



# Review of Sustainability Controls for 1 October 2015

Proposals to Alter Total Allowable Catch, Allowances,  
Total Allowable Commercial Catch and Deemed Value  
Rates for Selected Fishstocks

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# 1 Introduction

The Ministry for Primary Industries (MPI) has consulted on proposals to amend the Total Allowable Catch (TAC), allowances and Total Allowable Commercial Catch (TACC) for seven finfish stocks, and amend the deemed value rates for an additional twelve stocks.

This Decision Document provides you with MPI's final advice on these proposals. It has been divided into three parts:

- Part A provides advice relating to two deepwater stocks (HOK1 and OEO4);
- Part B provides advice relating to five inshore stocks (GUR3, GUR7, SPO2, SPO7, and STA7); and
- Part C provides advice on the proposed amendments to deemed value rates.

Each Part comprises specific discussions of each stock including the relevant background information, specific legal considerations, a summary of submissions, and analysis of the proposed management options, including MPI's recommendations.

The full submissions that MPI received on the relevant proposals are contained within Appendix II.

## 2 Statutory Considerations

This section provides an overview of your legal obligations under the Fisheries Act 1996 (the Act) that relate to the decisions requested for the 1 October 2015 fishing year.

Stock specific details relating to these obligations are further provided within the relevant decision document.

### 2.1 SECTION 8 – PURPOSE OF THE FISHERIES ACT 1996

The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

The purpose statement incorporates “the two competing social policies reflected in the Act”<sup>1</sup>. “Ensuring sustainability” is defined as: “maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment”. “Utilisation” of fisheries resources is defined as “conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing.”

The Supreme Court stated that “both policies are to be accommodated as far as is practicable in the administration of fisheries under the quota management system...[I]n the attribution of due weight to each policy that given to utilisation must not be such as to jeopardise sustainability”.<sup>2</sup>

Utilisation may be provided for at different levels, and the extent of such use should be considered on a case-by-case basis. Where there is a significant threat to the sustainability of a fish stock, the measures adopted to achieve sustainability are likely to be more stringent than where there is a lesser threat.

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<sup>1</sup> New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors (Supreme Court, SC 40/2008, 29 May 2009), at para 39.

<sup>2</sup> Ibid.

## 2.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

The Act prescribes three environmental principles that you must take into account when exercising powers in relation to utilising fisheries resources and ensuring sustainability.

**Principle 1: Associated or dependent species should be maintained above a level that ensures their long-term viability.**

The Act defines “associated and dependent species” as any non-harvested species taken or otherwise affected by the taking of a harvested species. Examples are other non-target fish species (bycatch) or benthic species that are incidentally impacted by trawl gear. The term “long-term viability” (in relation to a biomass level of a stock or species) is defined in the Act as a low risk of collapse of the stock or species, and the stock or species has the potential to recover to a higher biomass level. This principle therefore requires the continuing existence of species by maintaining populations in a condition that ensures a particular level of reproductive success.

Where fishing is affecting the viability of associated and dependent species, there is an obligation to take appropriate measures, such as method restrictions, area closures, and potentially adjustments to the TAC of the target stock.

**Principle 2: Biological diversity of the aquatic environment should be maintained.**

“Biological diversity” means the variability among living organisms, including diversity within species, between species, and of ecosystems. Determining the level of fishing or the impacts of fishing that can occur requires an assessment of the risk that fishing might cause catastrophic decline in species abundance or cause biodiversity to be reduced to an unacceptable level.

**Principle 3: Habitat of particular significance for fisheries management should be protected.**

Habitat is not defined in the Act. The Magnuson-Stevens Fishery Conservation and Management Act (USA) defines “essential fish habitat” as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity”. The maintenance of healthy fish stocks requires the mitigation of threats to fish habitat. However, fishing may not be the sole source of the threat; a range of terrestrial activities may impact on fisheries habitats. Habitats of special significance, such as those that assist in the reproductive and productive process of a fishery, should be protected. Adverse effects on such areas must be avoided, remedied, or mitigated.

## 2.3 SECTION 10 – INFORMATION PRINCIPLES

The nature of data and assumptions used to generate fisheries assessments and the results produced contain inherent variation and uncertainty. Section 10 of the Act requires that you take the following information principles into account:

- a) Decisions should be based on the best available information;
- b) Decision makers should take into account any uncertainty in the available information;
- c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate; and
- d) The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.

Less than full information suggests caution in decision-making, not deferral of a decision completely if information standards are not met. “The fact that a dispute exists as to the basic material upon which the decision must rest, does not mean that necessarily the most

conservative approach must be adopted. The obligation is to consider the material and decide upon the weight which can be given it with such care as the situation requires.”<sup>3</sup>

Both scientific and anecdotal information need to be considered and weighed accordingly when making management decisions. The weighting assigned to particular information is subject to the certainty, reliability, and adequacy of that information. As a general principle, information on stock status outlined in the MPI Fishery Assessment Plenary Report is considered the best available information and should be given significant weighting. The information presented in the Plenary Report is subject to a robust process of scientific peer review and is assessed against the Research and Science Information Standard for New Zealand Fisheries. Corroborated anecdotal information also has a useful role to play in the stock assessment process and in the management process.

## **2.4 SECTION 5(A) - INTERNATIONAL OBLIGATIONS**

The Act is to be interpreted, and all persons exercising or performing functions, duties, or powers under it are required to act, in a manner consistent with New Zealand’s international obligations relating to fishing (s 5(a)). As a general principle, where there is a choice in the interpretation of the Act or the exercise of discretion, the decision maker must choose the option that is consistent with New Zealand’s international obligations relating to fishing.

The two key pieces of international law relating to fishing, and to which New Zealand is a party, are the United Nations Convention on the Law of the Sea, 1982 (UNCLOS) and the United Nations Convention on Biological Diversity 1992 (the Biodiversity Convention). The provisions of the Act and the proposed exercise of powers under the legislation are consistent with New Zealand’s international obligations.

## **2.5 SECTION 5(B) - TREATY OF WAITANGI (FISHERIES CLAIMS) SETTLEMENT ACT 1992**

The Act is to be interpreted, and all persons exercising or performing functions, duties, or powers under it are required to act, in a manner consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (s 5(b)). This requirement furthers the agreements expressed in the Deed of Settlement referred to in the Preamble to the Settlement Act. In particular, Māori non-commercial fishing rights continue to give rise to Treaty obligations on the Crown.

To give effect to the obligations arising from the Treaty, the Crown:

- a) Acknowledges it has an obligation to act in an informed manner when it forms policy or acts in a way that affects Māori interests;
- b) Acknowledges that it has a duty of active protection in relation to Māori rights and interests guaranteed pursuant to Article II of the Treaty subject to the Settlement Act;
- c) Recognises that the Crown and Māori both have an obligation to act in good faith, fairly, reasonably and honourably towards the other; and
- d) Recognises that central to the Treaty relationship and implementation of Treaty principles in respect of the rights of tangata whenua is a common understanding that tangata whenua will have an important role in the development of policies and processes that affect their interests and rights.

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<sup>3</sup> *Greenpeace NZ Inc v Minister of Fisheries* (HC, Wellington CP 492/93, 27/11/95, Gallen J) p 32.

## 2.6 SECTION 11 – SUSTAINABILITY MEASURES

Section 11 (1) requires that the following factors must be taken in account before setting or varying a TAC:

- (a) Any effects of fishing on the stock and the aquatic environment
- (b) Any existing controls that apply to the stock or area concerned
- (c) The natural variability of the stock concerned.

Section 11 (2) requires you to have regards to the provision of:

- (a) Any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991.
- (b) Any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and which the Minister considers to be relevant
- (c) Sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000
- (ca) regulations made under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and
- (d) a planning document lodged with the Minister of Fisheries by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011

Section 11 (2A) requires you to take into account:

- (a) Any conservation services or fisheries services
- (b) Any relevant fisheries plan approved under this Part
- (c) Any decisions not to require conservation services or fisheries services.

Services of particular relevance to the decisions in this paper relates to programmed research used to monitor stock abundance.

## 2.7 SECTION 12 – CONSULTATION

Before setting or varying any sustainability measure under the Act you are required to consult with those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including, but not limited to, Māori, environmental, commercial and recreational interest.

MPI consulted on your behalf on proposals to amend TACs, allowances and TACCs for HOa number of stocks for the 1 October 2015 fishing year. MPI followed its standard consultation process of posting Consultation Documents on the MPI website and alerting stakeholders to this and concurrent fisheries consultations through a letter sent to approximately 460 companies, organisations and individuals. The consultation period ran from 18 June to 17 July 2015.

You are also required 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. This requirement reflects the provisions of the Settlement Act, and the Crown's commitment to its Treaty partner.



### 2.7.1 Forum fisheries plans

Section 12 of the Act requires you to have particular regard to Kaitiakitanga when making sustainability decisions such as those proposed in this paper. Forum Fisheries Plans aid MPI in understanding the meaning of Kaitiakitanga in order to provide you with advice that is consistent with this obligation.

## 2.8 SECTION 13 – SETTING A TOTAL ALLOWABLE CATCH

The Act contains a number of specific provisions to ensure a stock is managed sustainably. A key measure is the setting of a TAC for a Quota Management System (QMS) stock.

The TAC is set under section 13 for all stocks with amendments proposed for October 2015. Under s 13 there is a requirement to maintain the biomass of a fishstock at or above a level that can produce the maximum sustainable yield (MSY), having regard to the interdependence of stocks.

MSY is defined, in relation to any fish stock, as being the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock.

Where a stock is assessed to be above the target stock level, section 13(2)(a) of the Act requires a TAC to be set that maintains the stock at or above that level. This section applies to HOK1, which has been assessed to be above the target stock level.

If the current status of the stock or the level of a stock that can produce the MSY is not able to be estimated reliably using the best available information, section 13(2A) dictates a requirement to not use this lack of information as a reason for postponing, or failing to set a TAC for the stock, having regard to the interdependence of stocks and the biological characteristics of the stock. The TAC that is set must use the best available information and must not be inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level which can produce the MSY. You may set the TAC to achieve the objective in a way and rate which has regard to the interdependence of stocks and within a period appropriate to the stock.

In considering the way in which and rate at which a stock is moved towards or above a level that can produce maximum sustainable yield you may have regard to such social, cultural, and economic factors as you consider relevant.

The obligation to have regard to the interdependence of stocks when setting a TAC requires consideration of the effects of fishing on associated stocks harvested with the target stock, and the role of the target stock in the food chain. In particular, it involves a direct trophic (i.e. one stock is likely to be directly affected through a predator or prey relationship by the abundance of another stock) or symbiotic (i.e. a close and often long-term interaction between two or more different biological species) relationship between stocks.

## 2.9 SECTIONS 20 & 21 – ALLOCATING THE TAC

After setting the TAC, a separate decision arises in respect of allocating the TAC. Section 21 of the Act states that in setting or varying the Total Allowable Commercial Catch, you must have regard to the TAC and allow for:

- a) Māori customary non-commercial fishing interests;
- b) Recreational interests; and
- c) All other mortality to that stock caused by fishing.

The customary fishing regulations (Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries (Kaimoana Customary Fishing) Regulations 1998) do not provide for the Crown to place limitations on customary fishing, apart from ensuring the sustainability of a particular stock. Customary take is regulated through the authorisation system in the customary regulations, which requires that all customary fishing is to be undertaken in accordance with tikanga and the overall sustainability of the fishery. This framework was put in place to give effect to legal obligations in the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

When allowing for Māori customary non-commercial interests, you must take into account:

- a) Any mataitai reserve in the relevant quota management area; and
- b) Any temporary area closure or temporary fishing method restriction or prohibition imposed in the area for the purposes of improving the availability of size of a species for customary fishing purposes or recognising a customary fishing practice in the area.

The intent is that measures enacted for purposes of customary fishing purposes are not rendered nugatory or reasons for limited customary take are ignored when setting the customary allowance.

When allowing for recreational interests, you must take into account regulations that prohibit or restrict fishing in any area closed to commercial fishing to recognise recreational fishing interests. These recreational-only areas are able to be created under section 311 following the exercise of a formal dispute resolution process, which is set out in the Act, between recreational and commercial fishing interests. No recreational-only areas have been created under this process.

An allowance is to be made for all other mortality to a stock that results from fishing by all fishing interests. This includes illegal catch, discards, and incidental mortality from fishing gear.

In terms of the TACC, the Act states that it can be set at zero (section 20). This would occur in situations where the TAC was set at zero for sustainability reasons (i.e. the fishery was closed) or allocative reasons (i.e. the species was recognised as non-commercial only).

