fishers, 65 from tangata whenua, 13,700 from environmentalists (including 13,650 prefilled forms), 14 from independent experts, 200 from recreational fishers, 4 from the petroleum industry, 8 from the seabed mining industry, 3 from local government authorities, and over 1,000 from the general public. There were also 3 petitions from environmental groups handed in to parliament, totalling over 76,000 signatures, and a petition from the Kawhia community with 140 signatures.

### Stakeholder view of the problem

In general, most submitters agree that the Hector's and Māui dolphin populations are vulnerable to human-induced threats and that action is required to reduce human-induced mortality to achieve the goals and population outcomes of the Threat Management Plan. However, there was a clear divide amongst some of these stakeholders in terms of what human-induced threats pose a risk (or the greatest level of risk), and therefore should be targeted with further management measures to reduce or remove that risk.

Most of the fishing industry, some tangata whenua, and iwi representatives consider there is a lack of evidence to support the need for further measures in relation to fishing. They typically support the status quo. They also consider non-fishing-related threats,

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<sup>6</sup> The consultation document and additional supporting evidence can be found at this link: <https://www.fisheries.govt.nz/news-and-resources/consultations/hectors-and-maui-dolphins-threat-management-plan-review/>



such as toxoplasmosis, pose a much greater threat that needs to be addressed to achieve the population outcomes.

Environmental submitters and some tangata whenua consider the risk of fishing-related mortality across the entire Māui and Hector's dolphin habitat range poses the greatest threat to the dolphins. Environmental submitters typically support the most precautionary options consulted upon or argue for going further. Most of the environmental stakeholders consider that non-fishing-related threats such as toxoplasmosis pose a much lower threat than indicated by the scientific assessment.

Fisheries New Zealand considers that the preferred package of measures to reduce the level of fishing-related mortality are required. The status quo would not achieve the desired outcomes. The most precautionary measures go beyond what is necessary to achieve the outcomes.

The proposed measures reflect what we consider to be an appropriate balance between use of fisheries resources and the effects of fishing-related mortality on this important protected species. They also reflect the fact that set-net fishing poses by far the greatest risk to both Hector's and Māui dolphins, relative to trawl fishing, which poses a much lower risk (see "Further Consultation" in Section 5.1).

### **Māori interests**

Māori have an interest in both the protection of Hector's and Māui dolphins and the management of, and involvement in, activities that maybe be impacted by additional protection measures (e.g. commercial, recreational and customary fishing).

Tangata whenua are represented through Iwi Fisheries Forums and Māori are represented through consultation with a range of bodies including Te Ohu Kaimoana (Te Ohu), Mandated Iwi Organisations, Asset-Holding Companies, and individuals.

Te Ohu is an independent Trust, established to provide for the allocation and governance of Fisheries Settlement assets, divested under the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, and Fisheries Deed of Settlement. Te Ohu provides fisheries advisory services to iwi, the Māori Fisheries Settlement entities and industry groups. Te Ohu provides advice to and is guided by the 58 Mandated Iwi Organisations that represent all Māori in New Zealand. Iwi are also represented separately through these Mandated Iwi Organisations and Asset Holding Companies.

The Minister has an obligation under the Fisheries Act 1996 to provide for the input and participation of tangata whenua having a non-commercial interest in the stock concerned or an interest in the effects of fishing on the aquatic environment in the area concerned, and have particular regard to kaitiakitanga.

Te Ohu considers that some information on dolphin presence is inaccurate and leads to wrong conclusions as to whether fisheries pose a risk. They also consider that, for Māui dolphin, demographic modelling suggests the risk from commercial fishing is already being effectively managed.

## 2.5 What are the objectives sought in relation to the identified problem?

### Population outcomes

The specific population outcomes of the Threat Management Plan set out the requirements for management of all human-induced threats (refer to **Table 1**).

**Table 1. Recommended population outcomes.**

Subspecies of dolphin	Population outcome
<b>Māui dolphins</b>	Human impacts are managed to allow the population to increase to a level at or above <b>95 percent</b> of the maximum number of dolphins the environment can support.
<b>Hector's dolphins</b>	Human impacts are managed to allow the population to increase to a level at or above <b>90 percent</b> of the maximum number of dolphins the environment can support.

These population outcomes inform fisheries' policy and my decision-making. Fisheries New Zealand consider them appropriate given the conservation status of the dolphins, and that their long-term viability and contribution to the biological diversity in the marine environment should be maintained.

### Fisheries management objectives

To support achieving the population outcomes, the following fisheries objectives apply:

- Ensure that dolphin deaths arising from fisheries threats do not:
  - a. exceed population sustainability thresholds set to achieve the applicable population outcome with 95% certainty;<sup>7</sup>
  - b. cause localised depletion; or
  - c. create substantial barriers to dispersal or connectivity between subpopulations.

The objectives for Māui dolphins would mean that, with 95 percent confidence, the West Coast North Island Māui dolphin population is able to recover to and/or maintain a level that is no more than 5 percent lower than what it would be in the absence of any fisheries impact.

The objectives for South Island Hector's dolphins would mean that, with 95 percent confidence, each South Island subpopulation is able to recover to and/or maintain a level that is no more than 10 percent lower than what it would be in the absence of any fisheries impact.

The fisheries objectives ensure that fisheries impacts are successfully managed to support the population outcomes being achieved. Achieving the fisheries objectives is not dependent on other impacts being managed also; however, achieving the population outcomes does rely on successful management of all human-induced threats. It is important that the other major lethal threat to the dolphins (i.e. toxoplasmosis) is addressed. Without such action, fisheries measures will not deliver the desired outcomes.

<sup>7</sup> The population sustainability threshold is the maximum number of dolphin deaths per year that can occur while still allowing the population outcome to be achieved. 95% certainty reflects statistical certainty.

## Section 3: Option identification

### 3.1 What options are available to address the problem?

In addition to the status quo, three regulatory options for set-net and trawl fisheries off the west coast North Island and two regulatory options for set-net and trawl fisheries in each of the subpopulations in the South Island were identified and included in a consultation document released in June 2019. No non-regulatory options were included in the document. A revised set of these regulatory options are set out below that take into account consultation feedback. Non-regulatory options and other options that were considered not viable are set out in section 3.3.

#### Regulatory options to manage fishing-related threats

To manage the primary fishing-related threats to the dolphins, two overarching approaches were consulted on:

1. Status quo: No further restrictions on the use of set-net and trawl methods, but with increased monitoring (e.g. observers and on-board cameras).
2. Additional fishing prohibitions: Creating new, or extending existing, area closures on the use of set-net and trawl in the Hector's and Māui dolphin habitat to ensure risk is low enough that fisheries objectives will be achieved.

The options to address the risk from each fishing method (set-net and trawl) are independent of one another. The total amount of fisheries risk to the dolphins that can be removed from an area is calculated by combining the effect of a trawl closure option and a set-net closure option (that is, combining how much risk reduction is estimated to occur under each method-option). These options have been combined to create "packages" of measures to address fisheries risk. We note there are many more possible combinations of options that could be pursued to achieve the objectives. In advice to the Minister of Fisheries this was noted and the Minister was free to consider other combinations. Note that Fisheries New Zealand preferred option was **Package 2**.

Note that some of the options included within the South Island packages, have been developed based on information received during submissions, discussed further below. Further public consultation on these measures (i.e. trawl gear modification and a capture-response approach, including on-board camera monitoring) would be required before they could be progressed (for more detail on the approach refer to **Appendix Four**).



## West Coast North Island

Māui dolphin and southern habitat zones	Status quo		Package One		Package Two		Package Three	
	Set-net	Trawl	Set-net Option 1	Trawl Option 1	Set-net Option 2	Trawl Option 1	Set-net Option 3	Trawl Option 2
Cape Reinga to Maunganui Bluff (northern tail of distribution)	N/A	Closure out to 1 nm offshore	N/A	Retain current closure out to 1 nm offshore	Put in place set-net closure out to 4 nm offshore	Retain current closure out to 1 nm offshore	Put in place set-net closure out to 4 nm offshore	Retain current closure out to 1 nm offshore
Maunganui Bluff to New Plymouth (core + tail distribution) and Harbours	Closure out to 7 nm offshore	Closure from Maunganui Bluff to Pariokariwa Point out to 2 nm offshore, except Manukau Harbour to Port Waikato where the closure extends out to 4 nm offshore	Extend existing set-net closures to 10 nm offshore	Extend existing trawl closures to 4 nm offshore	Extend existing set-net closure out to 10 nm	Extend existing trawl closures out to 4 nm offshore	<ul style="list-style-type: none"> <li>Extend existing set-net closure out to 12 nm</li> <li>Small extension of existing closures within Kaipara and Manukau harbours</li> </ul>	Extend existing trawl closures out to 7 nm offshore
New Plymouth to Cape Egmont (southern tail of distribution)	<ul style="list-style-type: none"> <li>Closure between 0 and 2 nm offshore</li> <li>Mandatory observer coverage between 2 and 7 nm offshore</li> </ul>	N/A	<ul style="list-style-type: none"> <li>Retain the current closure between 0 and 2 nm offshore, and mandatory observer coverage between 2 and 7 nm offshore</li> </ul>	N/A	Extend existing set-net closure out to 7 nm offshore	N/A	Extend existing set-net closure out to 7 nm offshore	Put in place trawl closure out to 4 nm offshore
Cape Egmont to Hawera (South: potential habitat)	<ul style="list-style-type: none"> <li>Closure between 0 and 2 nm offshore</li> <li>Mandatory observer coverage between 2 and 7 nm offshore</li> </ul>	N/A	<ul style="list-style-type: none"> <li>Retain the current closure between 0 and 2 nm offshore, and mandatory observer coverage between 2 and 7 nm offshore</li> </ul>	N/A	Extend existing set-net closure out to 7 nm offshore	N/A	Extend existing set-net closure out to 7 nm offshore	Put in place trawl closure out to 4 nm offshore
Hawera to Wellington (South: potential habitat)	N/A	N/A	N/A	N/A	Put in place set-net closure out to 4 nm offshore with a butterfly exemption	N/A	Put in place set-net closure out to 4 nm offshore	Put in place trawl closure out to 2 nm offshore

## East Coast South Island

For a description of capture-response approach, gear modification, and monitoring (i.e. use of on-board cameras), see section 5.1.