There is also a requirement to have particular regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act when making decisions under s 21 of the Fisheries Act. Section 7 of the Hauraki Gulf Marine Park Act requires recognition of the national significance of the Hauraki Gulf, and section 8 sets out objectives for the management of the Hauraki Gulf and its islands and catchments.

## **2.10 SECTION 75 – DEEMED VALUE RATES**

Section 75 of the Act requires that you set deemed value rates for every stock in the QMS which will provide an incentive for every commercial fisher to acquire or maintain sufficient ACE throughout the fishing year. When setting deemed value rates you may have regard to a number of factors including:

- i) The desirability of commercial fishers landing catch for which they do not have ACE; and
- ii) The market value of the annual catch entitlement for the stock; and
- iii) The market value of the stock; and

- iv) The economic benefits obtained by the most efficient fisher; and
- v) The extent to which catch of that stock has exceeded or is likely to exceed the TACC;  
and
- vi) Any other matters you consider relevant.

# PART A: DEEPWATER FISHERIES

## Hoki (HOK1)

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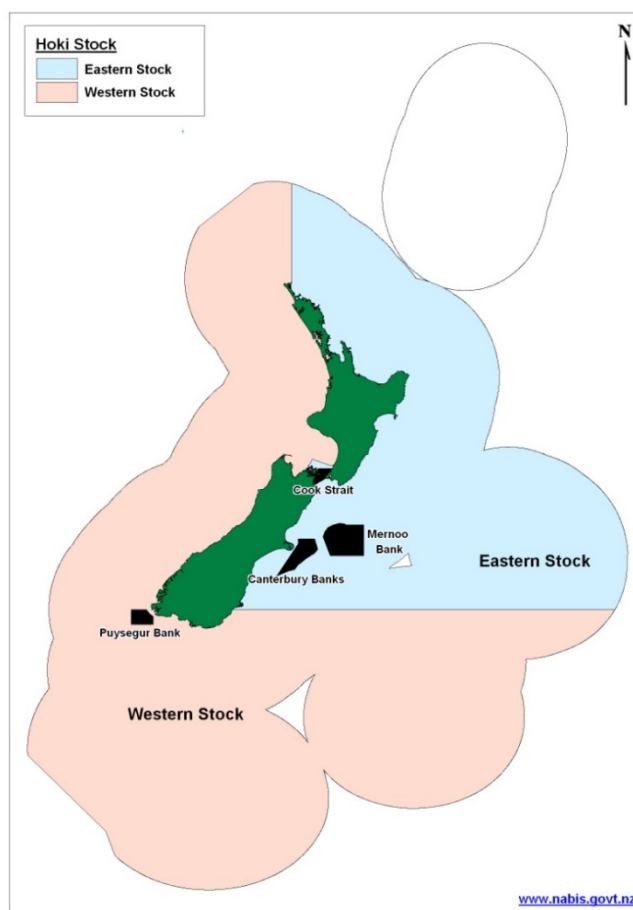


Figure 1: Map of the HOK1 quota management area detailing the boundaries between the eastern and western biological stocks and the hoki management areas (HMAs) in black

## 1 Executive Summary

New Zealand hoki is managed within one Quota Management Area (QMA), HOK1, although it is comprised of two biological stocks, an eastern stock and a western stock, which are managed in conjunction due to the spatial overlap of juveniles from both stocks.

The 2015 hoki stock assessment “base case” model<sup>4</sup> estimates the stock status of both stocks to be well above the biomass that will produce the maximum sustainable yield ( $B_{MSY}$ ) and above the hoki management target range of 35-50% of the unfished biomass ( $B_0$ ).<sup>5</sup> Five year projections using the 2015 stock assessment base case model show that with current catch levels, both stocks are likely to remain above  $B_{MSY}$  and within or above the management target range.

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<sup>4</sup> The stock assessment base case model is the model that the Deepwater Fisheries Assessment Working Group (DWFAWG) agrees is the most likely and best assessment of the status of the hoki stocks.

<sup>5</sup> This management target range is consistent with the requirements of the Harvest Strategy Standard and is specific to hoki. It was agreed in conjunction with quota owners in 2010.

While the assessment is positive and indicates a healthy stock status, the most recent (December 2014) trawl survey in the sub-Antarctic, has provided the lowest estimate of hoki abundance in the western stock since 2007. In response to this, and other anecdotal information from the fishery, some hoki quota owners have expressed concerns over the last year to the Ministry for Primary Industries (MPI) about the status of the western hoki stock.

The base case assessment did not fit well to the low estimate of hoki biomass from the Sub-Antarctic trawl survey. A sensitivity run that gave more weight to the trawl survey estimate was also considered by the Deepwater Fisheries Assessment Working Group (DFAWG), to try and improve the fit of the model. The result is a much lower estimate of current western stock status, below the management target range and with a decreasing biomass trajectory. Projections using the sensitivity run indicate that the western stock would decrease further below the management target range at current catch levels.

It is possible that the observation of low biomass in the 2014 trawl survey reflects a real change in hoki abundance and the projections based on the sensitivity run are a more accurate reflection of the population status. Although the base case model was considered the more likely scenario by the DFAWG, MPI has consulted on and is now presenting you with options to either reduce the hoki Total Allowable Catch (TAC) and Total Allowable Commercial Catch (TACC) for 2015/16 or re-allocate annual catch entitlement (ACE) within the TACC from the western stock to the eastern stock. The status quo was also consulted on.

MPI's preferred approach is to decrease the TAC and TACC by 10,000 tonnes. This would represent a proactive and conservative approach to management, taking action based on an early signal of a possible decline in hoki biomass that is not fully represented in the base case model. It also responds to concerns that have been raised by some quota owners on the status of the western stock and may decrease the likelihood of a larger TAC decrease and therefore larger economic loss being required in future, if the decrease in western stock hoki abundance is real.

Table 1: Proposed TACs, TACCs and allowances for HOK1 in 2015-16

Option	TAC	TACC	Non-regulatory catch split arrangement		Allowances (tonnes)		
			Eastern stock limit	Western stock limit	Customary Māori	Recreational	Other sources of fishing related mortality
Option 1 (status quo)	161,640	160,000	60,000	100,000	20	20	1,600
Option 2 (MPI Preferred)	151,540	150,000	60,000	90,000	20	20	1,500
Option 3	156,590	155,000	65,000	90,000	20	20	1,550

## 2 Purpose

### 2.1 BACKGROUND

#### 2.1.1 Biological characteristics of hoki

Hoki is a relatively fast growing and productive species that is widely distributed throughout New Zealand waters at depths of 300 to 800 m. Hoki are thought to mature between the ages of two and four and to reach a maximum age of 20 to 25 years old.

Two biological stocks of hoki exist within New Zealand's Exclusive Economic Zone (EEZ), referred to as the "eastern" and "western" stocks (Figure 1). The un-fished biomass ( $B_0$ ) of the western stock is estimated to have been significantly larger than the eastern stock.<sup>6</sup>

For the majority of the year, fish from both stocks are found on their feeding grounds: the Chatham Rise for the eastern stock and the Sub-Antarctic for the western stock. Juvenile fish from both stocks mix on the Chatham Rise and are thought to migrate to the eastern or western stock feeding grounds before recruiting to the spawning grounds upon maturity.

Mature hoki from both stocks migrate to spawn between late June and early September. The west coast of the South Island (WCSI) is the main spawning ground for the western stock, as is the Cook Strait for the eastern stock. Smaller spawning events occur on the Puysegur Bank (western stock) and off the east coast of the South Island (eastern stock).

### 2.1.2 Fishery description

New Zealand's hoki fisheries have been managed within the QMS since 1986. Both stocks are managed within a single quota management area (QMA), HOK1 (Figure 1).

The largest seasonal hoki fishery operates from mid-July to late August during the WCSI and Cook Strait spawning events. Small catches are also taken from the smaller spawning grounds off the east coast of the South Island and Puysegur Bank. Outside of the spawning season there is a substantial year round fishery on the Chatham Rise, and a smaller fishery in the sub-Antarctic.

To manage fishing effort across the two stocks, the HOK1 TAC, which is set by you,<sup>7</sup> is divided between the stocks each year via a non-regulatory catch split arrangement that is agreed between MPI and quota holders and endorsed by you. Each catch limit is varied (within the overall TACC) in response to the current estimate of stock status and projected impacts of catch levels on each stock. The catch split arrangement was first implemented by industry in 2001 and is now formally administered through FishServe,<sup>8</sup> reported to, and audited by MPI.

To protect juvenile hoki, industry have also implemented voluntary measures that apply to all vessels greater than 28 m in overall length, detailed within the industry-led initiative known as the Hoki Operational Procedure (HOP). Measures include closing four areas to hoki targeting where it is known that large numbers of juvenile hoki occur. These areas, known as hoki management areas (HMAs), are still accessible to vessels targeting other species such as scampi, silver warehou and squid. MPI actively monitors fishing activity and the level of hoki bycatch in the HMAs and reports quarterly to industry. The four closed areas are (Figure 1):

- a. Part of the Cook Strait
- b. Canterbury Banks
- c. Mernoo Bank
- d. Puysegur Bank

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<sup>6</sup> Median estimates of  $B_0$  for the western stock = 897,000 tonnes; and for the eastern stock = 540,000 tonnes. These median estimates are taken from the final base case model in the 2015 hoki stock assessment.

<sup>7</sup> The Minister for Primary Industries now exercises the powers and responsibilities of the Minister of Fisheries under the Fisheries Act 1996.

<sup>8</sup> FishServe is a wholly-owned subsidiary of Seafood New Zealand Limited and is responsible for the administration of catch reporting requirements.

Another non-regulatory management tool available, which has been applied in other deepwater fisheries, and is raised in several submissions in relation to the hoki stocks, is a 'shelving' arrangement, whereby quota owners agree to limit the total catch from a stock below the level of the TACC. Shelving arrangements have been successful in fisheries including orange roughy and oreo, and are generally implemented where the industry does not support a permanent reduction in the catch limit and there is a high level of agreement between all (or a very high proportion of) quota owners that such a catch reduction is necessary or beneficial.

#### *2.1.2.1 Recreational and Māori Customary Interests*

Recreational and customary fishers do not generally target hoki, as it is predominantly available offshore in deep water. Recent data on the level of customary and recreational hoki catch is negligible, although references to customary catches in the past do exist. Hoki has been identified as a taonga species in several Forum Fisheries Plans. It is also likely that a small amount of hoki is caught by recreational fishers while targeting other species.

An allowance of 20 tonnes each for the recreational and customary fishers is provided for within the current HOK1 TAC. MPI considers that these allowances should be retained under all proposed Options.

#### *2.1.2.2 Other Sources of Fishing Related Mortality*

MPI proposes to retain the current allowance for other sources of fishing-related mortality, set at 1% of the TACC. This nominal allowance accounts for unreported hoki mortality, such as loss due to burst nets, or discarding of damaged hoki.

## **2.2 RATIONALE FOR MANAGEMENT INTERVENTION**

The DWFAWG has agreed that the 2015 hoki stock assessment and all of the data inputs were of high quality and met New Zealand's Science and Research Information Standard.<sup>9</sup> The hoki assessment was not reviewed by MPI's Fisheries Assessment Plenary this year given that in 2014, MPI commissioned a panel of independent international experts to perform an independent review of the hoki assessment model. No significant changes to the model were recommended but the highest priority technical recommendations from the review have been implemented to improve the robustness of the 2015 assessment. Subsequent lower priority recommendations will be explored and addressed over time.

The results of the 2015 base case stock assessment estimate that the stock status of both the eastern and western hoki stocks are currently well above  $B_{MSY}$  and above the hoki management target range (35-50%  $B_0$ ) at 59%  $B_0$  and 51%  $B_0$  respectively.

The 2015 stock assessment model incorporated all available data sets, including a new data point from the Sub-Antarctic wide-area trawl survey that took place in December 2014. The result of this survey is the lowest estimate of hoki abundance in the western stock since 2007.

In the base case stock assessment model, the observation of low biomass in the 2014 Southern Plateau trawl survey was interpreted by the DWFAWG as observation error (i.e. the survey underestimated hoki biomass by chance and hoki abundance is actually higher than the survey estimated). However it was noted by the DWFAWG that the status of the western stock could be significantly lower if the low survey result is reflecting a real decline in hoki abundance.

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<sup>9</sup> Available at: <http://www.fish.govt.nz/en-nz/Publications/Research+and+Science+Information+Standard.htm>

A sensitivity model run that gave more weight to the most recent Sub-Antarctic survey has tested the impact of this on stock status. The sensitivity estimates that the western stock status is 30%  $B_0$ , which is below the management target range, but the outputs did not fit to the other data inputs as well as the base case model. Five year projections using the sensitivity model indicated a 77% chance that the western stock could decline below the management target range and a 35% chance that it could decline below the soft limit at current catch levels.

In response to the assessment results (including the sensitivity model) and before formal consultation was commenced, industry stakeholders voiced concerns with the low abundance estimate from the recent survey and the effect of this on western stocks status.

Responding to this information by taking a relatively small decrease in catch now will lessen the risk that a larger cut to the western stock catch limit will be needed in the future, if the next Sub-Antarctic survey confirms the decrease in hoki abundance in the western stock is real. MPI notes that from 2002 - 2005, significant TAC cuts were required to rebuild the western stock from below the soft limit. It is arguable that an earlier response to indications of low western stock abundance could have prevented such large cuts from being required. Low abundance estimates at that time were also observed in the Sub-Antarctic survey, which was then scheduled every year. The survey now takes place biennially, and will take longer to determine whether the decline in abundance is real.

While the hoki stocks will be assessed again in early 2016, the next Sub-Antarctic trawl survey, which provides an independent estimate of hoki abundance in the western stock, will not occur until December 2016. This information would be available to inform a TAC decision in 2017 at the earliest.

### 3 Consultation

MPI consulted on your behalf on the three Options set out in Table 1 above. MPI followed its standard consultation process (detailed in Appendix I).

#### 3.1 SUBMISSIONS RECEIVED

Submissions were received from the following:

- a) Ceebay Holdings Ltd. (CHL)
- b) Deepwater Group Ltd. (DWG)
- c) Independent Fisheries Ltd. (IFL)
- d) Iwi Collective Partnership (ICP)
- e) Ngai Te Rangi Fisheries AHC Ltd. (NFAL)
- f) Ngati Porou Seafoods Ltd. (NPSL)
- g) Sanford Ltd (Sanford)
- h) Sealord Group Ltd. (SGL)
- i) Talley's Group Ltd. (Talley's)
- j) Te Ohu Kai Moana Trustee Limited (TOKM)

Full copies of all submissions are available in Appendix II for your reference.



## 3.2 SUMMARY OF SUBMISSIONS

### 3.2.1 Option 1

Deepwater Group Ltd (DWG) is the industry organisation that represents holders of quota in New Zealand's major deepwater fisheries. DWG submits on behalf of its shareholders who collectively own 93% of HOK1 quota.<sup>10</sup> The submission proposes that an updated management strategy evaluation be undertaken in the 2015-16 year to refine the management targets for New Zealand's hoki fisheries. DWG submits that no shareholders support Option 3, but that there are a range of views amongst DWG shareholders on whether Option 1 or Option 2 is preferred. DWG advises that a reduction in catch from the western stock could be achieved through a shelving arrangement rather than a TACC reduction.

Sealord Group Ltd (SGL) owns 29% of HOK1 quota and also submits in support of Option 1, but with an adjustment of the catch split arrangement within the current TACC to reduce the catch from the western stock. SGL considers the consideration given to the sensitivity run is inappropriate and questions MPI's confidence in the current hoki stock assessment (base case). SGL considers that the base case model is an accurate representation of stock status, and notes that indications from their skippers in the fishery do not suggest any decrease in the abundance of hoki in the western stock. However, SGL supports increasing the catch limit on the eastern stock, by reallocating a portion of the western catch limit, provided the additional catch in the east was taken from the Pegasus region if the northern boundary of the Canterbury Banks Hoki Management Area was changed.

Sanford Ltd owns 15% of HOK1 quota and submitted in support of a precautionary approach recommending Option 1, but only if there is agreement between quota owners to shelve 10,000 tonnes within the western stock catch limit. Sanford submits that a cautious approach would ensure that the industry does not enter the downward cycle experienced in the early 2000s when the hoki TACC was reduced by more than 50% after a delayed management response to signals of a decline in hoki abundance.

Iwi Collective Partnership (ICP) is a collective of 14 iwi across the North Island that have pooled their ACE together, including hoki, to improve management returns, and opportunities within the fisheries sector.<sup>11</sup> ICP represent 3% of the HOK1 quota ownership. ICP considers the scientific uncertainty is not strong enough to warrant a TAC cut and therefore supports Option 1. It is noted that ICP has promoted a shelving arrangement at industry discussions but was unsuccessful at reaching a consensus.

Ngati Porou Seafoods Ltd submitted in support of the ICP submission on hoki.

Ngai Te Rangi Fisheries AHC Ltd (NFAL) took into consideration the most recent science data as well as comments from TOKM, SGL, and ICP in making a submission. NFAL supports Option 1, but with an adjustment of catch limits within the TACC to shift some of the western stock catch limit to the eastern stock catch limit.

Te Ohu Kai Moana (TOKM) submits in their capacity as trustee for the Fisheries Settlement, in support of Option 1, and recommend that a TACC review is planned for 1 October 2016. TOKM notes there is a range of views amongst companies involved in the hoki fishery, including options not proposed in the initial discussion document like shelving or adjusting

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<sup>10</sup> Note that Sealord, Sanford, ICP and TOKM are shareholders of the DWG and their views are represented in DWG's submission in addition to individual submissions made.

<sup>11</sup> Note that NPSL is also a member of the Iwi Collective Partnership and support the final submission of DWG.

allocation of catch limits within the current TACC. TOKM provided information on trends in catch-per-unit-effort in the hoki fisheries in support of their belief that there are no worrying signs of a decrease in abundance and therefore no reason to decrease the TACC as proposed by Option 2 or Option 3.

### 3.2.2 Option 2

Talley's Group Limited holds 20% of HOK1 quota, and supports the proposed 10,000 tonne reduction of the hoki TACC, with the decrease coming from the western stock catch limit. The decrease is supported based on the qualifications and uncertainties in the science this year. Talley's note a preference for a TACC decrease as opposed to a shelving arrangement as proposed by several other submitters.

Independent Fisheries Ltd holds 9% of HOK1 quota and supports a reduction in the catch from the western stock, citing previous experience when the science has indicated a healthy stock, while the TACC eventually was drastically reduced as the signals of a decline were missed. IFL suggests that 10,000 tonnes may not be a sufficient reduction and suggests that a 20,000 tonne reduction in the western stock catch limit may be more appropriate. It is noted that this reduction may be achieved by either reducing the TACC or through a shelving agreement, although there is no clear mandate for this from quota owners at present.

Ceebay Holdings Ltd holds 4% of HOK1 quota, and submits in support of Option 2, citing the possible decrease in hoki abundance in the western stock and the need to be cautious. CHL is of the view that a transfer of fishing effort from the western stock to the eastern stock is inappropriate. In addition, CHL considers that a 'shelving' arrangement would not be as effective at reducing overall catch due to the effects of ACE carried forward between years.

### 3.2.3 Option 3

There was no support amongst submitters for Option 3.

### 3.2.4 Post consultation discussion

MPI notes that while several of the submissions summarised above expressed support for Option 1, which would retain the status quo TAC/TACC, this support was either contingent on a voluntary agreement to reduce the catch from the western stock, or supported a reallocation of catch within the TACC from the western to the eastern stock. These submitters together represent 47.2% of HOK1 quota owners.

Following the closure of the formal consultation period, MPI tested whether consensus could be reached from hoki quota owners on a formalised voluntary agreement that would achieve a reduction in catch from the western stock via either a shelving arrangement or a reallocation of catch within the TACC. MPI was informed that agreement was not reached as several quota owners continued to support a TAC reduction.

## 4 Legal Considerations

### 4.1 SECTION 8 – PURPOSE OF THE ACT

MPI considers that all options presented in this paper meet the purpose of the legislation. Each management Option proposed will ensure the long term sustainability of the stock. Option 1 maximises utilisation of the stock, but does carry a risk to the sustainability of the stock if the low abundance scenario is real. If catch from the western stock is reduced there would be a lower risk to the sustainability of the stock, but this limits immediate utilisation opportunities.

## 4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

MPI considers that all options presented in this paper satisfy your obligations under section 9 of the Act.

Detailed information on each of these principles is provided below.

### 4.2.1 Associated or dependent species (section 9(a))

The main commercial bycatch species in the hoki fisheries are hake, ling and silver warehou. Option 2 in this Decision Document would result in reduced fishing effort in the west and no change in the east, while Option 3 would result in reduced fishing effort in western stock fisheries and a small increase in fishing effort in eastern stock fisheries.

All three hake stocks have been assessed in the last three years. All stocks were assessed to be Likely or Very Likely to be above the default management target of 40%  $B_0$ . It is considered that all stocks could probably support higher catch levels, especially as all three TACCs have been under-caught in recent years. None of the Options proposed are likely to impact on the sustainability of any hake stock.

Stock assessments for all ling stocks potentially affected by changes in hoki fishing effort have been completed in the past four years. All stocks were estimated to be above the default management target of 40%  $B_0$  and catch limits were increased in both LIN 5 and LIN 7 in 2013. MPI considers that all Options proposed are unlikely to impact on the sustainability of any ling stock.

The TACC for silver warehou has been over-caught in SWA 3 in three of the past four years, and in one of the last two years in SWA 4. Increased fishing effort in the eastern hoki stock were to increase, if Option 3 were implemented, could result in the SWA 3 or SWA 4 TACC being over-caught again. The sustainability of current catch levels for these stocks is not known, although no specific sustainability concerns have been identified for these stocks.

MPI is satisfied that any changes to the hoki TAC or increase in fishing effort in eastern stock fisheries is unlikely to have an unacceptable impact on the sustainability of the key species that are caught in conjunction with hoki. Fish by-catch levels in the fishery will continue to be monitored.

### 4.2.2 Aquatic environment - protected species interactions (section 9(b))

Proposed Options 2 and 3 would both result in an overall decrease in hoki fishing effort, although Option 3 would result in increased effort in eastern fisheries (Cook Strait and Chatham Rise). This may result in slight increases to the known interactions with protected species in the eastern fisheries, as outlined below. However, MPI considers that current management processes will ensure that the long-term viability of these affected protected species populations is not negatively impacted.

#### 4.2.2.1 Seabirds

Management of seabird interactions with New Zealand's commercial fisheries is driven through the 2013 National Plan of Action to reduce the incidental catch of seabirds in New Zealand Fisheries (NPOA-Seabirds). The NPOA-Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk.

The level of risk from commercial fishing to individual seabird species has been identified through a comprehensive hierarchical risk assessment and risk screening approach that underpins the NPOA-Seabirds. Hoki fishing effort generally contributes a relatively low proportion of the total risk score for most seabird species.

There are three species captured in hoki fisheries that are estimated to be at very high risk from commercial fishing in New Zealand waters. These are the New Zealand white-capped albatross, Salvin's albatross, and Southern Buller's albatross. A brief summary of each species is provided below as well as catch rate information for the most recent five years.

New Zealand white-capped albatross is categorised by the New Zealand Department of Conservation <sup>12</sup> (DOC) as 'At Risk: Declining', and 'Near Threatened' by the International Union for the Conservation of Nature <sup>13</sup> (IUCN). However, recent population studies show fluctuating numbers of breeding birds at the main colonies and it is not possible to determine population trend with any certainty. <sup>14</sup> Hoki fishing is estimated to contribute roughly 10% of the total risk for NZ white-capped albatross from New Zealand fishing activity.

Salvin's albatross is categorised by DOC as 'Threatened: Nationally Critical', and 'Vulnerable' by the IUCN. The population is estimated to have declined between 1997 and 2011, however recent population counts suggest that the population may be stable. Hoki fishing is estimated to contribute just under 10% of the total risk to Salvin's albatross from New Zealand fishing activity.

Southern Buller's albatross is categorised by DOC as 'At Risk: Naturally Uncommon', and 'Near Threatened' by the IUCN. The current population trend for Southern Buller's albatross is uncertain but the population increased markedly between 1950 and 2005. Hoki fishing is estimated to contribute roughly 25% of the estimated risk to Southern Buller's albatross from New Zealand fishing activity.

In 2012-13 (the most recent full year for which data is available), 100 seabird captures were observed from 4,467 observed hoki target tows. Subsequent modelling of the level of effort and the number of observed seabird captures across the different hoki grounds provides an estimate of total seabird captures in hoki fisheries of 265 seabirds in 2012-13 (Table 3).