Area	Status quo		Package One		Package Two		Package Three	
	Set-net	Trawl	Set-net Option 1	Trawl Option 1	Set-net Option 1	Trawl Option 2	Set-net Option 2	Trawl Option 3
<b>ECSI: Pegasus Bay</b>	Closure out to 4 nm offshore	Trawl restriction out to 2 nm offshore where only low headline height may be used.	Extend prohibition on all commercial and recreational set-netting to Pegasus Bay	Capture-response approach	Extend prohibition on all commercial and recreational set-netting to Pegasus Bay	<b>Option 1 plus Gear modification and monitoring in Pegasus Bay</b>	Extend prohibition on all commercial and recreational set-netting to Pegasus Bay	<b>Area closure:</b> prohibit trawling in Pegasus Bay
<b>ECSI: South from Banks Peninsula to Timaru</b>	Closure out to 4 nm offshore	Trawl restriction out to 2 nm offshore where only low headline height may be used.	Extend commercial and recreational set-net prohibition between South Canterbury Bight and Timaru out to 12 nm offshore	<b>Gear modification and monitoring in area around Timaru</b> <b>Capture-response approach</b>	Extend commercial and recreational set-net prohibition between South Canterbury Bight and Timaru out to 12 nm offshore	<b>Option 1 plus gear modification and monitoring from South Canterbury Bight to Timaru</b>	Extend commercial and recreational set-net prohibition between South Canterbury Bight and Timaru out to 12 nm offshore	<b>Area closure:</b> around Timaru <b>Gear modification and monitoring in South Canterbury Bight</b> <b>Capture-response approach</b>
<b>ECSI: Kaikōura</b>	<ul style="list-style-type: none"> <li>Closure out to 4 nm offshore for recreational set-net.</li> <li>Closure out to 4 nm offshore for commercial, except around Kaikōura canyon where the closure extends approximately 1 nm offshore</li> </ul>	Trawl restriction out to 2 nm offshore where only low headline height may be used.	Retain recreational prohibition, and extend commercial set-net prohibition to reflect 'Option Kaikōura' <b>Capture-response approach</b>	No change proposed	Retain recreational prohibition, and extend commercial set-net prohibition to reflect 'Option Kaikōura' <b>Capture-response approach</b>	No change proposed	Retain recreational prohibition, and extend commercial set-net prohibition out to 4 nautical miles	No change proposed

### South coast South Island (SCSI)

Area	Status quo		Package One		Package Two		Package Three	
	Set-net	Trawl	Set-net Option 1	Trawl Option 1	Set-net Option 2	Trawl Option 2	Set-net Option 2	Trawl Option 3
SCSI: Te Waewae Bay	Closure within Te Waewae Bay and out to 4 nm offshore	Trawl restriction (low headline height required) out to 2 nm offshore from Te Waewae Bay to Slope Point	Area closure: extend the existing prohibition on all commercial and recreational set-net fishing to 7 nautical miles offshore in the vicinity of Te Waewae Bay.	Capture-response approach	Area closure: extend the existing prohibition on all commercial and recreational set-net fishing to 10 nm offshore in the vicinity of Te Waewae Bay.	Option 1 plus Gear modification and monitoring within Te Waewae Bay and 4 nautical miles offshore	Area closure: extend the existing prohibition on all commercial and recreational set-net fishing to 10 nautical miles offshore in the vicinity of Te Waewae Bay.	Area closure: prohibit all trawling within Te Waewae Bay and 4 nautical miles offshore. <b>Capture-response approach</b>

### North coast South Island (NCSI)

Area	Status quo		Package One		Package Two		Package Three	
	Set-net	Trawl	Set-net Option 1	Trawl Option 1	Set-net Option 1	Trawl Option 2	Set-net Option 1	Trawl Option 3
NCSI: Golden and Tasman Bays	N/A	Discrete non-dolphin related closures in the inner portion of Golden Bay and off Abel Tasman National Park	Area closure: prohibit all commercial and recreational set-netting out to 4 nautical miles	No new measures proposed.	Prohibit all commercial and recreational set-netting out to 4 nautical miles	Capture-response approach	Area closure: prohibit all commercial and recreational set-netting out to 4 nautical miles	Option 2 plus Area closure: prohibit trawl out to 2 nautical miles within Golden and Tasman Bay



### **Other fisheries risk**

Three additional fisheries measures were also consulted on as part of the review of fisheries measures and are part of Fisheries New Zealand's preferred package of options.

#### **Drift net ban**

Most drift netting is already banned in New Zealand waters, but there is a gap in the legislation that could enable drift nets (less than 1 km in length) to be used in coastal waters. Unsecured nets that drift along with the ocean currents pose a significant risk to dolphins. A drift net prohibition would assist in meeting the assessment criteria to:

- Keep fisheries risk below a level that will allow the populations to recover;
- Help avoid localised depletion;
- Help support connectivity between subpopulations;
- And given the method is very rarely used at this point in time have a minimal impact on the use of fisheries resources.

#### **Regulatory trigger limit off the west coast North Island**

In the unlikely event of a fishing-related capture and/or death in the Māui dolphin habitat zone, where the consequence of any human-induced mortality is very high, a clear response protocol is required.

The setting of a regulatory trigger limit of one dolphin will assist in meeting the assessment criteria to:

- Help maintain fisheries risk below a level that will allow the populations to recover;
- Help avoid localised depletion;
- Help support connectivity between subpopulations;
- Enable fishing to continue in the Māui dolphin habitat zone, while providing a clear message to fishers of the consequence of a fishing-related capture.

### **Commercial ring net exemptions in the west coast North Island harbours**

Ring netting is currently captured under the legal definition of a set-net in legislation, but is an active fishing method (where the fisher is involved in the duration of the fishing activity) in comparison to a “passive” set-net that is left submerged for extended periods and/or unattended. The latter poses the greatest risk of fishing-related mortality to Hector’s and Māui dolphins.

An exemption to allow ring netting within the set-net ban areas of the west coast North Island harbours is considered justified due to this difference. A ring netting exemption meets the assessment criteria in that it will:

- not increase fisheries risk to a level that will inhibit populations ability to recover;
- not increase the risk of localised depletion;
- not negatively impact connectivity between subpopulations; and
- provide for greater use of fisheries resources.

### **Impact of consultation on options**

A range of submissions expressed concern that managing the risk to the dolphins from set-net and trawl fisheries via the use of large spatial closures was a blunt approach, and that alternatives should be considered. This feedback resulted in additional measures (regulatory and non-regulatory) being considered in development of final advice. In regard to the use of set-nets off the southern west coast North Island (referred to as the southern habitat/transition zone), following submissions from fishers a proposal was put forward to exempt the use of set-net when targeting butterfish, which Fisheries New Zealand considered and is reflected above within Package 2. Butterfish set-netting is considered to pose a much lower risk to Māui and Hector’s dolphins than other types of set-netting because it operates in near-shore rocky habitat that is not preferred by dolphins.

Despite the low risk from butterfish set-net to the dolphins, there was a reported capture of a Hector’s dolphin in a recreational butterfish set-net off the east coast of the South Island (in a butterfish exemption area) in February 2015. However, we consider allowing butterfish set-netting in selected discrete areas within the southern habitat zone will not jeopardise achieving the fisheries population objective.

For trawl fishers, a number of submissions considered that the use of alternative gear configurations (e.g. low headline height and slow tow speeds) would provide sufficient risk reduction to the dolphins with a much smaller socio-economic impact compared to large spatial closures. This approach is reflected above in the Hector’s dolphin east coast and south coast subpopulation areas under Packages 1 and 2.

Fishers and industry also commented that, in addition to considering alternative gear considerations, alternative approaches should be considered in collaboration with the industry to manage the effects of captures on the populations that could avoid the need for further closures. This approach is reflected in the South Island packages where a capture-response approach is proposed.

### **Refinement of options**

Options were refined for final advice to provide a preferred range of measures to address fisheries risk. Some of the options originally consulted on were removed because they well exceeded the level of risk reduction required to achieve the fisheries objectives for the dolphins, and would have resulted in significant socio-economic costs with minimal additional benefits.

New options were added for the trawl fisheries off the east, south and north coasts of the South Island. These trawl options include the modification of trawl gear (i.e. use of a low headline height and slow trawl speed) in the area where trawl closures were proposed, and/or the development of a capture-response management approach. Further statutory consultation would be required before they could be progressed (and potentially implemented) as alternatives to the original spatial closure options consulted on (refer to Section 5.1).

**Appendix Three** illustrates the refined range of spatial closure options to manage set-net and trawl fisheries risk.

### **Non-regulatory options**

Non-regulatory options were considered as part of monitoring the effectiveness of the measures proposed; particularly where fishing may be allowed to continue but potentially still posed a risk to the dolphins. For example, in areas where trawl fishing may continue (with or without gear modification requirements).

Non-regulatory options were not considered with respect to method prohibitions, as risk reduction/removal is core to achieving the fisheries objectives. The level of certainty specified in the population objectives, which is achieved with 95% certainty, requires that the measures will be effective and the different tools available within the regulatory framework help provide that certainty. Method prohibitions implemented by regulation will better ensure effective monitoring, compliance, and enforcement – including applying penalties when breaches occur. The level of certainty required is essentially inconsistent with a voluntary regime.



### 3.2 What criteria, in addition to monetary costs and benefits have been used to assess the likely impacts of the options under consideration?

#### Assessment Criteria

- **Criterion 1 (Māui):** Does the option reduce the fisheries risk to a level that enables the population to recover to a size no more than 5 percent lower than what it would be if there was no fisheries impact?
- **Criterion 1 (Hector's):** Does the option reduce the fisheries risk to a level that enables the population to recover to a size no more than 10 percent lower than what it would be if there was no fisheries impact?
- **Criterion 2:** Does the option prevent or avoid localised depletion?
- **Criterion 3:** Does the option support dispersal or connectivity between subpopulations of the subspecies?
- **Criterion 4:** Does the option minimise the impact on the use of fisheries resources to the extent possible?

Criteria 1-3 are derived from the fisheries objectives of the revised Threat Management Plan (Section 2.3). That is, ensure that dolphin deaths arising from fisheries threats do not:

- exceed population sustainability thresholds<sup>8</sup> set to achieve the applicable population outcomes with 95 percent certainty;
- cause localised depletion; or
- create substantial barriers to dispersal or connectivity between subpopulations.

Criterion 4 is informed in part by the relevant legislative provisions under the Fisheries Act 1996.

#### Trade-offs

The ability to meet Criteria 1 through 3 comes at the expense of Criterion 4, and vice versa. Each option provides for a different level of protection (and certainty around the level of risk reduction) to the dolphins across various spatial areas. The more expansive the protection measures, the higher the socioeconomic impacts on the primary users and beneficiaries of the fishery resources.

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<sup>8</sup> The population sustainability threshold is the maximum number of dolphin deaths per year that can occur while still allowing the population objective to be achieved.

### 3.3 What other options have been ruled out of scope, or not considered, and why?

The best available information indicates that the status quo is not adequately protecting the dolphins. Consequently, the status quo was not progressed as a viable option.

Options that removed all fishing-related threats from the estimated Hector's and Māui dolphin distribution or habitat were also viewed as out of scope. Not all areas where fishing overlaps with the dolphins pose a significant threat (e.g. fishing effort is low) to achieving the objectives for the subpopulation or local area dolphin populations.

Some of the options originally proposed in consultation were removed from our recommended range of measures as they would well exceed the level of risk reduction required to achieve the fisheries objectives, and came at a very high socioeconomic cost.

Fisheries measures that would rely on a high degree of voluntary compliance were not considered given the range of fisheries stakeholders involved, the certainty of risk reduction required, and the difficulties in monitoring compliance and therefore ensuring effectiveness with voluntary tools across sectors.

Fisheries measures that require a high degree of monitoring to implement (e.g. fishing-related mortality limits in the South Island) were not consulted on as part of the review because the tools required to deliver the associated monitoring requirements were not in place, or likely to be in place in the short term. Such measures required further development/consideration before consulting on such an approach.

## Section 4: Impact Analysis

**Marginal impact:** How does each of the options identified in section 3.1 compare with taking no action under each of the criteria set out in section 3.2?

### Options analysis – West coast North Island

Criteria	Package 1	Package 2	Package 3
<b>Criterion 1 (Māui):</b> Does the option reduce the fisheries risk to a level that enables the Māui dolphin population to recover to a size no more than 5 percent lower than what it would be if there was no fisheries impact?	+ Measures sufficiently reduce risk.	+ Measures sufficiently reduce risk.	++ Measures are more than necessary to achieve this criterion.
<b>Criterion 2:</b> Does the option prevent or avoid localised depletion?	- Does not address fisheries risk in the southern/habitat transition zone	+ Measures sufficiently reduce risk.	+ Measures sufficiently reduce risk.
<b>Criterion 3:</b> Does the option support dispersal or connectivity between subpopulations of the subspecies?	- Does not address fisheries risk in the southern/habitat transition zone	+ Removes the highest risk from set-net	+ Removes the highest risk from set-net
<b>Criterion 4:</b> Does the option minimise the impact on the use of fisheries resources to the extent possible?	+ Least impact on use. No restrictions in the southern habitat zone	+/- Significant impact on use. Provides exemptions to butterfish set-netting to minimise some of these impacts.	- Significant impact on use with measures that may go further than necessary to achieve criteria 1 through 3.
<b>Socioeconomic impact (Est. annual revenue loss)</b>	\$2.14 million	\$3.39 million	\$8.00 million
<b>Socioeconomic impact (Total Economic Impact – 5 year)</b>	\$11.23 – 26.97 million	\$17.79 – 42.75 million	\$41.89 – 100.67 million
<b>Overall assessment</b>	Ineffective as it doesn't provide any protection to dolphins in the southern habitat zone	Best option to achieve the fisheries objectives while minimising the impact on use where possible.	Far exceeds criteria requirements and unnecessarily impacts on use.

Key: Met +, Well Exceeded ++, Partially Met +/-, Not met -



The costs and benefits for both the North Island and South Island were calculated based on information available to Fisheries New Zealand. The methodology used was reviewed by NZIER, who also recommended some additional modelling work, which Fisheries New Zealand undertook (the NZIER report has not yet been publically released). The analysis was also informed by two pieces of separate independent research completed on the impacts of proposed measures on the Taranaki and Kaikōura communities.

Estimated annual revenue loss is based on estimates of the reduction in catch that would be caused by putting in place the fisheries restrictions/prohibitions multiplied by the estimated value of that catch (i.e. export price). The estimates assume that the lost catch is not caught by another fishing method or in another area.

### Package 1

Package 1 would achieve the criteria for the core Māui dolphin habitat zone. The criteria within the southern habitat zone are not achieved as no measures are proposed in that area. There is uncertainty in whether there are resident Hector's and/or Māui dolphins in the area, and/or to what extent dolphins transit through the region. Further research could be done to try to improve understanding of dolphin use of this habitat. However, that research would likely be both cost and time prohibitive given the low numbers of dolphins that may be present, which means it may not be feasible to obtain statistically meaningful estimates to inform future management action.

The primary benefit of Option 1 is that it has least impact on the use of fisheries resources of any of the packages as it includes minimal trawl restrictions in the Māui dolphin habitat zone, and no set-net or trawl restrictions in the southern habitat zone. The primary cost is that Package 1 does not go far enough to ensure that criteria 1 through 3 are met in both zones. That is, measures may not go far enough to provide adequate protection for dolphins.

### Package 2

Package 2 achieves the criteria within both the Māui dolphin and southern habitat zones.

Within the Māui dolphin habitat zone this package provides the minimum extent of set-net closures required to achieve the population objective. This is based on the assumption that the fisheries risk attributed to harbour set-nets is overestimated. The added reduction of trawl risk in the core distribution zone, where dolphin density is higher, provides a further buffer in the risk reduction.

Within the southern habitat zone this package addresses the high set-net risk and reduces that risk by around 90 percent. This package also removes the recreational set-net risk, which is estimated to be the highest across all the subpopulation areas. Providing for butterfish exemption zones in the southern habitat zones for commercial fishers is negligible with respect to risk reduction (~2 percent). While a similar assessment was unable to be done for recreational butterfish set-net, we consider its use as likely lower risk than other recreational set-net methods. The proposed exemption offsets some of the estimated socioeconomic impacts of the measures.

Because trawl risk is even more negligible in the southern habitat zone, refraining from extending any trawl restrictions in the southern habitat zone is considered appropriate.

### Package 3

Package 3 achieves criteria 1 through 3, and in the Māui dolphin habitat zone is estimated to exceed what is required for criterion 1, but comes at considerable cost to industry. Scientific assessment suggests that this level of restriction on the use of fisheries resources, particularly from trawl fishing, is not necessary to achieve the criteria.

The primary benefit of this package is the very high level of certainty around meeting criteria 1 through 3. The primary costs is that borne by industry, with the majority of the added socioeconomic impact (between Package 2 and 3) affecting the trawl fishery.

### Options analysis – South Island Hector’s Dolphins

A single “Package 2” is assessed below for the whole South Island. It combines Package 2 for each subpopulation area (as outlined in the options identification) and reflects that the objectives must be met for the subspecies as a whole across the South Island. For example, criterion 3 is only relevant when looking at connectivity between subpopulations, and should be assessed at the scale of the South Island.

Criteria	Package 1	Package 2	Package 3
<b>Criterion 1 (Hector's):</b> Does the option reduce the fisheries risk to a level that enables the population to recover to a size no more than 10 percent lower than what it would be if there was no fisheries impact?	+/- May not sufficiently reduce risk in some areas, particularly in Golden/Tasman bays.	+ Relies on further measures (which require consultation) and research.	++ Measures are more than is necessary to achieve criterion.
<b>Criterion 2:</b> Does the option prevent or avoid localised depletion?	+/- May not sufficiently protect some local populations from trawl risk.	+ Relies on further measures (which require consultation).	+ Criterion well exceeded except in NCSI, where outcome relies on further measures and consultation.
<b>Criterion 3:</b> Does the option support dispersal or connectivity between subpopulations of the subspecies?	+/- If localised depletion occurs, dispersal and connectivity may be compromised.	+ Relies on further measures (which require consultation).	+ Criterion well exceeded except in NCSI, where outcome relies on further measures and consultation.
<b>Criterion 4:</b> Does the option minimise the impact on the use of fisheries resources to the extent possible?	+ Least impact on use of all the packages.	+ Considerable impact on use, but deemed necessary.	- Closures will have significant impact on use and go further than necessary to achieve criteria 1 through 3.
<b>Socioeconomic impact (Est. annual revenue loss)<sup>9</sup></b>	\$1.57 million (set-net) <sup>13</sup>	\$2.72 million (set-net) <sup>10</sup>	\$11.4 million
<b>Socioeconomic impact (Total Economic Impact – 5 year)<sup>11</sup></b>	\$8.26 million - \$19.86 (set-net) <sup>13</sup>	\$8.45 million – \$20.30 million (set-net) <sup>13</sup>	\$59.72 million – \$143.48 million
<b>Overall assessment</b>	Largely achieves criteria, but doesn't go far enough to provide certainty of protection for dolphins.	Considerable impact on use, but necessary to ensure criteria are met for dolphins.	Far exceeds criteria and unnecessarily impacts on use.