**Table 3: Estimated and observed seabird captures in hoki fisheries 2008-09 to 2012-13**

	Observed captures	Estimated captures	% tows observed	Total # of tows	Estimated Capture rate (per 100 tows)
2012-13	100	265	38.7	11,681	2.27
2011-12	59	242	22.8	11,333	2.14
2010-11	50	272	16.6	10,405	2.61
2009-10	53	197	20.7	9,966	1.98
2008-09	37	185	20.3	8,174	2.26

A range of measures are currently in place or are under development. Mandatory seabird mitigation measures <sup>15</sup> include the requirement that all trawlers over 28 m in length deploy

<sup>12</sup> DOC categorisation information may be found at <http://www.doc.govt.nz/documents/science-and-technical/nztcs4entire.pdf>

<sup>13</sup> Details on categorisation of the IUCN may be found at <http://www.iucnredlist.org/>

<sup>14</sup> Seabird population and risk information available in the Ministry for Primary Industries Aquatic Environment and Biodiversity Annual Review 2014. Available at <http://mpi.govt.nz/news-resources/publications>

<sup>15</sup> Seabird mitigation on trawl vessels is regulated by the Fisheries (Commercial Fishing) Regulations 2001, Seabird Scaring Devices Circular 2010 (No. F517).

bird mitigation devices during fishing. Research projects are currently underway that aim to improve the performance of these mitigation devices.<sup>16</sup>

Non-regulatory measures are also used to reduce the risk of seabird interactions with the hoki fleet. Every vessel over 28m in length (the majority of the hoki fleet) has developed a specific vessel management plan (VMP) that sets out the onboard practices vessels must follow to reduce the risk to seabirds, including offal management procedures and good factory cleanliness. MPI monitors each vessel's performance against its VMP and works with the Deepwater Group Ltd (DWG) to rectify any non-adherence and also to assist the fleet to improve their offal management practices. These practices will continue during 2015-16.

The proposed Options, apart from the status quo, will result in an overall reduction in hoki fishing effort, with a consequent reduction in the risk of seabird interactions. MPI will continue to work with industry stakeholders to further reduce the risk to key seabird species.

#### 4.2.2.2 Marine mammals

The hoki fisheries are responsible for some fur seal mortalities, particularly in the fisheries on the WCSI and in Cook Strait. It is estimated that 242 fur seal incidental captures occurred in the hoki fisheries in 2012-13.

**Table 4: Estimated and observed NZ fur seal incidental captures and capture rates in hoki fisheries 2008-09 to 2012-13**

Year	Observed captures	Estimated captures	% tows observed	Observed Capture rate (per 100 tows)	Total # of tows
2012-13	58	242	38.6	1.28	11,682
2011-12	33	213	22.8	1.28	11,332
2010-11	24	180	16.6	1.39	10,405
2009-10	30	179	20.7	1.45	9,966
2008-09	37	217	20.3	2.23	8,176

The rate of fur seal captures has declined fairly steadily since 2005. The proposed Options will result in an overall reduction in hoki fishing effort. MPI notes that the population of New Zealand fur seals is believed to be increasing and considers it is unlikely that the current level of mortalities is affecting the long-term viability of the national population.

New Zealand sea lions are rarely captured in hoki fisheries, with two observed captures having been reported in the past 10 years. In 2012-13, one New Zealand sea lion was observed captured and released alive in hoki fisheries. MPI considers that the risk to sea lions from hoki fishing is low, but will continue to work with DWG to monitor and minimise marine mammal captures in deepwater fisheries. A non-regulated approach is used in the hoki fishery to manage and minimise marine mammal captures in the hoki fishery. All vessels greater than 28m in overall length operate under a Marine Mammal Operating Procedure, which requires that vessels minimise the time the fishing gear is accessible to fur seals and to reduce the loss of fish and offal from the gear, and the vessel.

A risk assessment for marine mammals is underway which will provide further information on particular species at risk from fishing and allow management to be targeted based on risk. This work will inform future management of the New Zealand fur seal and New Zealand sea lion with respect to the deepwater fisheries, including that for hoki.

<sup>16</sup> More information on these projects can be found at the Department of Conservation's Conservation Services Programme website: [www.doc.govt.nz/csp](http://www.doc.govt.nz/csp)

### 4.2.3 Habitat of significance to fisheries management (section 9(c))

#### 4.2.3.1 *Benthic impacts*

Although hoki is a mid-water species, it is often caught by bottom trawl or midwater trawl fished on or near the bottom which will have an impact on benthic habitat.

Management measures to address the effects of deepwater trawl activity have focused on ‘avoiding’ these effects. This has been achieved through closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas (BPAs). The implementation of BPAs in 2007<sup>17</sup> effectively closed approximately 30% of the New Zealand EEZ to bottom trawling. A monitoring regime to ensure these closures are adhered to was also implemented.

The proposed Options will result in an overall reduction in hoki fishing effort, although Option 3 would result in some additional fishing effort in the eastern fishery. Most of the additional effort from any increase in the catch limit for the eastern stock will likely be in areas that have previously been fished, somewhat limiting further benthic impacts.

MPI will continue to monitor the trawl footprint of the hoki and other deepwater fisheries annually.

#### 4.2.3.2 *Hoki management areas*

As noted in section 2.1.2, four areas that are known to be favoured by juvenile hoki are closed to hoki target fishing under the HOP. The HOP will continue to operate in the 2015-16 fishing year regardless of which option you choose.

## 4.3 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations for the HOK1 stock. All science information upon which the management Options are based has been peer reviewed by one of MPI’s Fisheries Assessment Working Groups and meets the Research and Science Information Standard for New Zealand Fisheries.

## 4.4 SECTION 11 – SUSTAINABILITY MEASURES

Only section 11 measures that are directly relevant to hoki are discussed in this section. See Annex I for consideration of other Section 11 measures.

Under section 11 of the Act, before setting or varying any sustainability measure for any stock, you must:

- a) Section 11(2)(c): have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that pply to the coastal marine area and you consider relevant. In the case of HOK1, there have only ever been negligible catches of hoki in the Hauraki Gulf (<20 kgs in last 10 years). There is also no target fishing for hoki, and it is not taken by recreational fishers in the Hauraki Gulf. MPI considers therefore, that there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.
- b) Section 11(2A)(b): take into account any relevant fisheries plan approved under section 11A. The application of the National Fisheries Plan for Deepwater and Middle-depth Fisheries is discussed in the following section.

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<sup>17</sup> Benthic Protection Areas are regulated by the Fisheries (Benthic Protection Areas) Regulations 2007.

#### 4.4.1 Section 11A – Fisheries Plans

MPI, in collaboration with industry and environmental organisations, has developed a National Fisheries Plan for Deepwater and Middle-depth Fisheries (the National Deepwater Plan) which was given Ministerial approval in 2010. The National Deepwater Plan sets out the long-term goals and objectives for deepwater fisheries. Fishery-specific chapters set specific Operational Objectives that will be delivered annually for each key deepwater species, and establish performance indicators to assess if the management objectives have been delivered.

The fishery-specific chapter of the National Deepwater Plan for hoki was completed in 2010. You are required to take the National Deepwater Plan into account when making a decision on the management Options presented for HOK1. The management Options proposed in this FAP are consistent with the dual Outcomes of the National Deepwater Plan:

- a) The Use Outcome: Fisheries resources are used in a manner that provides greatest overall economic, social and cultural benefit
- b) The Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use.

These dual Outcomes are given effect to by a series of Management Objectives, the most relevant of those being:

- a) Management Objective 1.1: Enable economically viable deepwater and middle-depth fisheries in New Zealand over the long-term
- b) Management Objective 1.3: Ensure the deepwater and middle-depths fisheries resources are managed so as to provide for the reasonably foreseeable needs of future generations
- c) Management Objective 2.5: Manage deepwater and middle-depth fisheries to avoid or minimise adverse effects on the long-term viability of endangered, threatened and protected species.

MPI considers that the management Options presented in this Decision Document will contribute towards the achievement of these three Management Objectives.

#### 4.4.2 Forum Fisheries Plans

There are two Forum Fisheries Plans relevant to the HOK1 fishery area. Te Waka a Maui me ona Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan, and the Rekohu/Wharekaui iwi have produced the Chatham Islands Fisheries Forum Plan. Both these plans cover HOK1 and identifies hoki as a taonga species. Te Waipounamu Iwi Forum Fisheries Plan contains six Management Objectives, two of which are relevant to the management of HOK1:

- a) Management objective 3: to develop environmentally responsible, productive, sustainable and culturally appropriate commercial fisheries that create long-term commercial benefits and economic develop opportunities for South Island iwi
- b) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.

MPI considers that the management options presented in this advice paper will contribute towards the achievement of these two Management Objectives in ensuring that the fishery remains sustainable and that environmental impacts are minimised.

## 4.5 SECTION 13 – SETTING THE TAC

Section 13(2) of the Act requires you to set a TAC that:

- a) Maintains the stock at or above a level that can produce a maximum sustainable yield, having regard to the interdependence of stocks;
- b) Enables the level of a stock whose current level is below that which can produce the maximum sustainable yield to be altered
  - i. in a way and at a rate that will result in the stock being restored to at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and
  - ii. within a period appropriate to the stock having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or
- c) Enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

Under section 13 you are required to set a TAC for the entire HOKI. Given that both hoki stocks are assessed to be above the level that can produce the maximum sustainable yield, MPI considers that you should set a TAC under section 13(2)(a).

As discussed in section 4.2.1 above, bycatch species of the hoki fishery are predominantly species that are managed in the QMS. MPI considers there is no information to suggest that the interdependence of stocks should affect where the TAC is set for hoki.

MPI considers that given the information presented in this Decision Document, maintaining the current TAC at 161,640, or decreasing the TAC to either 151,540 or 156,590 tonnes will ensure the stock remains at or above a level that can produce the maximum sustainable yield.

## 4.6 SECTIONS 20 & 21 – ALLOCATING THE TACC

### 4.6.1 Recreational and customary allowances

Recreational and customary fishers do not target hoki as it is predominantly an offshore fishery and the data on customary and recreational catches of hoki in recent years is negligible. However, there are references to customary catches of hoki occurring in the past. MPI also considers it likely that a small amount of hoki is caught by recreational fishers while fishing for other middle-depth species.

### 4.6.2 All other mortality to that stock caused by fishing

MPI proposes an allowance for other sources of fishing-related mortality of 1% of the TACC. This allowance is required to take account of hoki mortality that is not reported such as hoki lost due to burst nets or dumping of damaged hoki.

## 4.7 SECTION 75 – DEEMED VALUE RATES

Section 75 of the Act requires that you set deemed value rates for every stock in the QMS. This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient Annual Catch Entitlement (ACE) so that fishing effort does not result in catch limits being exceeded.



The current deemed value rates were revised in 2007 and are set as follows:

- a) Annual deemed value rates set at \$0.90 per kg
- b) Interim deemed value rates set at \$0.45 per kg
- c) Differential deemed value rates apply at 102% of catch in excess of ACE at a rate of \$1.30 per kg.

MPI considers these deemed value rates have been effective in constraining fishing effort to the TACC (although recognising that information on catch levels against the 2014-15 TACC of 160,000 tonnes is not yet available). No comments were received during the consultation to suggest that the current deemed value rates are not appropriate.

Despite recent increases in the hoki ACE trading price, the current annual deemed value rate is still set between the ACE trading price and the port price for the stock. The high differential deemed value rate also provides an appropriate incentive to limit catch to ACE holdings. The Ministry is satisfied that under all the proposed management Options the deemed value rates are set at an appropriate level to limit catch to the TACC.

Fishing activity will be monitored during the 2015-16 fishing year and if there is evidence that fishers are either fishing in excess of the TACC or fishing in excess of their individual ACE holdings, then the deemed value rates will be reviewed for the 2015-16 fishing year.

## 5 Management Options

The 2015 hoki stock assessment model was used to generate a series of projections that provide estimates of future stock status in relation to  $B_0$  and the target and limit reference points. The projections estimate the likely stock status trajectory under different catch scenarios to guide selection of appropriate management settings.

To inform this review of management settings, projections were produced assuming three different catch scenarios:

- 1 The status quo TACC of 160,000 tonnes, with 60,000 tonnes allocated to the eastern stock and 100,000 tonnes allocated to the western stock,
- 2 A TACC decrease of 10,000 tonnes, from within the western stock catch limit, providing a catch limit of 60,000 tonnes for the eastern stock and 90,000 tonnes for the western stock,
- 3 A TACC decrease of 5,000 tonnes, comprising a 10,000 tonne reduction in the western stock catch limit and a 5,000 tonne increase in the eastern stock catch limit. This would result in catch limits of 65,000 tonnes for the eastern stock and 90,000 tonnes for the western stock.

Projections were also run to test these catch scenarios using the sensitivity model that added weight to the Sub-Antarctic trawl survey abundance index to provide information on the potential trajectory of the stock in the case that the most recent trawl survey abundance estimate reflects a decrease in abundance. These projections were significantly more pessimistic for the western stock than those run using the base stock assessment model.

Projections from the base stock assessment model result in both stocks remaining above the management target range through to 2020 for all Options. The projections also provide the

probability of each stock declining below management reference points. These probabilities for the western stock are shown in Table 6 for each of the three Options proposed under both assumptions regarding the trawl survey abundance estimate. The probability of the eastern stock declining below any management reference points is <1% for all Options.

Table 6: Western stock status and percentage probability of the western stock declining below management reference points by 2020 from the proposed Options based on the stock assessment model and the sensitivity run

Option	Western stock catch limit (t)	Status in 2020 (% $B_0$ )		Probability >35% $B_0$		Probability <20% $B_0$		Probability <10% $B_0$	
		Base	Sensitivity	Base	Sensitivity	Base	Sensitivity	Base	Sensitivity
1	100,000	53	24	89%	23%	1%	35%	1%	7%
2	90,000	56	28	92%	29%	0	24%	0	4%
3	90,000	56	27	92%	29%	0	25%	0	4%

## 5.1 ANALYSIS OF OPTIONS

The projections described above were used to form the management options that were consulted on, and shown in Table 5.

Table 5: Proposed TACs, TACCs and allowances for HOK1 in 2015-16

Option	TAC	TACC	Non-regulatory catch split arrangement		Allowances (tonnes)		
			Eastern stock limit	Western stock limit	Customary Māori	Recreational	Other sources of fishing related mortality
Option 1 (status quo)	161,640	160,000	60,000	100,000	20	20	1,600
Option 2 (MPI Preferred)	151,540	150,000	60,000	90,000	20	20	1,500
Option 3	156,590	155,000	65,000	90,000	20	20	1,550

### 5.1.1 Option 1

Under this Option, the TAC would remain at 161,640 tonnes and the TACC would remain at 160,000 tonnes. The current catch split arrangement would also remain unchanged under this Option.

Five year management projections using the base case stock assessment model indicate that under this Option, the status of both stocks is likely to remain at or above the management target range.

However, five year projections were run using the sensitivity model that gave more weight to the recent Sub-Antarctic trawl survey biomass estimate. These projections indicate a 35% chance of the western stock status falling below 20%  $B_0$  in the next five years, if the survey abundance estimate reflects a change in hoki abundance.

If the next Sub-Antarctic survey, scheduled for December 2016, confirms that hoki abundance has decreased and no action has been taken, a larger cut may be required in 2017 to maintain the western stock within the management target range.

This Option would maximise the economic benefit to the fishing industry over the next year, but may result in larger cuts being required in the future if the lower hoki abundance in the

western stock is real. Larger TAC cuts in the future would reduce the economic benefit to the industry over the long term.

This Option was supported by SGL and NFAL, with both suggesting that the TACC be reallocated to allow more catch to be taken from the eastern stock. Several other submitters including Sanford, ICP, NPS, and TOKM, supported this Option but if there was implementation of an agreement between quota owners to shelve ACE within the current TACC to reduce fishing pressure on the western stock.

MPI notes that all five submitters who were in favour Option 1 qualified this with support for an additional agreement for reducing the catch taken from the western stock via non-regulatory measures. MPI is aware that no formal agreement was reached between quota owners following consultation and in the absence of this MPI considers that the status quo would not address the concerns raised by quota owners.

#### 5.1.2 Option 2 (MPI Preferred)

Under this Option, the TAC would be decreased to 151,540 tonnes and the TACC would be decreased to 150,000 tonnes. It is proposed that the decrease is taken from the catch limit for the western stock, decreasing the catch limit from 100,000 tonnes to 90,000 tonnes. The eastern catch limit would remain at 60,000 tonnes.

The five year projections from the base case stock assessment model indicate that the western stock will likely remain above the management target range and increase slightly to 56%  $B_0$ .

This Option is conservative and provides a responsive approach to the possibility that hoki abundance in the western stock has decreased. The intention of this approach is to avoid a larger reduction in future if it is determined in 2017 that there has been a reduction in hoki biomass in the western stock.

The five year projections using the sensitivity model that gave more weight to the trawl survey result in a decrease in probability of the western stock being below the soft limit in 2020 from 35% to 24%. The stock status is projected by the sensitivity model to decline further below the management target range under this Option, but not as far below as it would at current catch (28%  $B_0$  compared to 24%  $B_0$ ).

Based on export figures from 2014 of roughly \$1.65/kg greenweight, a 10,000 tonne<sup>18</sup> decrease in the TACC may result in approximately \$16.5 million reduction in immediate export revenue. This loss can be considered in the context of the possibility of greater reductions in the future if larger cuts were required.

Option 2 was supported by Ceebay Holdings, Sanford Ltd, and Talley's Group Ltd who submit that there is a need to be cautious, recognising the qualifications and uncertainties in the science. The decrease is also supported to ensure that the significant decrease in the hoki stock as seen in the early 2000s isn't repeated.

In the absence of a formal agreement to reduce the catch from the western hoki stock (i.e. shelving), MPI considers this Option to be the most appropriate. The reduction in the TAC acknowledges the uncertainty in the hoki stock assessment in regards to the abundance estimate from the most recent sub-Antarctic trawl survey. While this Option limits utilisation

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<sup>18</sup> Based export figures for 2014 calendar year of \$1.65 / kg greenweight. This uses frozen headed and gutted (HGU) to estimate the greenweight export price as this form accounted for 32% of export earnings and 46% of export volume for hoki in the 2014 calendar year.

in the short term, it aims to protect against larger cuts being required in the future and also responds to the concerns raised by a significant number of quota owners who supported this Option. It is also notable that several submitters, those who supported Option 1, did suggest that the catch taken from the western stock should be reduced by 10,000 tonnes, although the mechanism proposed to achieve this outcome differed.

### 5.1.3 Option 3

Under this Option, the TAC would be decreased to 156,590 tonnes and the TACC would be decreased to 155,000 tonnes. It is proposed that this be apportioned by decreasing the western catch limit by 10,000 tonnes and allocating a 5,000 tonne increase to the eastern catch limit.

The five year projections based on the stock assessment model indicate that under this Option, both stocks are likely to remain above the management target range, with the western stock increasing slightly to 56%  $B_0$  and the eastern stock to remain at the current stock status of 59%  $B_0$ .

As with Option 2, this Option also provides a responsive approach to the information that shows the western stock abundance may have declined. Projections using the sensitivity model that gave more weight to the trawl survey abundance estimate indicate a decrease in the probability of the western stock declining below the soft limit from 35% to 25%. The stock status of the western stock is projected to decline further below the management target range under this Option, to 27%  $B_0$  which is lower than the stock status projected for Option 2, but higher than that under the status quo (Option 1).

This Option provides a middle ground, decreasing the catch limit of the western stock to reduce the probability that it may decline below the soft limit while decreasing the effect on the fishing industry by reallocating 5,000 tonnes of catch to the eastern stock. A projection was run investigating the effects of the 5,000 allocation to the eastern stock being taken only in the spawning fishery. It was determined that there was no significant difference in stock status with the catch taken from different areas of the eastern stock.

Based on export figures from 2014 of roughly \$1.65/kg greenweight, a 5,000 ton decrease in the TACC may result in approximately \$8.25 million in immediate export revenue loss. This loss should be considered in the context of the potential for greater losses if a larger cut is required in future.

There were no submissions in support of this Option and MPI does not recommend implementation of this Option.

## 6 Other Matters

### 6.1 CATCH SPLIT MONITORING

The catch split arrangement has been adhered to without issue for the last three years. MPI acknowledges that it is too early to assess the performance of the arrangement in the 2014-15 fishing year but expects that adherence will continue.

Adherence to the catch split is now formally managed and reported by FishServe on behalf of the DWG. All ACE generated at the start of the fishing year is split into either HOK1E (hoki that can be harvested from the eastern stock) or HOK1W (hoki that can be harvested from the western stock) ACE. Catch against each type of ACE is then reported, enabling in-season monitoring of performance against the catch split arrangement. The performance against the

catch split is verified on a quarterly basis for the first three quarters and monthly for the remainder, and is reported to both DWG and MPI for review.

MPI is confident that industry stakeholders will continue to adhere to the voluntary catch split arrangement in the HOK1 fishery.

## 6.2 COMPLIANCE ISSUES

MPI considers there may be limited additional compliance risks with any decrease to the TAC. Compliance issues will continue to be monitored and addressed through regular analysis of catch returns of hoki and bycatch species as well as increased observer coverage across the fisheries and monitoring of information collected by observers.

MPI's compliance group has also completed a risk profile of compliance issues in hoki fisheries with a focus on the west coast South Island. This profile guides monitoring and enforcement activities to ensure continued compliance with all regulations.

## 7 Conclusion

The 2015 hoki stock assessment estimates the status of both hoki stocks to be above  $B_{MSY}$  and the management target range. There is uncertainty, however, in the status of the western stock, with the most recent Sub-Antarctic trawl survey (December 2014) suggesting a possible decline in the stock that is not well fitted in the base case stock assessment model. This information has prompted several hoki quota owners to express support for a responsive approach to reduce harvests from the western stock. Although a non-regulatory shelving agreement was discussed, it was not agreed.

MPI agrees that caution should be exercised with regards to the observation of a decline in the western hoki stock abundance, and in the absence of a voluntary agreement, the TAC for HOK1 be reduced from 160,000 tonnes to 150,000 tonnes. The 10,000 tonne decrease would be taken from the western stock catch limit, reducing it from 100,000 tonnes to 90,000 tonnes.

# Smooth Oreo (OEO4)

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Figure 1: Map of the oreo quota management areas

## 1 Executive Summary

Oreos on the Chatham Rise (OEO4) are managed under section 13 of the Fisheries Act 1996 (the Act) as a species complex (Figure 1) of four oreo species, which are each assessed separately.<sup>19</sup> A single total allowable catch (TAC) and total allowable commercial catch (TACC) is set for the OEO4 quota management area (QMA), against which the catch of all oreo species is reported. The current TACC in OEO4 is 7,000 tonnes which is generally fully caught.

Smooth oreo is the dominant species within the OEO4 QMA, comprising around 85% of the total catch within the TACC each year.<sup>20</sup> The smooth oreo stock within OEO4, referred to as SSO4, is the focus of this review of management settings, following an updated stock assessment that was finalised in 2014. MPI has no new information to support changes to the catch levels of the other three oreo species.

The results of the 2014 SSO4 assessment estimates stock status to be 27%  $B_0$  which is below the default management target of 40%  $B_0$  that is set in the Harvest Strategy Standard. This target is used as proxy for the biomass level which produces the maximum sustainable yield, which has not been reliably estimated for SSO4. The stock assessment also indicated that the current exploitation rate is approximately three times higher than the rate that would allow the stock to reach and be maintained at the management target.

Five year projections, using the 2014 stock assessment, indicate that SSO4 stock status will continue to decline under the current catch of approximately 6,000 tonnes per year, and would decline below the soft limit (20%  $B_0$ ) before 2018. These projections indicated that the stocks'

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<sup>19</sup> In this context the term species complex refers to multiple species being managed as a single QMS fishstock.

<sup>20</sup> The remainder of the catch is predominantly black oreo, with a very small amount of spiky oreo. Warty oreo forms an even smaller component of the catch is not reported in some years. The remaining oreo species are predominantly caught as bycatch.

declining biomass trajectory would be halted by reducing the catch limit to 3,000 tonnes or less, and would rebuild to the target level if the catch limit was reduced to 2,000 tonnes or below to allow the stock to rebuild towards the management target.

MPI presents options for the OEO4 TAC, TACCs, species-specific catch limits, and associated allowances for the 2015-16 fishing year (Table 1). MPI's preferred option is for the smooth oreo catch limit to be reduced to 2,000 tonnes. MPI notes that a reduction in smooth oreo catch of this magnitude will have significant impacts on industry and require existing capacity to be reallocated to other fisheries, however considers that this will ensure the stock can rebuild to a more healthy level. This option promotes steady rebuilding towards the management target but balances the benefits of increasing stock biomass with the economic impacts on the fishing industry.

MPI also recommends that as part of this review, a non-regulatory, species specific catch limit is implemented in this fishery to ensure the catch of smooth oreo does not exceed the required level within the TACC. This will be formally administered through FishServe,<sup>21</sup> endorsed by you and monitored and audited by MPI, but will not reduce the level of catch for the other oreo species in the area, for which MPI has no new information to support a review.

In addition, MPI is recommending that an allowance for other sources of fishing related mortality is introduced within the TAC for the first time in 2015-16 to allow for unreported mortality.