<sup>9</sup> Assumptions exist as for west coast North Island analysis.

<sup>10</sup> Total annual revenue lost for set-net fishers. These costs are an underestimate as costs on trawl vessels to transition their gear to alternative gear types cannot be estimated without further consultation.

<sup>11</sup> Assumptions exist as for west coast North Island analysis.



### **Package 1 – South Island**

Package 1 largely achieves the criteria. Uncertainty remains on the north coast of the South Island in particular. Information is inconclusive as to whether the north coast South Island comprises a distinct Hector's dolphin subpopulation. In addition, estimates of fisheries risk in Golden and Tasman Bays are less reliable than other subpopulation areas, and more information is needed to determine if additional restrictions on use are necessary to ensure protection for Hector's dolphins in this area.

The primary benefit of Package 1 is that it has least impact on use of any of the packages as it includes minimal trawl restrictions. The primary cost is that Package 1 may not go far enough to ensure that /criterion 1 through 3 are met. That is, measures may not go far enough to provide adequate protection for dolphins.

### **Package 2 – South Island**

Package 2 achieves the criteria, but it relies on consultation and implementation of further measures that were developed in response to submissions.

The benefits of Package 2 include the certainty that objectives will be met in practice and dolphins will be adequately protected.

The primary costs are those borne by industry, as well as some costs borne by the Crown to support camera monitoring. Another cost is that Package 2 requires consultation on further measures before it could be fully realised.

### **Package 3 – South Island**

Package 3 most likely achieves criteria 1 through 3, but at considerable cost to industry. Scientific assessment suggests that this level of restriction on use is not necessary to achieve the objectives, meaning Package 3 fails criterion 4. There is still some uncertainty regarding north coast South Island (as under Package 1) and whether or not the criteria would be met.

The primary benefit is certainty around meeting criteria 1 through 3 on the east coast and south coast South Island. The primary cost is that borne by industry, and Package 3 still requires consultation on further measures to improve monitoring and information, particularly on north coast South Island, before it can be fully realised.

### **Other fisheries measures (can apply under any package)**

Under all proposed packages, the additional fisheries measures proposed would also apply.

The ability to commercial ring net only in the west coast North Island harbours where set netting is prohibited will benefit commercial fishers by allowing them to better use the fisheries resources in the harbours. The species targeted (mullet and kahawai) are more prevalent in the North Island harbours, compared to the South Island harbours.

The ban on drift nets less than one kilometre in length (which applies nationally) closes a gap in the regulation and will have minimal impact on commercial fishers as there is little use of such nets in New Zealand waters.

The fishing-related mortality limit of one in the Māui dolphin habitat zone, would result in immediate measures to prohibit all (or specified) fishing methods in an area, taking into account the circumstances of the capture event. This would have an impact on commercial

fishers as they would not be able to access that area for the short term (up to 3 months) and possibly longer if the Minister of Fisheries deems it to be warranted, following a detailed review of the incident.

## Section 5: Conclusions

### 5.1 What option, or combination of options is likely to best address the problem, meet the policy objectives and deliver the highest net benefits?

#### Preferred option

Package 2 was identified as the preferred regulatory option for both the west coast North Island and South Island subpopulations. The preferred package meets all of the assessment criteria and reflects that:

- set-net fishing poses a greater risk of fishing-related mortality than trawl to Hector's and Māui dolphins, and
- the consequence of fishing-related mortality is greater for Māui dolphins than for Hector's dolphins.

Supporting Package 2 are the additional fisheries measures proposed to prohibit any commercial and recreational drift netting, put in place a regulatory trigger limit of one dolphin capture in the Māui dolphin habitat zone, and to enable commercial ring netting in the set-net ban areas within west coast North Island harbours.

For the west coast North Island, the proposed set-net closures significantly reduce the remaining risk of fishing-related mortality to Māui dolphins. However, a small increase to the current trawl closures in the area of highest risk of a trawl-related mortality is considered warranted to further reduce the risk to the Māui dolphins.

For the South Island, the preferred set-net closures also significantly reduce the remaining risk of fishing-related mortality to Hector's dolphins. For trawl and set-net fisheries that continue to operate in areas that remain open, a new management approach is recommended that will require further public consultation.

South Island trawl fishers would only be allowed to operate in defined high-risk areas using modified fishing gear, and both trawl and set-net vessels will be required to operate with an on-board camera or observer to verify reporting. Graduated responses to fishing-related dolphin mortalities at an individual vessel/operator and population level are proposed. Responses will escalate in the case of recurring captures, up to the point of restricting access to fisheries, or closing areas to a method, if necessary to ensure that population level limits are not exceeded.

Although Package 2 meets the criteria set for this fisheries review, the Threat Management Plan population outcomes and objectives will only be achieved if all human-induced threats are successfully managed.

#### West coast North Island

Under Package 2 the population objectives are achieved with 95 percent certainty for the Māui dolphin population and dolphins within the southern habitat zone. Risks of localised

depletion, and barriers to dispersal and connectivity, to dolphins present in the southern zone are also reduced.

The objectives are estimated to be achieved just through extended set-net closures. In addition, two options were considered for trawl in the areas of highest risk to the critically endangered Māui dolphins, either:

- gear modifications for trawl, which will reduce risk further: trawl fishing poses a much lower risk and as such can be managed differently to recognise that; or
- a small increase to the current trawl closures (out to 4 nm) to further more certainty to reduction of risk of fishing-related mortality to the population.

The preferred package also takes into account views provided during consultation from affected commercial butterfish fishers. These fishers requested an exemption to allow them to continue to harvest in discrete areas in the southern habitat zone (specifically between Hawera and Wellington). Butterfish set-netting is considered a lower risk to Māui and Hector's dolphins than other types of set-netting. Providing for this exemption would still pose some risk, as there have been Hector's dolphins killed in butterfish set-nets in the South Island. Nonetheless, the risk is estimated to be low enough that it will not jeopardise the fisheries objectives from being achieved.

### South Island

Package 2 is our preferred option. Package 2 seeks to achieve the fisheries objectives while minimising the impact on use of fisheries resources to the extent possible. Package 2 largely removes fisheries risk by proposing considerable set-net ban extensions (set-net poses a much higher risk to dolphins than trawl). It also responds to submissions by taking into account feedback provided by local communities and the fishing industry and proposing further measures for consultation based on their feedback.

Under Package 2, a revised approach to managing trawl and set-netting impacts is proposed in place of fishing bans in some areas, in response to submissions. Package 2 would drive the need for widespread monitoring and research to support implementation of a new capture-response framework and improve information on fisheries risk. The proposed new framework would support management and provide a stepwise approach to managing captures and driving overall capture rates towards zero through time. This approach requires further consultation (see next section).

Fisheries New Zealand is confident in the assumptions and evidence to identify the preferred approach to manage the risk of fishing-related mortality to the dolphins.

### Tangata whenua and stakeholder views

Tangata whenua and stakeholder views of the preferred approach are outlined in Table 2.1 below. Tangata whenua and stakeholders who are directly affected by the preferred approach have significant concerns with the impact of the range of fisheries options on their existing fishing activities.

Fisheries New Zealand's assessment is that measures that involve creating new, or extending existing, closed areas to commercial set-netting and trawling, or putting in place gear restrictions for trawl could significantly impact commercial fisher's annual catch (e.g. trawl fishers operating out of Raglan and set netters on the Taranaki coast and northland).



The preferred set-net options are also likely to eliminate all existing recreational set-netting in some areas (e.g. Golden Bay and Tasman Bay, and the southern habitat zone off the west coast North Island).

**Table 2.1: Tangata whenua and stakeholder views of preferred approach**

	Group	Views
Treaty partners	Tangata whenua	<p>Te Ohu Kaimoana and a number of iwi consider measures outside of the status quo go beyond the requirements of the Fisheries Act 1996, and are consequently inconsistent with kaitiakitanga and the proper exercise of the principles of the Treaty.</p> <p>Customary non-commercial fishing interests in the Taranaki region oppose further closures to set netting. These closures will have a negative impact on the arrangements they have in place with commercial set-net fishers and licensed fish receivers who store and provide the Taranaki iwi with fish for hui and tangi (pātaka).</p> <p>Also, some iwi note they feel morally bound to not issue customary permits that allow customary take of species typically taken by set-netting in areas closed to recreational and commercial set-net fishers.</p> <p>Conversely some tangata whenua express support for further fishing restrictions, particularly in coastal waters to further protect the dolphins.</p>
Stakeholder groups directly affected by the proposals	Commercial fishers	Commercial fishers consider the status quo to be consistent with legislative obligations and that risk can be reduced through a collaborative approach to improve on-the-water practices. They consider that no further fisheries restrictions are required and consider that much greater emphasis needs to go on toxoplasmosis, given the risks from that.
	Recreational fishers	Recreational fishers generally support the options for additional measures to protect dolphins, particularly for commercial fishers. Some support increased recreational set-net restrictions. Others oppose any further measures on recreational set-net fishing.
Stakeholder groups indirectly affected by the proposals	Environmentalists	Environmental groups support a far more precautionary approach to reduce fisheries risk as they consider that the risks of fishing-related mortalities used to inform this review are not adequately estimated. There were also concerns about the measures resulting in displacement of effort rather than risk reduction. They support the use of on-board cameras on all commercial fishing vessels as soon as possible.
	Independent experts	Independent experts across a number of disciplines consider that the current fisheries measures are inadequate and a more precautionary approach needs to be taken to protect dolphins. Many will consider that the preferred approach does not go far enough to remove fisheries risk, and also raised concerns about effort displacement as opposed to risk reduction.
	General public	<p>The general public have a range of views on the preferred approach. Some are supportive, in particular, of increased set-net prohibitions, but will be disappointed similar measures are not being taken for trawl.</p> <p>Local communities that are significantly affected by the proposals are likely to have mixed views and some will consider the measures are punitive.</p>

## Further consultation and analysis on options to reduce fisheries-related threats

Fisheries New Zealand proposes to undertake further public consultation in 2020 on an additional package of regulatory proposals that include some of the fisheries measures within Package 2:

- an additional area of set-net restrictions around Banks Peninsula following concerns raised about potential effort displacement from Package 2,
- regulated trawl gear modifications in areas of the east and south coasts of the South Island, and
- a capture-response management approach (that would include on-board camera monitoring) in the South Island (for more detail on the approach refer to **Appendix 4**).