Table 1: Proposed TACs, TACCs and allowances for OEO4 in 2015-16

Option			Non-regulatory species specific catch split		Allowances (tonnes)		
	TAC	TACC	Smooth oreo limit	Other oreo species limit	Customary Māori	Recreational	Other sources of fishing related mortality
Current (not an option)	7,000	7,000	N/A	N/A	0	0	0
Option 1	2,100	2,000	1,000	1,000	0	0	100
Option 2 (MPI Preferred)	3,150	3,000	2,000	1,000	0	0	150
Option 3	4,200	4,000	3,000	1,000	0	0	200

## 2 Purpose

### 2.1 BACKGROUND

#### 2.1.1 Biological characteristics of oreo

There are four separate oreo species - smooth oreo (*Pseudocyttus maculatus*), black oreo (*Allocyttus niger*), spiky oreo (*Neocyttus rhomboidalis*), and warty oreo (*Allocyttus verrucosus*) that exist in OEO4. Oreo are deep sea species, inhabiting depths of 600 to 1,500 m, with younger fish typically found towards the shallower end of this depth range.

There is little biological information available on the lesser known oreo species (spiky and warty oreo), but all four species likely share some biological characteristics. All oreo are long-lived and slow growing species found predominantly in southern latitudes of New Zealand's Exclusive Economic Zone (EEZ). Smooth oreo, the species that is the focus of the

<sup>21</sup> FishServe is a wholly-owned subsidiary of Seafood New Zealand and is responsible for the administration of catch reporting requirements.  
Ministry for Primary Industries

changes recommended herein, are thought to mature between the ages of 27 and 34 and to reach a maximum age of 86 years.

Smooth oreo is a southern species that is more abundant on the South Chatham Rise, along the east coast of the South Island and into the sub-Antarctic ocean to the south of New Zealand. Spawning occurs from late October to at least December and is widespread on the south Chatham Rise. They are found at slightly deeper depths than black oreo (down to 1,500 m), which are more common further north. The geographical distribution and spawning patterns of black oreo are similar to that of smooth oreo.

### 2.1.2 Fishery description

New Zealand's oreo fisheries have been managed within the quota management system (QMS) since 1986. The four species of oreos (black, smooth, spiky and warty) are managed as a species complex within New Zealand. Only black and smooth oreos are commercially targeted in New Zealand fisheries waters. Spiky oreo are taken in small quantities as bycatch and warty oreos are rarely caught.

Quota for all four oreo species was allocated as a combined oreo assemblage and all oreo catch is reported against a single TAC. However, in more recent years MPI and Deepwater Group Ltd have introduced non-regulatory catch split arrangements in certain stocks (OEO 3A and OEO 1) to ensure the catch of individual oreo species can be tracked accurately.

The Chatham Rise oreo fishery (OEO4) is primarily a smooth oreo fishery with most of the black oreo and virtually all the spiky and warty oreo being taken as a bycatch when smooth oreo is targeted, but also in the orange roughy fishery which operates in the same area.

Stock assessments for oreo are completed based on the biological stock structure of individual species, rather than Quota Management Areas (QMAs).

#### 2.1.2.1 *Recreational and Māori Customary Interests*

Recreational and customary fishers do not target oreo, as it is available only offshore in deep water. No allowance has traditionally been provided for recreational and Maori customary fishing interests for OEO4 (or for any oreo fishery). Because of the depth distribution of the oreo species, it is considered that there are no significant recreational or Maori customary fisheries for any oreo species. The options presented therefore do not contain any allowance for recreational or customary interests.

#### 2.1.2.2 *Other Sources of Fishing Related Mortality*

MPI proposes that an allowance for other sources of fishing-related mortality, be set at 5% of the TACC. This nominal allowance accounts for unreported oreo mortality, such as loss due to burst nets, or discarding of damaged oreo.

## 2.2 RATIONALE FOR MANAGEMENT INTERVENTION

In 2014, an updated stock assessment for smooth oreo in OEO4 was presented and accepted by the Deepwater Fisheries Assessment Working Group (DWFAWG) and the 2015 Fisheries Assessment Plenary. The assessment included all data available up to and including 2013, which includes a time series of five wide-area acoustic surveys that took place between 1998 and 2012. The DFAWG gave the assessment a rating of "1" under the Research and Science Information Standard for New Zealand Fisheries, but did recognise that there was a high level of uncertainty driven in part by issues with the quality of data, especially from the short time series of acoustic biomass estimates.



The results of the 2014 stock assessment of the smooth oreo stock in OEO4 (SSO4) estimates stock status to be at 27%  $B_0$  which is below the management target of 40%  $B_0$ . Stock biomass appears to be undergoing a long term decline under the current catch level.

A forward projection using the 2014 stock assessment tested the effects of retaining the current catch level of 6,000 tonnes past 2015. This indicated that SSO4 stock status will continue to decline and would fall below the soft limit (20%  $B_0$ ), reaching 17.6%  $B_0$  in 2018.

The stock assessment also provided an estimate of the exploitation rate (U - the proportion of vulnerable biomass that is removed from the stock in a fishing year) that would allow the stock to rebuild to the management target (U40%  $B_0$ ). This shows that U40%  $B_0$  is  $U = 0.05$ , which means that harvesting 0.05% of the available mature biomass each year would allow the stock to reach and remain at the management target level. The assessment shows that the current catch corresponds to an exploitation rate of  $U = 0.15$ , three times greater than U40%  $B_0$ .

The 2014 assessment results are also consistent with the previous assessment of the SSO4, which was finalised in 2012. That earlier assessment estimated the stock to be at or below the management target and showed a similar ongoing decline in the stock biomass trajectory. Since then, a further acoustic survey has been undertaken and the assessment methodology has been improved, to inform the current review of management settings.

The available science information clearly shows it is necessary to reduce the catch of SSO4 to prevent the stock declining below the soft limit within the next three years. To inform decisions on the scale of the reductions as part of this review of management settings for SSO4, MPI used five year forward projections that estimated stock status under a range of different catch scenarios between zero and 5,000 tonnes, over a five year timescale from 2013 (the final year of the stock assessment model).

MPI also proposes to implement a non-regulated catch split arrangement in this stock, via agreement with quota owners. This would limit the catch of smooth oreo, versus the catch of the remaining three oreo species. MPI has no new information at this time to suggest that a change in the current catch of the other three oreo species is necessary. Therefore, in addition to the smooth oreo catch limit that you choose to implement within the OEO4 TACC, MPI recommends that the current level of catch of black, spiky and warty oreo remain unchanged, at a combined total of 1,000 tonnes.

## 3 Consultation

MPI consulted on your behalf on the three Options set out in Table 1 above. MPI followed its standard consultation process (detailed in Appendix 1).

### 3.1 SUBMISSIONS RECEIVED

Submissions on the OEO4 proposals were received from the following:

- a) Deepwater Group Limited (DWG)
- b) Iwi Collective Partnership (ICP)
- c) Ngati Porou Seafoods Limited (NPS)
- d) Sealord Group Limited (Sealord)
- e) Te Ohu Kai Moana (TOKM)

All submissions may be found in Appendix III for your reference.

## 3.2 SUMMARY OF SUBMISSIONS

In total, five submissions were received. Submissions unanimously supported Option 3 to reduce the smooth oreo catch to 3,000 tonnes as part of a staged reduction. Overall, this Option was seen only as an interim step predicated on additional outputs of the stock assessment being provided. As indicated in the submission summaries below, submitters considered that this management action is as a 'sensible first step' in a staged reduction, given some ongoing questions that quota owners have regarding the status of this fishery.

Submitters were also in favour of more data collection being undertaken and coordinated between industry and MPI in 2015/16 to inform the next stage of managing this stock.

During consultation, DWG requested further information for their submission. MPI provided additional projections of stock status that indicate the time it would take the stock to rebuild to the management target of 40%  $B_0$ . These projections provide a useful indication of the long term trajectory of the stock at different catch levels but MPI notes that they assume the stock will experience average recruitment over the timeframe of the projections, which might not eventuate.

Table 2: Summary of submissions received for SSO4 in 2015-16

Submission from:	Option 1	Option 2	Option 3
DWG			DWG
ICP			ICP
NPS	None	None	NPS
Sealord			Sealord
TOKM			TOKM

### a) Deepwater Group Limited (DWG)

DWG represents shareholders who collectively own 94% of OEO4 quota. DWG offered an interim submission in favour of a staged reduction (option 3). DWG acknowledged that the 2014 stock assessment estimates the SSO4 stock is in decline and accepts the need to rebuild the stock. DWG recognises the need for the development and implementation of a comprehensive management strategy to rebuild the stock which encompasses these key elements (following the reduction of the TACC at 4,000 tonnes):

- Industry will collectively manage their SSO4 harvest with an agreed 3,000 tonne smooth oreo catch limit that will be monitored by FishServe and audited by MPI.
- The implementation of a Fisheries Improvement Plan (FIP) for SSO4 which would include, from 1 October 2016:
  - a new stock assessment with more age data
  - a management strategy evaluation; and
  - a rebuilding plan

### b) Iwi Collective Partnership (ICP)

ICP is a commercial fishing group established in 2010 to improve, amongst other things, iwi participation in the sustainable management of New Zealand's fisheries. The ICP represents 14 iwi throughout the North Island who together hold 1.7% of OEO4 quota. ICP supports the submission of the DWG (option 3). ICP are of the view that while the stock assessment was accepted by the Science Working Group, and that a reduction of the TAC is necessary there is, in their view, a question as to whether the extent of the reduction from 1 October 2015 is correct.

ICP agree with DWG that further information and projections are required for how the stock would rebuild under different catch scenarios over time. Until such additional information is available, ICP reserves the right to review their submission. In the meantime, ICP supports option 3.

**c) Ngati Porou Seafoods Limited**

NPS is based in Gisborne, and is the commercial asset holding company established under the Maori Fisheries Act 2004 settlement process to receive and manage quota assets allocated to Ngati Porou. NPS supports the submission of the ICP. NPS does not offer any supporting information in their submission.

**d) Sealord**

Sealord supports option 3, with a staged reduction supported by new ‘industry science initiatives as proposed by DWG’. Sealord submit they have held ‘extensive discussions’ with their skippers who have a long history of fishing smooth oreo on the South Chatham Rise, and that the perception of these fishers of the current state of the fishery ‘does not match the [stock] assessment.’

Sealord maintains that the index driving the stock assessment ‘relies heavily on acoustic results from mixed species on the flat areas of [the] South Chatham Rise.’ Their vessels however, fish predominantly on the knolls and volcanoes in this region, and that the biomass on these features has changed and increased in the latest survey. Sealord note that the situation with smooth oreo biomass increasing in the hills is ‘very similar to what industry found in 2010 with the projections for orange roughy on the Northeast Chatham Rise’ (ORH 3B). Sealord believes its technology was able to ‘provide better measurements of ORH 3B’ and that this allowed the fishery to proceed eventually to certification.

Sealord therefore believes that they now have the technological capability to improve the assessment of SSO4 and propose undertaking additional research programmes in association with MPI in 2015/16 to address some ‘critical issues in the assessment.’

**e) Te Ohu Kai Moana (TOKM)**

TOKM is the Trustee for the Fisheries Settlement. They circulated their submission to all 57 iwi recognised under the Fisheries Settlement, and have received ‘overwhelming support’ from those iwi who have responded. TOKM agrees there is need for action and supports option 3. While TOKM accepts that the SSO4 stock assessment ‘doesn’t look good’ it believes that there are ‘many unanswered questions’ about the management of the stock.

These include the “on the water experience” of skippers which suggests that the fishery is doing well, as stated in the Sealord submission. Also, the availability of better survey methods which may deliver more accurate information that could show the fishery to be healthier than previously estimated using older survey techniques. TOKM believes better age sampling of age classes is needed across the population and range of fish (from flat areas where this species is found as part of a mix of species, to the hills, where older fish can be found).

In summary, TOKM believes that option 3 is a ‘sensible first step’ but that the necessity of further cuts to ensure the sustainability of this fishery should be reviewed in the 2015/16 year until uncertainties in the current information are clarified.

## 4 Legal Considerations

### 4.1 SECTION 8 – PURPOSE OF THE ACT

The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. MPI considers that all options presented in this paper meet the purpose of the legislation.

Option 1 would allow the stock to rebuild in the shortest timeframe, but with the greatest short term impact on utilisation. Option 2 provides for greater short-term utilisation opportunities but lengthens the time taken to rebuild the stock to the target. Option 3 would provide for the greatest level of utilisation in the short term, but would maintain the stock at a lower biomass level for the foreseeable future.

### 4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

MPI considers that all options presented in this paper satisfy your obligations under section 9 of the Act.

Detailed information in relation to each of these principles is provided below.