These proposals have been developed based on comments and suggestions received during the 2019 consultation process, and subsequent revised options put forward by Fisheries New Zealand to the Minister.

It is proposed that the capture-response management approach be regulated and:

- apply to trawl and set-net vessels that continue to operate outside of closures;
- respond to every dolphin capture (alive or dead) - the capture is a “trigger” for action; and
- provide a graduated response at an operator/vessel level to escalate management action if sequential capture events occur.

This approach is designed to incentivise fishers to develop and use gear that reduces risk. Every capture (resulting in live-release or in death) of a dolphin will receive attention and a response at a vessel/vessel-operator specific level. Through this approach, we want to achieve a year-on-year reduction in fishing-related capture rates towards zero over time.

The measures would also ensure that any fishing-related mortality that does occur is never allowed to exceed the levels that would result in a failure to meet the fisheries objective for that population. Consultation would explore the use of fishing-related mortality limits to be applied across all vessels in a local and subpopulation area. A fishing-related mortality limit would enable the Minister of Fisheries to take appropriate action (such as closing a fishery) in response to fishing-related captures (dead or alive) to ensure that the limit is not exceeded.

These measures will create a more transparent, agile, and responsive management approach to address any dolphin deaths and drive capture rates towards zero.

## 5.2 Summary table of costs and benefits of the preferred approach

Affected parties	Comment:	Impact	Evidence certainty
<b>Additional costs of proposed approach compared to taking no action</b>			
Commercial fishers and LFRs (regulated party)	Annual revenue loss	\$5.0 million	High
Recreational fishing sector (regulated party)	Loss of fishing areas, either requiring use of new method or travel to other locations to continue use of set-nets	Non-monetised, low	High
Fisheries New Zealand (Regulators)	Additional observer and/or on-board camera monitoring costs, capital and operating costs over a five year period Transitional support costs for the commercial fishing sector.	Additional <sup>s 9(2)(f)(iv)</sup> over and above current funds over four years (Budget Bid) <sup>s 9(2)(f)(iv)</sup> total over the transition period (~12 months). Budget bid has been scaled to <sup>s 9(2)(f)(iv)</sup>	Medium
Wider government	Total additional fiscal costs to the Government (shared between Fisheries New Zealand and the Department of Conservation) in updating the risk assessment science, population monitoring, assessing progress with the TMP	Non-monetised, medium	Medium
Customary fishers (non-regulated party)	Current pātaka arrangements for Taranaki iwi that are held by the local LFRs may be unviable if the LFRs are unable to continue to operate	Non-monetised, Medium	High
Communities and associated indirect industry parties	Local communities may find it more difficult to source fish locally Associated industries may lose business if directly affected parties cease to operate	Non-monetised, Medium	Medium
Wider economy	Considers the direct and indirect impacts of the direct losses to commercial fishers on the wider economy (Total Economic Impact)	\$26.25 – 63 million over five years	
<b>Total Monetised Cost</b>		\$42.75 – 86.5 million over five years	High
<b>Non-monetised costs</b>		Medium	Medium

Expected benefits of proposed approach compared to taking no action			
Commercial fishing sector (regulated parties)	<ul style="list-style-type: none"> <li>Greater certainty and defence of fishing practices that are allowed to continue with increased monitoring</li> <li>Potential trade benefit from continued access to certain markets.</li> </ul>	Non-monetised, Low/Medium	Medium
Recreational fishing sector (regulated parties)	Less competition with commercial fishers in some areas	Non-monetised, Low	Medium
Fisheries New Zealand (regulators)	Greater level of regulatory oversight on regulated businesses and practices to manage fisheries risk to the dolphins	Non-monetised, High	High
Wider government	Greater oversight and management of human-induced threats on protected species, improved research focus	Non-monetised, High	High
Other parties	New Zealand's standing internationally in marine mammal protection, and associated spin-offs to domestic and international tourism, marine mammal research, and trade.	Non-monetised, High	Medium
<b>Total Monetised Benefit</b>		N/A	N/A
<b>Non-monetised benefits</b>	<p>Improve management of fisheries risk to the dolphins</p> <p>Greater certainty that fisheries-threats are not affecting achievement of population outcomes</p> <p>Greater certainty for fishers and means of adapting to the proposed closures</p> <p>Ability for trawl fishers, in particular, to continue to operate and innovate dolphin mitigation tools</p>	Medium	Medium



### 5.3 What other impacts is this approach likely to have?

#### Environmental

- The preferred option will result in reducing fishing effort by certain methods in some areas (for example, bottom trawl) as fishers either adopt methods that are more dolphin-safe or exit the fishery. This may reduce the number of bottom impacting events and other protected species interactions also, which may lead to positive environmental outcomes.
- Transition to dolphin-safe fishing methods can have unintended consequences for other protected species. For example, transitioning to longlining as a fishing method may have unintended consequences for seabirds.
  - Seabird mitigation devices are more developed than mitigation tools for protecting dolphins from capture, and thus this risk may be able to be managed.

#### Effectiveness

- The measures may result in a shifting of set-net and trawl fishing activities, rather than a reduction (i.e. effort-displacement may occur). If this effort shifts into new areas where the dolphins are present, this may negate any risk reduction that is estimated to be achieved from the measures.
  - Vessels would only be displaced to areas of lower dolphin density, so risk of interaction will likely be lower and thus any negation of risk reduction is likely to be minimal compared to benefits gained by closures.
  - Regular monitoring and review of the Threat Management Plan will enable Fisheries New Zealand to reassess fisheries risk to the dolphins and respond as required with additional measures if needed.
- Changing fishing practices to dolphin-safe methods may have unintended impacts on catch composition or catchability of target species, making it difficult for fishers to avoid unwanted fish species.
  - Government will continue to work with industry to support those that wish to transition method and try to identify ways forward that minimise unintended impacts.
  - On the other hand, the measures will drive innovation and change in the inshore fishing practices, particularly for trawl fishing in the South Island, which will be a long-term benefit in reducing unintended and unwanted bycatch.
- The proposed population outcomes and objectives under the Threat Management Plan may not be achieved if other human-induced threats (i.e. toxoplasmosis) are not also successfully managed. If this turns out to be the case then significant costs may be incurred with negligible benefits.
  - Fisheries New Zealand will continue to work in collaboration with the Department of Conservation under the Threat Management Plan to ensure that agencies remain aligned in efforts to manage human-induced impacts and ensure progress towards population outcomes and objectives being achieved for each subspecies and populations.

#### Impacts on individuals

The proposed measures will significantly affect some fishers and the businesses that support them (and their employees), despite efforts to minimise impacts on use of fisheries resources.

The Crown is under no obligation to compensate fishers or licensed fish receivers for implementing a sustainability measure that the Minister of Fisheries considers necessary. Nonetheless, a proposal to seek Government support for a transitional support package (including *ex gratia* payments) has been developed. The payments would support significantly affected fishers and licensed fish receivers to either transition to alternative fishing methods, or leave the fishery.

#### **International reputation**

The New Zealand QMS and its management of particular fish stocks is a highly regarded management approach internationally. However, other countries have progressively raised the expectations they have around environmental performance of their fisheries. The measures proposed for dolphins will enhance our international reputation by being able to demonstrate improvements to the protection of vulnerable and protected species.

#### **Improved reputation with consumers**

Proposals which incentivise good fishing practice by fishers and improve environmental performance speak directly to consumer expectations for sustainable seafood. New Zealanders' perceptions of the fishing industry and of how Fisheries New Zealand ensures that the industry operates in a sustainable way would both benefit from the proposals to protect Hector's and Maui dolphins. The goal of minimising the fishing-related mortality of dolphins and creating incentives to drive this towards zero aligns with public expectations around the management of our fisheries. The future implementation of improved monitoring and verification methods will provide an opportunity to enhance this reputation by being able to demonstrate fisher accountability and improvements to the system.

#### **Other**

There is always the potential for new information on dolphin distribution to create the need to reassess and remodel the risk to dolphins from fishing-related mortality. The Threat Management Plan and the measures in place to protect dolphins may need to be reviewed in light of any new analysis that reveals a significant threat requiring a management response.

## Section 6: Implementation and operation

### 6.1 How will the new arrangements work in practice?

If the fisheries measures are approved, amendments to the following regulations would be required:

- Fisheries (Commercial Fishing) Regulations 2001
- Fisheries (Auckland Kermadec Commercial Fishing) Regulations 1986
- Fisheries (Central Commercial Fishing) Regulations 1986
- Fisheries (South-East Commercial Fishing) Regulations 1986
- Fisheries (Southland and Sub-Antarctic Commercial Fishing) Regulations 1986
- Fisheries (Amateur Fishing) Regulation 2013
- Fisheries (Set Net Prohibition from Pariokariwa Point to Hawera) Notice 2012

Within these regulations, a number of existing regulations would be amended or revoked, and new regulations added.