#### 4.2.1 Associated or dependent species (section 9(a))

Oreo target fishing in OEO4 historically results in captures comprising over 97% oreo (smooth and black) by greenweight and on average 98% of the catch is made up of other species managed within the QMS. As all options would result in a reduction in fishing effort, MPI considers it unlikely that the changes proposed would result in an unacceptable impact on the sustainability of other species caught in this fishery. It is also unlikely to impact on the interdependence of stocks.

#### 4.2.2 Aquatic Environment - Protected species interactions (section 9(b))

All the options proposed would result in an overall decrease in oreo fishing effort.

##### 4.2.2.1 Seabirds

Management of seabird interactions with New Zealand's commercial fisheries is driven through the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA-Seabirds). The NPOA-Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species to the extent practicable.

The level of risk from commercial fishing to individual seabird species has been identified through a comprehensive hierarchical risk assessment that underpins the NPOA-Seabirds. Seabird interactions with OEO4 do not occur to any significant degree. Oreo fisheries overall were assessed to contribute very low levels of risk to a small number of seabird species.

A range of measures are currently in place or are under development. Mandatory seabird mitigation measures<sup>22</sup> include the requirement that all trawlers over 28 m in length deploy bird mitigation devices during fishing. Research projects are currently underway that aim to improve the performance of these mitigation devices.<sup>23</sup>

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<sup>22</sup> Seabird mitigation on trawl vessels is regulated by the Fisheries (Commercial Fishing) Regulations 2001, Seabird Scaring Devices Circular 2010 (No. F517).

<sup>23</sup> More information on these projects can be found at the Department of Conservation's Conservation Services Programme website: [www.doc.govt.nz/csp](http://www.doc.govt.nz/csp)

Non-regulatory measures are also used to reduce the risk of seabird interactions with the hoki fleet. Every vessel over 28m in length (the majority of the hoki fleet) has developed a specific vessel management plan (VMP) that sets out the onboard practices vessels must follow to reduce the risk to seabirds, including offal management procedures and good factory cleanliness. MPI monitors each vessel's performance against its VMP and works with the Deepwater Group Ltd (DWG) to rectify any non-adherence and also to assist the fleet to improve their offal management practices. These practices will continue during 2015-16.

#### 4.2.2.2 *Marine mammals*

Very few captures of protected species occur in smooth oreo fisheries in OEO4. Under all options, fishing effort for smooth oreo in OEO4 is expected to decrease significantly and there will be no additional risk to marine mammals. All vessels that operate in the OEO4 fishery have adopted a non-regulated operational procedure to reduce the risk of marine mammal captures. This will continue during 2015/16.

### 4.2.3 Habitats of particular significance to fisheries management (section 9(c))

#### 4.2.3.1 *Benthic impacts*

Bottom trawling can affect fragile benthic invertebrate communities but effects may be reduced if vessels repeatedly trawl along the same towlines in a fishery. There are cost implications for industry in terms of lost or damaged gear when fishing in new areas. As a consequence industry generally follows known trawl tracks in the OEO4 fishery and fishing occurs within a relatively small proportion of the quota management area.

Two initiatives are in place to manage benthic impacts in the exclusive economic zone (EEZ). In 2001, the Minister regulated a trawl closure covering a selection of 19 seamounts of varying size and depth within New Zealand. In addition 17 further areas have been closed to bottom trawling by regulation under the Fisheries (Benthic Protection Areas) Regulations 2007. These areas are considered representative across all the offshore habitat classes within the Marine Environment Classification.

There are four BPAs and four seamount closures in the OEO4 fishery. MPI is satisfied that decreasing the TAC will further reduce the risk to the benthic environment.

MPI will continue to monitor the trawl footprint of the oreo and other deepwater fisheries annually.

## 4.3 SECTION 10 – INFORMATION PRINCIPLES

Section 10 of the Act requires that you take the following information principles into account:

- e) Decisions should be based on the best available information;
- f) Decision makers should take into account any uncertainty in the available information;
- g) Decision makers should be cautious when information is uncertain, unreliable, or inadequate; and
- h) The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.

Several submissions raised concerns with the information that forms the basis of the management options for SSO4. A view is presented that further analyses are needed to determine whether it is necessary to reduce the smooth oreo catch limit below 3,000 tonnes.

MPI considers that the best available information has been used as the basis for the recommendations herein. All science information upon which the management options are based has been peer reviewed by one of MPI's Fisheries Assessment Working Groups and accepted as meeting the Research and Science Information Standard for New Zealand Fisheries. Anecdotal information presented from fishers that have operated in SSO4 for many years, who continue to be able to sustain good catch rates in the fishery and do not consider that significant cuts are required.

The nature of the SSO4 fishery, whereby fish are targeted in semi-predictable locations where they aggregate in high numbers, such as around underwater topographical features, means it is not surprising that commercial catch rates have declined at a slower rate than indicated by the stock assessment. The assessment takes into account the entire range of the stock, and indicates that abundance has decreased across the whole range. There are also indications from the SSO4 catch data that the locations where fish are targeted have changed over time, indicating successive exploitation of new areas as previous fishing locations fail to produce the high catch rates experienced initially on an ongoing basis. Given this, MPI recommends placing more weight on the assessment results than on the anecdotal information that has been presented.

MPI recognises however that there is a relatively high level of uncertainty in the science information available on which to base management of this oreo stock. MPI will continue working collaboratively with DWG to implement the fisheries improvement plan (FIP) for the key oreo fisheries that has been developed over the last year. The FIP highlights the priority work that MPI and DWG will progress over the next 1-2 years to further improve the information available. As part of the FIP over the next year MPI will deliver further ageing, which may improve the quality of future SSO4 assessments, and will re-design the acoustic survey approach over the next year to ensure it is optimal for the stock.

While the FIP work is underway a response to the information currently available is required to prevent the stock from falling below the soft limit within the next two to three years.

## **4.4 SECTION 11 – SUSTAINABILITY MEASURES**

Only section 11 measures that are directly relevant to oreo are discussed in this section. See Part 1 of this paper for consideration of other Section 11 measures that apply across both deepwater stocks.

Under section 11 of the Act, before setting or varying any sustainability measure for any stock, you must:

- a) Section 11(2A)(b): take into account any relevant fisheries plan approved under section 11A. The application of the National Fisheries Plan for Deepwater and Middle-depth Fisheries is discussed in the following section.

### **4.4.1 Section 11A – Fisheries Plans**

MPI, in collaboration with industry and environmental organisations, developed a National Fisheries Plan for Deepwater and Middle-depth Fisheries (the National Deepwater Plan) which was given Ministerial approval in 2010. The National Deepwater Plan sets out the long-term goals and objectives for deepwater fisheries. Fishery-specific chapters set specific Operational Objectives that will be delivered annually for each key deepwater species, and establish performance indicators to assess if the management objectives have been delivered.

The fishery-specific chapter for oreo within the National Deepwater Plan was completed in 2013. You are required to take the National Deepwater Plan into account when making a decision on the management Options presented for SSO4.<sup>24</sup> The management Options proposed in this Decision Document are consistent with the dual Outcomes of the National Deepwater Plan:

- a) The Use Outcome: Fisheries resources are used in a manner that provides greatest overall economic, social and cultural benefit
- b) The Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use.

These dual Outcomes are given effect to by a series of Management Objectives, the most relevant of those being:

- a) Management Objective 1.1: Enable economically viable deepwater and middle-depth fisheries in New Zealand over the long-term
- b) Management Objective 1.3: Ensure the deepwater and middle-depths fisheries resources are managed so as to provide for the reasonably foreseeable needs of future generations
- c) Management Objective 2.5: Manage deepwater and middle-depth fisheries to avoid or minimise adverse effects on the long-term viability of endangered, threatened and protected species.

MPI considers that the management Options presented in this Decision Document will contribute towards the achievement of these three Management Objectives.

#### 4.4.2 Forum Fisheries Plans

There is one Forum Fisheries Plan relevant to the SSO4 fishery area. Rekohu/Wharekauri iwi have produced the Chatham Islands Fisheries Forum Plan. This plan covers SSO4 and contains six management objectives, two of which are relevant to the management of SSO4”

- a) Management Objective 1: Mana and Tino Rangatiratanga. Mana and Rangatiratanga is restored, and our fisheries responsibilities, rights and assets are preserved, maintained and enhanced.
- b) Management Objective 5: Thriving Fisheries. Thriving sustainable fisheries are enduring for present and future generations.

MPI considers that the management options presented in this advice paper will contribute towards the achievement of these two Management Objectives in ensuring that the fishery remains sustainable and that environmental impacts are minimised.

## 4.5 SECTION 13 – SETTING THE TAC

Under section 13 you are required to set a TAC for the entire OEO4 stock as a single unit of management (i.e. the combination of the four species). If a stock’s status in relation to the level that can produce the maximum sustainable yield is not able to be reliably estimated, the TAC must be set under section 13(2A).

The SSO4 stock assessment did not reliably estimate the stock’s biomass level that can produce the maximum sustainable yield (MSY), although current stock status has been

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<sup>24</sup> As under section 11(2A)(b) of the Fisheries Act.

provided. There are no reliable estimates of the stock status of either of the three minor oreo stocks in OEO4, or for the combined species complex.

Section 13(2A) requires that you:

- a) Not use the absence of, or uncertainty in, that information as a reason for postponing or failing to set a total allowable catch for the stock;
- b) Have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock; and
- c) Set a total allowable catch –
  - i. Using the best available information; and
  - ii. That is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards a level that can produce the maximum sustainable yield

In the absence of a reliable estimate of MSY for the SSO4 stock, the default target reference point within the Harvest Strategy Standard ( $40\%B_0$ ) is used as a proxy for MSY that takes into account the biological characteristics of the stock. The stock status of SSO4 has been estimated to be below the management target level and therefore the TAC should be set at a level that allows this stock to rebuild towards the management target, as the proxy for MSY.

You have discretion under the Act to determine the way and rate at which the stock should be rebuilt to the level that can produce the maximum sustainable yield. The three options provided below are all estimated to halt the ongoing biomass decline. Options 1 and 2 will allow the stock to rebuild, but Option 3 is estimated to stabilise the stock below the level that can produce the maximum sustainable yield, which indicates that a further catch reduction will be required if you choose to implement Option 3.

Bycatch species of the smooth oreo fishery are predominantly species that are managed in the QMS. MPI considers there is no information to suggest that the interdependence of stocks should affect where the TAC is set for smooth oreo. MPI considers that given the information presented above, decreasing the TAC is necessary to ensure the stock can be restored to at or above a level that can produce the maximum sustainable yield.

## **4.6 SECTIONS 20 & 21 – ALLOCATING THE TACC**

The TAC must be apportioned among the relevant sectors and interests as required under sections 20 and 21 of the Act. Section 21 prescribes that you shall make allowances for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

### **4.6.1 Recreational and customary allowances**

Recreational and customary fishers do not target oreo. Due to the depth distribution of the oreo species, it is considered that there are no significant recreational or Maori Customary fisheries for any oreo species.

### **4.6.2 Other sources of fishing-related sources of mortality**

Under the status quo there is no allowance for other sources of fishing-related mortality. MPI proposes an allowance for other sources of fishing-related mortality of 5% of the TACC. This would be 100 tonnes under Option 1, 150 tonnes under Option 2, and 200 tonnes under



Option 3. This allowance is required to take account of oreo mortality that is not reported such as oreo lost due to burst nets.

## 4.7 SECTION 75 – DEEMED VALUE RATES

Section 75 of the Act requires that you set deemed value rates for every stock in the QMS. This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient Annual Catch Entitlement (ACE) so that fishing effort does not result in catch limits being exceeded.

No changes to the deemed values were revised in 2003 and are set as follows:

- d) Annual deemed value rates set at \$0.78 per kg
- e) Interim deemed value rates set at \$0.39 per kg
- f) Differential deemed value rates apply at the standard rates of catch in excess of ACE to a maximum of a rate of \$1.56 per kg for catch more than 200% of ACE holdings.

The consultation document did not propose any changes to deemed value rates. MPI considers the current deemed value rates have been effective in constraining fishing effort to the TACC and does not propose you agree to any amendments.

## 5 Management Options

To inform the management options in this Decision Document, MPI has used the stock assessment model to generate a range of additional projections, including long term projections that estimate the likely rebuilding timescales and short term projections to test the immediate impacts of reducing the smooth oreo catch, including a staged reduction. All projections assumed a 6,000 tonne catch of smooth oreo from 2013 (the final year of the stock assessment) up until the start of 2015/16, when any management intervention would take effect.

The long term projections (Figure 1) show that the declining biomass trajectory would be halted by reducing the smooth oreo catch to 3,000 tonnes, 2,000 tonnes or 1,000 tonnes. Reducing catch to below 2,000 t would enable the stock to rebuild towards the target level.