The Ministry for Primary Industries (Fisheries New Zealand specifically) will be responsible for the ongoing operation and enforcement of the new arrangements. Local government will not have a formal role.

As part of providing a service for impacted fishers, in regards to their welfare, Fisheries New Zealand will involve the Ministry of Social Development, WINZ, and financial advisors.

Fisheries New Zealand considers the preferred options can be implemented consistent with the Government's expectations for regulatory stewardship.

It is proposed that the amendments that are able to be progressed now (i.e. those that have been consulted on) would come into force by 1 October 2020. If Cabinet agrees, the Governor-General would then be recommended to make the necessary changes by Order in Council.

A communications plan will be developed for the notification of the measures. The new measures would be publicised through local newspapers, the MPI and Fisheries New Zealand website and social media channels, directly to affected stakeholders and representative stakeholder bodies, and through MPI Fishery Officers' interactions with fishers in each area.

Further, targeted and detailed information will be provided to affected stakeholders closer to implementation (e.g. during the 28 day Gazette notice period before the measures take effect).

Other key agencies, in particular the Department of Conservation, have been kept closely informed of the options developed for fishing. The Department of Conservation is responsible for jointly setting the population outcomes and is also responsible for management of the non-human threats to dolphins.

## Measures requiring further consultation

Fisheries New Zealand notes the following measures that are part of Package 2 measures for the South Island still require public consultation before they could be progressed for implementation:

- Trawl gear restrictions (headline height and low tow speed) to manage the risk of trawl-related mortality in certain Hector's dolphin areas along the east and south coasts.
- Put in place a capture-response management approach (supported by an extensive on-board camera monitoring programme) that provides a strong response to any capture of dolphins in areas open to set-net and trawl fishing. It will provide incentive for industry to innovate to reduce environmental impact and improved transparency.

This consultation will also include:

- Further commercial and recreational set-net closure proposal for around Banks Peninsula to address concerns raised in consultation about the risk of effort displacement as opposed to risk reduction in the east coast South Island subpopulation.

It is anticipated implementation of such measures, if approved, would occur in 2021.

## 6.2 What are the implementation risks?

### Issues regarding implementation raised through consultation

There are several key implementation risks with the proposed measures, which fall into the following categories:

- Effort displacement rather than risk reduction;
- Litigation;
- Compliance; and
- International trade.

#### ***Effort displacement***

Estimated risk reduction assumes that the fishing effort in an area disappears completely because of a closure, but it is possible that fishing effort would move from the closed area to an open area instead rather than disappearing completely, that is, effort is 'displaced'.

Some submissions received during consultation raised concern that effort displacement would increase fisheries risk to unacceptable levels in areas where it had previously been estimated to be low, mostly notably around Banks Peninsula. In other words, fishers would their fishing effort away from closed areas to areas that remain open, which would increase the risk of fishing-related mortalities of Hector's dolphins in these areas.

We are intend to mitigate this risk by proposing a further closure in response to submissions around Banks Peninsula, which will require further consultation as it was not included in the original consultation material (Refer To Section 5.1).



### **Litigation**

There are concerns that implementation may be compromised if litigation is undertaken by any of the interested stakeholder parties. Litigation can result in a delay and/or failure to put in place additional fisheries measures.

There was significant opposition to further fisheries measures by both the commercial fishing industry, their representative bodies, some iwi and Te Ohu Kaimoana. Litigation steps may be taken if any of these parties consider the decisions excessive and unnecessarily punitive relative to the Ministers legal obligations.

There was also strong concern from a range of ENGOs and the general public that the proposed fisheries measures did not go far enough to provide the most precautionary management approach to reduce the risk of fishing-related mortality to the dolphins.

To assess any litigation risk and likelihood that an aggrieved party could bring a successful judicial review, we have sought advice from Crown Law during the development of proposals to ensure that any recommended options are consistent with the requirements of section 15(2) of the Fisheries Act, which enables the Minister “to take such measures as he or she considers are necessary to avoid, remedy, or mitigate the effect of fishing-related mortality on any protected species”.

### **Compliance**

Successful implementation of fisheries measures requires there to be a high degree of compliance from those directly affected by the measures, including commercial and recreational fishers.

For government and Fisheries New Zealand as the administrator of the Fisheries Management System, there are expected to be short-term costs, including:

- increased monitoring and compliance activities; and
- revised educational and promotional material regarding the fisheries changes.

Compliance monitoring of new measures will be aided significantly by the recent implementation of Electronic Reporting and Global Position Reporting (ER/GPR) system on all commercial fishing vessels. This system allows timelier reporting of catch and incidental capture of protected species, and provides current location and activity of vessels. This information is used to monitor compliance with spatial protection measures (e.g. closed areas) and any fishing restrictions such as speed at which a trawl net can be towed.

The ongoing use of observers and on-board camera monitoring programmes, which Fisheries New Zealand proposes is rolled-out over all inshore vessels in dolphin habitat areas, provides additional means of catch verification and assessing whether measures are complied with, as well as the effectiveness of the measures (e.g. the number of dolphins captured in remaining open areas).

Fisheries New Zealand will need to ensure that there is adequate resourcing to assess and review the data and information collected via digital monitoring (ER/GPR and cameras) in order to enable a timely response, including enforcement action, to interactions between

commercial fishers and dolphins. A Budget 2020 Bid is being put forward to address resourcing needs.

s 6(a)



Proactively Released

## Section 7: Monitoring, evaluation and review

### 7.1 How will the impact of the new arrangements be monitored?

Fisheries New Zealand is best placed to collect information and monitor the impact of the proposed new measures on the dolphin populations.

The new measures would be monitored from two perspectives:

- compliance, and
- their effectiveness in helping to achieve the fisheries objectives within the Threat Management Plan.

Monitoring provisions are already in place as part of the overarching fisheries management system, as well as via the Department of Conservation. The Department of Conservation undertakes a research programme as outlined below.

Fisheries New Zealand (in addition to research) monitors commercial and recreational fishers' compliance with fisheries measures, including whether there is illegal fishing activity in closed areas.

Compliance monitoring is aided significantly by the recent implementation of Electronic Reporting and Global Position Reporting system on all commercial fishing vessels. This system allows timelier reporting of catch and incidental capture of protected species, and provides current location and activity of vessels. This information is used to monitor compliance with spatial protection measures (e.g. closed areas) and any fishing restrictions such as speed at which a trawl net can be towed.

The ongoing use of observers and on-board camera monitoring programmes provides additional means of catch verification and assessing whether measures are complied with, as well as the effectiveness of the measures (e.g. the number of dolphins captured in remaining open areas).

Effectiveness of the measures is also monitored via:

- Research (e.g. updated information on abundance and distribution, updated risk assessments) by both Fisheries New Zealand and the Department of Conservation.
- The necropsy programme managed by the Department of Conservation to determine cause of death when dolphin carcasses are able to be recovered.

For the first time a spatial risk assessment tool exists that, in combination with better defined population outcomes and fisheries objectives, significantly improves our ability to more accurately assess performance of fisheries measures and whether they are effective.

Existing annual research planning processes run by Fisheries New Zealand (via the Aquatic Environment Working Group) and the Department of Conservation (Conservation Services Programme) determine new information and analysis needs, and these groups involve other stakeholders (e.g. academics, eNGOs, industry representatives) in those discussions.

Fisheries New Zealand and the Department of Conservation are also proposing the establishment of North Island and South Island Stakeholder Advisory Groups made up of scientific experts and interested stakeholders that have knowledge and experience on the range of human-induced threats being managed under the Threat Management Plan, including fishing.

Data will be analysed and discussed in appropriate forums (e.g. Science Working Groups, Stakeholder Advisory Groups, and/or other engagement meetings) with tangata whenua and stakeholders (or their representatives) as required.

## 7.2 When and how will the new arrangements be reviewed?

The Hector's and Māui dolphin Threat Management Plan (or portions of it) is reviewed by Fisheries New Zealand and the Department of Conservation approximately every five years. Revisions may be proposed if supporting information indicates the existing management measures (regulatory and voluntary) are not supporting delivery of the vision and goals of the plan.

Evidence supporting a review may include:

- New information on the abundance and distribution of the dolphin populations.
- New necropsy information indicating changes to human-induced deaths.
- New information on the distribution and intensity of human-induced threats.
- New information on the vulnerability and/or susceptibility of the dolphins to human-induced threats.
- The level of human-induced deaths exceeds the levels that would allow the population outcomes and/or fisheries objectives (for example) to be achieved.

Early reviews may also be prompted by new information that indicates:

- the Hector's and/or Māui dolphin are at a greater risk of decline;
- a sudden increase in human-induced mortalities; and
- human-induced mortalities in areas where they are unexpected.

Regular engagement by Fisheries New Zealand with tangata whenua (through the Iwi Fisheries Forums) and other interested or affected stakeholders (commercial, recreational and eNGOs) provides an opportunity for discussion of concerns with any fisheries measures, achievement of the fisheries objectives, and any other related matters (e.g. research, monitoring, and education).



**Appendix One: The estimated distribution of Hector's and Māui dolphins along the New Zealand coastline**



Note: the area from Cape Egmont to Wellington is not thought to be occupied by a permanent population; this is potential habitat and a possible dispersal corridor.

**Māui and/or Hector's Dolphin Sightings and Estimated Spatial Distribution**

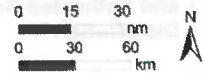


**Validated Public Sightings**

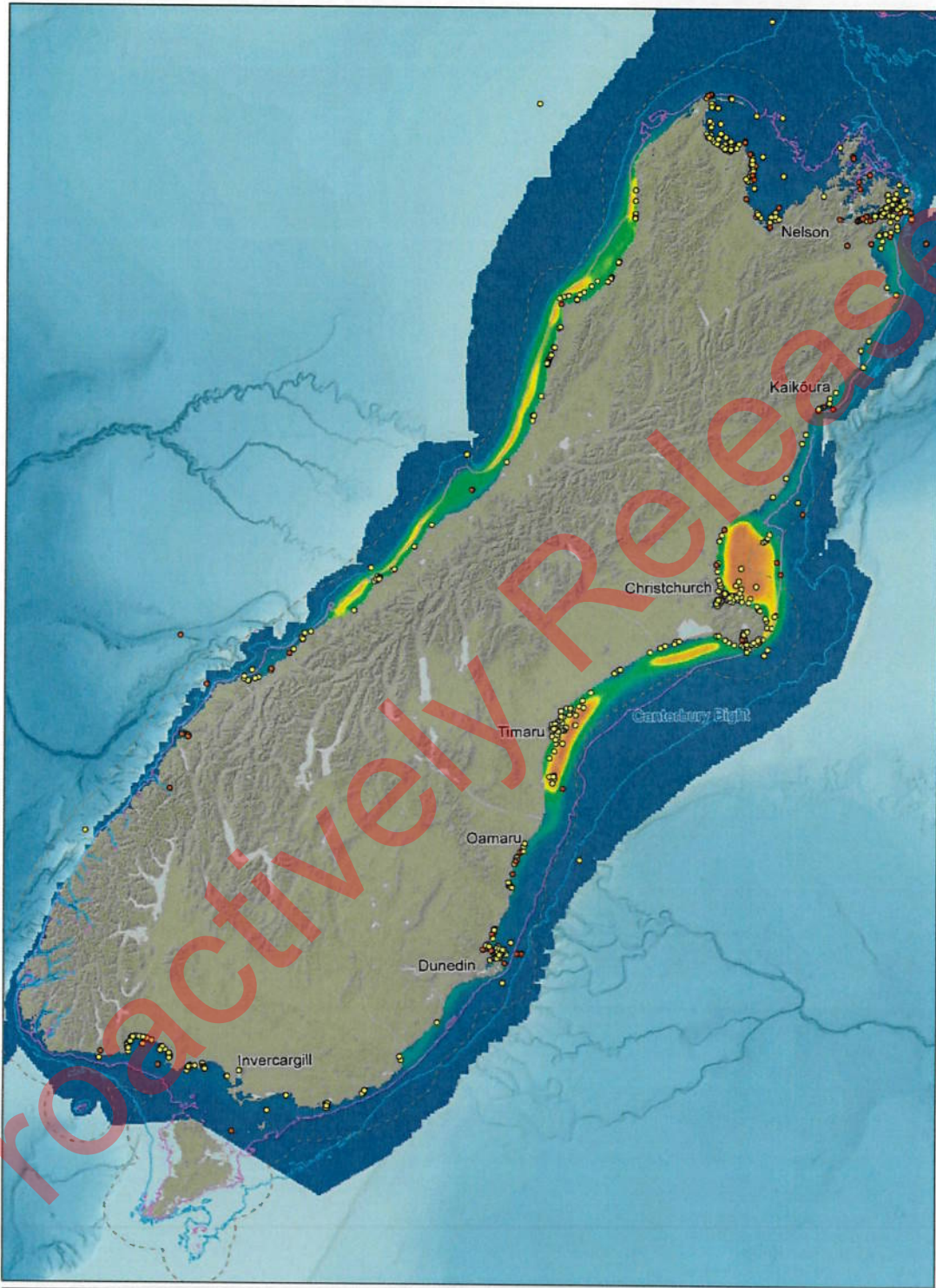
- Summer
- Winter
- 50m Bathymetry Contour
- 100m Bathymetry Contour

**Dolphin Distribution**

- High
- Low
- Territorial Sea (12nm)



Data Attribution:  
This map uses data sourced from LINZ, DOC and © Geographix.



**Hector's Dolphin Sightings and Estimated Spatial Distribution**

**Validated Public Sightings**

- Summer
- Winter
- 50m Bathymetry Contour
- 100m Bathymetry Contour

**Dolphin Distribution**

High (Yellow/Orange)  
Low (Green/Blue)

--- Territorial Sea (12nm)

0 15 30 nm  
0 30 60 km

Scale bar and North arrow.

**Fisheries New Zealand**  
Te Kaitiaki

**Data Attribution:**  
This map uses data sourced from LINZ, DOC and © GeoGraphix.



## Appendix Two: The current mitigation measures for fisheries and existing marine mammal sanctuaries







<ul style="list-style-type: none"> <li>— 100m Depth Contour</li> <li>- - - Territorial Sea</li> <li>▨ Marine Mammal Sanctuary</li> <li>■ Marine Reserve</li> <li>■ Mātaitai Reserve</li> <li>■ Submarine Cables and Pipelines Protection Area</li> </ul>	<ul style="list-style-type: none"> <li>■ Farewell Spit Nature Reserve</li> </ul> <p><b>Status Quo Set Net Restrictions</b></p> <ul style="list-style-type: none"> <li>■ Set Net Prohibition</li> <li>■ Set Net Prohibition (seasonal)</li> <li>■ Butterfish Netting Exemptions</li> <li>■ Seasonal Flatfish Netting Exemptions</li> </ul>	<p>0 10 20 0 25 50 nm km</p> <p>N</p> <p><small>Data Attribution: This map uses data sourced from LINZ and DOC under CC-BY, NIWA and © Geographx.</small></p>
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<ul style="list-style-type: none"> <li>— 100m Depth Contour</li> <li>— Territorial Sea</li> <li>▭ Marine Mammal Sanctuary</li> <li>▭ Marine Reserve</li> <li>▭ Mātaitai Reserve</li> <li>▭ Submarine Cables and Pipelines Protection Area</li> <li>▭ Farewell Spit Nature Reserve</li> </ul>	<p><b>Status Quo Trawl Restrictions</b></p> <ul style="list-style-type: none"> <li>▭ Trawl Prohibition</li> <li>▭ Trawl Prohibition (seasonal)</li> <li>▭ A low headline height trawl net must be used</li> <li>▭ Various conditions relating to trawl fishing</li> </ul>	<ul style="list-style-type: none"> <li>▭ Trawling by vessels over 46m long prohibited</li> </ul>	<p>0 10 20 nm</p> <p>0 25 50 km</p> <p>N</p>
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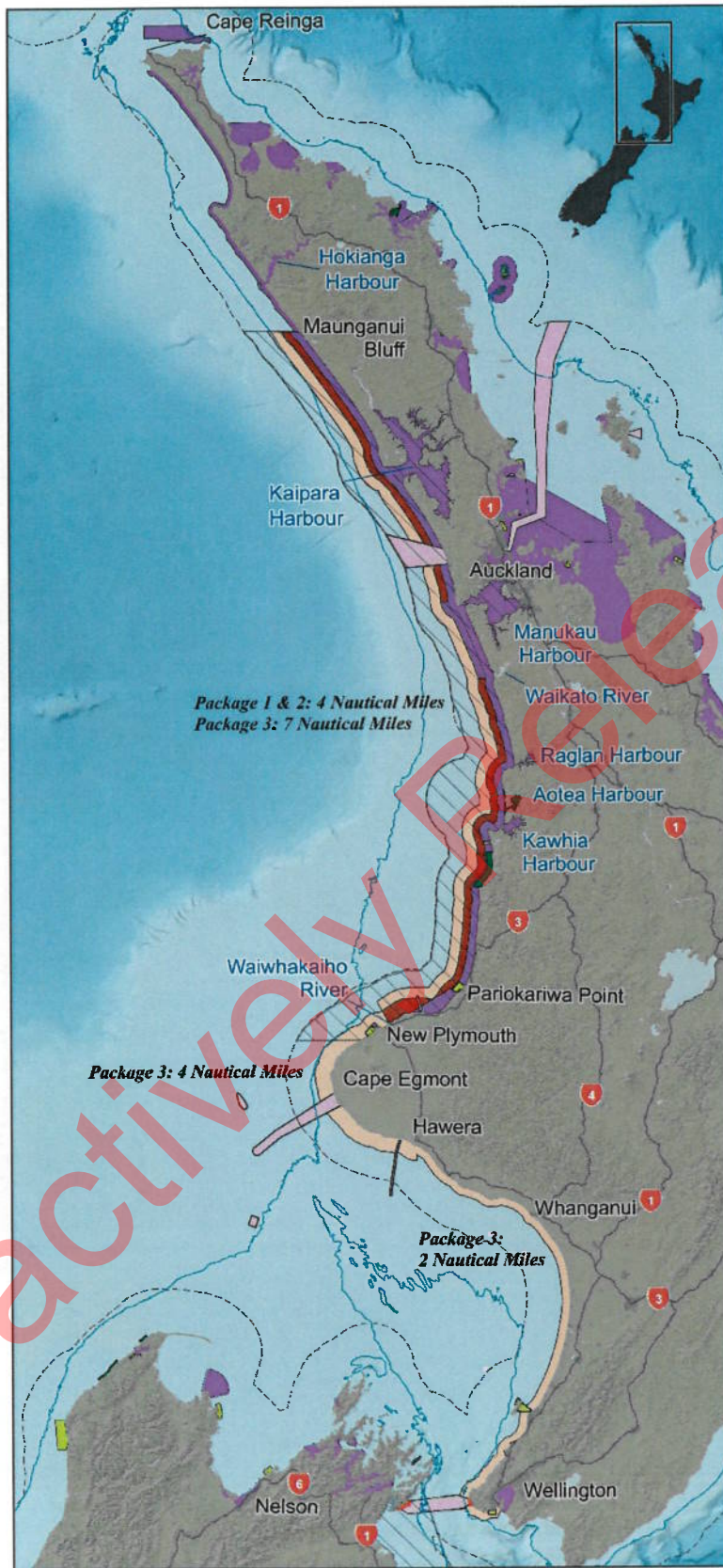
Data Attribution:  
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**Appendix Three: Revised set-net and trawl options that form Packages 1, 2 and 3 for the west coast North Island and South Island subpopulations.**







Package 1 & 2: 4 Nautical Miles  
 Package 3: 7 Nautical Miles

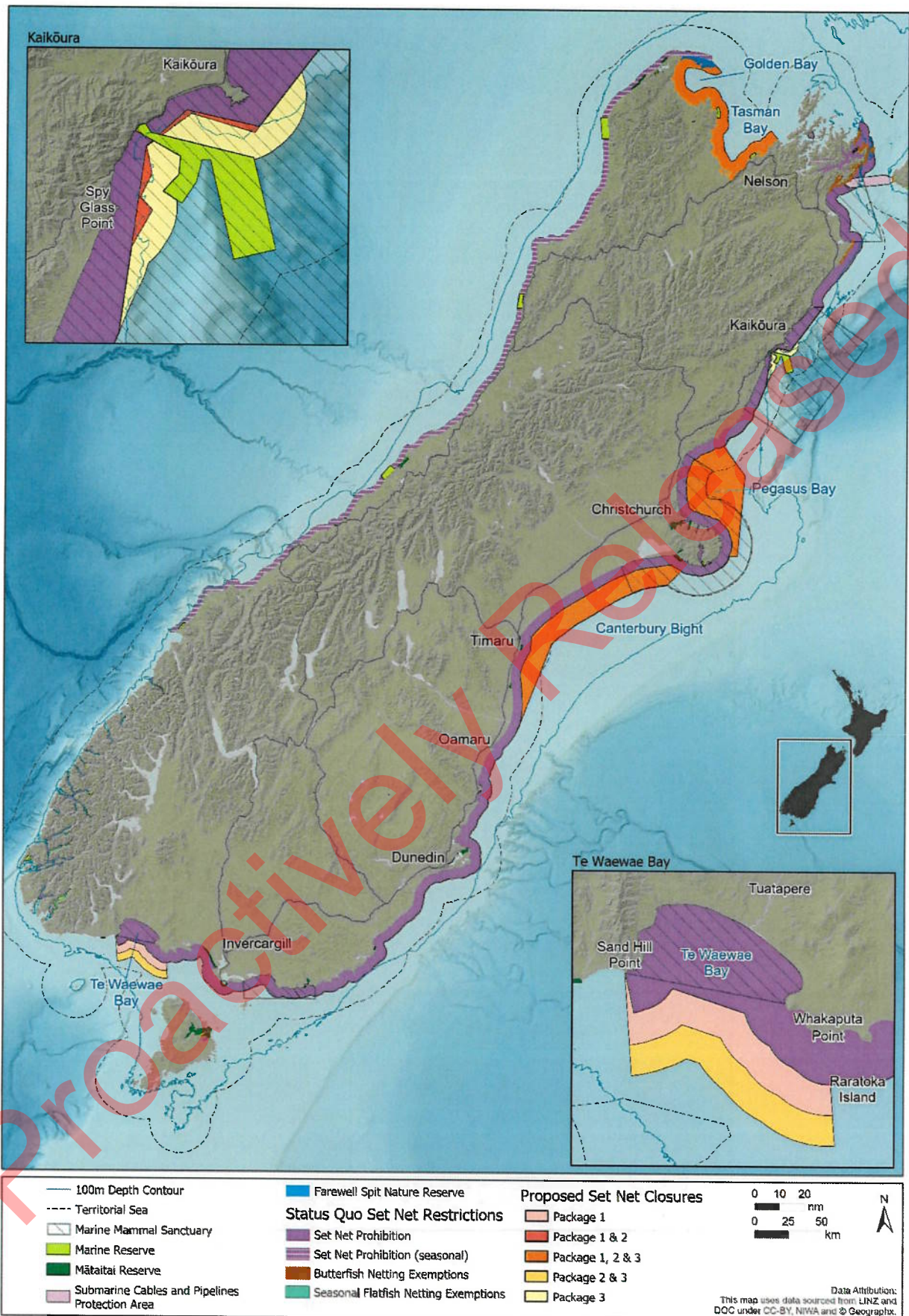
Package 3: 4 Nautical Miles

Package 3: 2 Nautical Miles

— 100m Depth Contour	Submarine Cables and Pipelines Protection Area	0 15 30 nm	N
- - - Territorial Sea	Status Quo Areas Closed to Trawl Fishing	0 25 50 km	
▭ Marine Mammal Sanctuary	<b>Proposed Trawl Closures</b>	1:2,300,000	
▭ Marine Reserve	Package 1 & 2		
▭ Māitaitai Reserve	Package 3		

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<ul style="list-style-type: none"> <li> 100m Depth Contour</li> <li> Territorial Sea</li> <li> Marine Mammal Sanctuary</li> <li> Marine Reserve</li> <li> Mātaihai Reserve</li> <li> Submarine Cables and Pipelines Protection Area</li> <li> Farewell Spit Nature Reserve</li> </ul>	<p><b>Status Quo Trawl Restrictions</b></p> <ul style="list-style-type: none"> <li> Trawl Prohibition</li> <li> Trawl Prohibition (seasonal)</li> <li> A low headline height trawl net must be used</li> <li> Various conditions relating to trawl fishing</li> </ul>	<p><b>Proposed Trawl Closures</b></p> <ul style="list-style-type: none"> <li> Package 1 – Low Headline Height Restrictions</li> <li> Package 2 – Low Headline Height Restrictions</li> <li> Package 3 – Trawl Closure (Including low headline height restrictions for Canterbury Bight)</li> </ul>	<p>0 10 20 0 25 50 km</p> <p>N</p> <p><small>Data Attribution: This map uses data sourced from LINZ and DOC under CC-BY, NIWA and © Geographix.</small></p>
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## Appendix Four: New measures proposed for trawl fisheries and a management approach to fisheries-related captures

1. The Fisheries New Zealand is recommending a new approach to reduce captures in the South Island that requires further consultation.
2. For trawl fisheries specifically, vessels would only be allowed to operate in defined high-dolphin-density areas using modified trawl fishing gear (low headline height and reduced tow speed), and with an on-board camera or observer to verify reporting.
3. For both set-net and trawl vessels that continue to operate under the proposals on the east coast, south coast, and north coasts of the South Island, we propose graduated responses to fishing-related dolphin captures at an individual vessel level. This graduated capture response framework will incentivise fishers to avoid captures.
4. As a fall back, the management approach will also include fishing-related mortality limits. Fishing-related mortality limits enable the Minister of Fisheries to take appropriate action (such as closing a fishery) in response to captures (dead or alive) to ensure that the limit is not exceeded. Implementing fishing-related mortality limits as a fall back will ensure that the fisheries objective for the populations are met in practice.
5. The intent of the measures is to reduce year-on-year mortalities of dolphins toward zero. The framework itself would be reviewed in two years to ensure effectiveness.
6. The elements of the approach are outlined in the table below and it is proposed they would be implemented through regulation. Fisheries New Zealand intends to consult on this new approach in 2020.

### Proposed measures for that require further consultation (South Island)

Measure	Area*	Description
Trawl gear restrictions	ECSI SCSI	Modified trawl gear would be required in areas of known high dolphin density and risk of fishing-related mortality (see Appendix 3). Trawl vessels in these areas would be required to operate with a headline height of 1 metre or less and tow speed of 2.5 knots (4.6 km/hour) or less.
Capture response framework	ECSI SCSI NCSI	The capture response framework would provide escalating responses to capture events for individual vessels that allows for greater restrictions to be placed on vessels that repeatedly fail to avoid captures. The framework would provide strong incentive for individual fishers to avoid captures and will encourage innovation and development of practices.
Electronic monitoring	ECSI SCSI NCSI	Cameras would be required on select trawl vessels less than 28 metres in length and set-net vessels operating within the subpopulation boundaries. Monitoring would ensure compliance, support research, and allow implementation of Fishing-Related Mortality Limits (FRMLs)

		and individual vessel triggers (graduated response framework) where appropriate.
Fishing-related mortality limits (FRMLs)	ECSI SCSI	<p>FRMLs would allow the Minister of Fisheries to take appropriate action (such as closing set-net and/or trawl fisheries) to prevent the limit being exceeded. This approach is taken for sea lions in the SQU6T fishery, and lessons from this process will be applied to ensure FRMLs for South Island Hector's dolphins are sound and successfully function as an incentive to avoid captures. The aim is that FRMLs are never reached in practice (this works in the SQU6T fishery; the FRML for sea lions has not been reached for over ten years now).</p> <p>Fisheries New Zealand proposes to have the Minister set FRMLs only as a backstop to other measures (above). The other measures provide a strong and individual incentive to reduce captures to zero; the FRMLs provide a collective incentive on top of that and ensure that immediate action can be taken if necessary.</p> <p>The intention is that, in practice, an early trigger would elicit management action before a FRML is close to being reached.</p> <p>Fisheries New Zealand proposes consulting on FRMLs at the local population and subpopulation level to ensure population connectivity and avoid localised depletion.</p> <p>The FRMLs that could be consulted on require further discussion and analysis. The final numbers would reflect population size and the other relevant considerations such as cryptic mortality. Potential numbers for FRMLs for consultation would include: 10 (Goat Point to Timaru), 10 (Pegasus Bay to Goat Point), 4 (Kaikōura), 3 (in the remaining areas north of Motunau), 3 (in the remaining areas south of Timaru), and 2 (Te Waewae Bay).</p>

\* ECSI: east coast South Island, SCSI: south coast South Island, NCSI: north coast South Island