A catch limit of 1,000 tonnes would allow the stock to rebuild to 40%  $B_0$  within 15 years, whereas a catch limit of 2,000 tonnes would rebuild the stock to 40%  $B_0$  within 30 years. A catch limit of 3,000 tonnes would not allow the stock to rebuild to the target, but would halt the biomass decline and stabilise the stock at around 26%  $B_0$ .

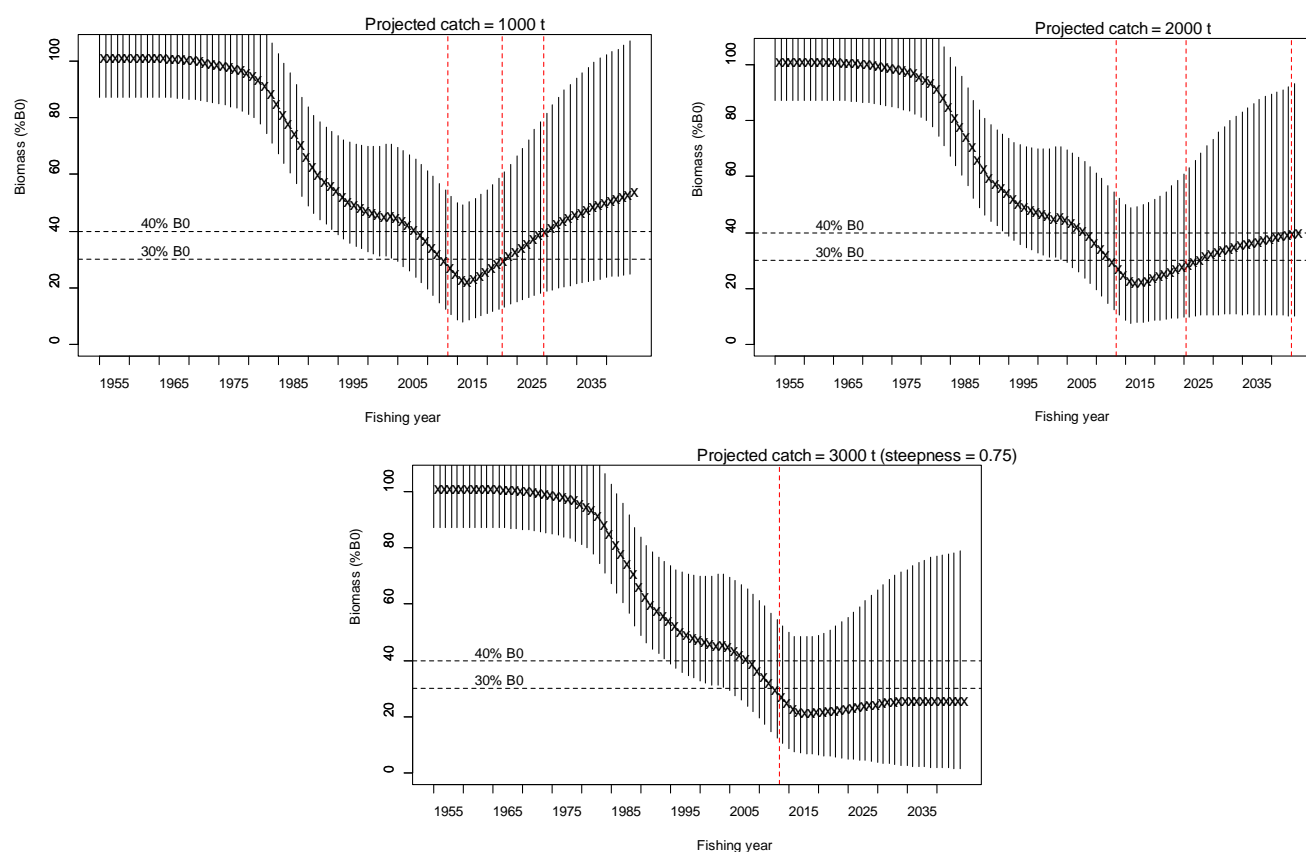


Figure 1: Projected spawning stock biomass of smooth oreo in OEO4 with annual catch of smooth oreo assumed to be either 1,000 tonnes (Option 1), 2,000 tonnes (Option 2) or 3,000 tonnes (Option 3) from 1 October 2015

The SSO4 stock is currently scheduled for its next assessment in 2018, which will provide a further update of the stock trajectory and can inform a subsequent adjustment of the catch limit, if necessary. It is MPI's intention to contract a further acoustic survey of the stock prior to the assessment, to provide a further independent estimate of stock biomass.

## 5.1 ANALYSIS OF OPTIONS

Table 5: Proposed TACs, TACCs and allowances for OEO4 in 2015-16

Option	TAC	TACC	Non-regulatory species specific catch split		Allowances (tonnes)		
			Smooth oreo limit	Other oreo species limit	Customary Māori	Recreational	Other sources of fishing related mortality
Status quo (not an option)	7,000	7,000	N/A	N/A	0	0	0
Option 1	2,100	2,000	1,000	1,000	0	0	100
Option 2 (MPI preferred)	3,150	3,000	2,000	1,000	0	0	150
Option 3	4,200	4,000	3,000	1,000	0	0	200

### 5.1.1 Option 1

Under this Option, the TAC would be reduced to 2,100 tonnes, and the TACC would be decreased to 2,000 tonnes. Within the TACC a species-specific catch limit would cap the catch of smooth oreo to 1,000 tonnes. An additional allowance of 100 tonnes (5% of the TACC) within the TAC would account for other sources of fishing related mortality.

MPI acknowledges that this Option will result in the largest impact on industry in terms of both the reduction in export earnings and the need to redeploy the existing vessel capacity into other fisheries.

Of the three Options proposed, this would provide the fastest rate of rebuilding to the management target, estimating the stock would reach 40%  $B_0$  in 15 years. This rebuilding timeframe assumes the stock will receive average levels of recruitment every year during the 15 year rebuilding timeframe, which may not be realistic.

Based on an approximate current export value for oreo of \$1.72 per kilogram greenweight, this option may result in the loss of up to \$8.6 million per annum in export value.<sup>25</sup> Given this option would allow the stock to rebuild at the fastest rate, the catch limit could be increased at an earlier point, to take advantage of higher biomass levels.

Implementing this option may reduce the ability of MPI to deliver further research surveys in this stock, given the reduction in the value of the stock and the high cost of research surveys (between \$850,000 and \$1 million). However, this option provides the highest confidence that the stock would be able to rebuild and therefore ongoing monitoring of the progress of that rebuild would be less of a priority.

There were no submissions in support of this Option.

#### 5.1.2 Option 2 (MPI Preferred)

Under this option, the TAC would be set at 3,150 tonnes. Within the TAC, the TACC would be decreased by 57% to 3,000 tonnes and an allowance for other sources of fishing related mortality would be set at 150 tonnes (or 5% of the TACC). Under this option a species-specific catch limit would cap the catch of smooth oreo to 2,000 tonnes.

This option would rebuild the stock to the management target at a slower rate, but would allow the stock to reach 40%  $B_0$  in approximately 29 years. As with Option 1, this timeframe assumes average recruitment, which may not eventuate. The estimated rate of rebuilding is also slower than under Option 1 but the economic impact is reduced. A reduction in smooth oreo catch of this magnitude in a single year will still have a significant impact on the industry and require a significant amount of capacity to be reallocated into other fisheries.

Despite these impacts, this is MPI's preferred option as it provides a balance between the economic impacts on the fishing industry and the benefits of rebuilding the stock to the target level.

The increased value of the stock (compared to the value if Option 1 were implemented) will also provide a greater relative opportunity to deliver a further research survey of the stock, to monitor the progress of the stock rebuild.

This option also cuts the TAC by over 50%. Based on an approximate current export value for oreo of \$1.72 per kilogram greenweight may result in the loss of up to \$6.9 million per annum in export value.

There were no submissions in support of this Option.

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<sup>25</sup> Based export figures for 2014 calendar year of \$1.72 / kg greenweight. This uses frozen fillet (FIL) to estimate the greenweight export price as this form accounted for 94% of export volume and 92% of export value for oreo in the 2014 calendar year.

### 5.1.3 Option 3

Under this Option, the TACC would be decreased by 40% to 4,000 tonnes and the TAC would be set at 4,200 tonnes. The allowance for other sources of fishing related mortality would be set at 200 tonnes. Under this option a species-specific catch limit would cap catches of smooth oreo to a maximum of 3,000 tonnes.

This option is not estimated to result in the stock rebuilding to the management target, but would halt the biomass decline and stabilise the stock below the target level. Therefore, this option should be viewed as a first step in a staged reduction in smooth oreo catch, with the second step occurring on 1 October 2016, unless new information was provided in the interim that clearly showed an alternative management approach was acceptable.

MPI tested the immediate impacts of alternative catch scenarios, as a staged reduction. MPI notes that the projections were initiated in 2013, the final year of the assessment model, and run for five years to 2018.

#### *Scenario 1*

A 3,000 tonne catch of smooth oreo during the 2015/16 fishing year, and 2,000 tonne catches during the 2016/17 and 2017/18 fishing years.

#### *Scenario 2*

A 3,000 tonne catch of smooth oreo during the 2015/16 year and 1,000 tonne catches during the 2016/17 and 2017/18 years.

Results of the projections are shown in Table 6 below.

Table 6. Probabilities of stock status in relation to reference points in 2018 from five-year projections using the 2014 stock assessment model and two future catch scenarios

Catch scenario	SSO4 Stock status in 2018 (%B <sub>0</sub> )	Probability of stock being at or above management target (40% B <sub>0</sub> )	Probability of stock being below the soft limit (20% B <sub>0</sub> )	Probability of stock being below the hard limit (10% B <sub>0</sub> )
1	22.5	0.024	0.383	0.040
2	23.4	0.031	0.344	0.030

The results indicate that under the two catch scenarios described, the stock will start to rebuild at a faster rate if 1,000 tonne catch is taken going forward. Scenario 1 would result in a 38% probability of the stock being below the soft limit in 2017/18 while for Scenario 2, the probability would be 34%.

Cutting the catch to either 2,000 or 1,000 tonnes from 2016 would allow the stock to rebuild, although this is not part of your current decision, the projections MPI has run demonstrate the stock would rebuild under these catch scenarios, albeit more slowly than under the first two options.

This option would have the least immediate impact on the fishing industry. It would allow further time to reallocate fishing capacity into other fisheries, but would also require ongoing investment, input and participation from both MPI and industry over the next year to gain agreement on the next stage of management for the stock.

If you choose to implement this option, MPI will use the next year to agree the subsequent management action with industry stakeholders. MPI will continue to work with the DWG to progress the Fisheries Improvement Plan (FIP) work programme that has been collaboratively developed over the past two years. The FIP describes a five year work programme, including a research component, to move the fishery towards the standards required for achieving certification by the Marine Stewardship Council as a sustainable fishery. Should you choose to implement this Option, any outputs from the initial stages of the FIP would be incorporated into the advice used to inform the second stage of the TAC review.

All submitters were in favour of this Option, but considered that the information that would be produced from the initial stages of the FIP would confirm whether further TAC cuts would be required from 2016. MPI considers that further cuts would be necessary, barring a significant change in the available information, which is unlikely in the next year.

Based on an approximate current export value for oreos of \$1.72 per kilogram greenweight, this option may result in the loss of around \$5.2 million per annum in export value in 2015/16, with further reductions of between \$6.8 million (under scenario 1) and \$8.6 million per annum (under scenario 2) (compared to current TACC levels) from 2016/17.

## 6 Other Matters

### 6.1 CATCH SPLIT MONITORING

One of the practical difficulties associated with management of a species complex is ensuring the individual species that make up the stock are managed in a sustainable manner consistent with the purpose of the Act. The primary tool used by MPI to manage such stocks is to request the fishing industry to implement species-specific catch limits. This non-regulatory approach is used in the neighbouring OEO3A fishery to limit catch of smooth and black oreo within the OEO3A TACC and works well.<sup>26</sup>

In cooperation with the fishing industry, MPI is proposing that regardless of the option selected, you request a non-regulatory agreement to implement a species specific catch limit arrangement in the OEO4 fishery to limit the catch of smooth oreo to an agreed amount within the TACC.

The proposed smooth/black oreo catch limits are specified in each of the options above.

### 6.2 COMPLIANCE ISSUES

MPI considers that implementing a species-specific catch limit arrangement does not pose an additional compliance risk. The vessel operators involved in the fishery are familiar with the risks of such arrangements, which already operate in a number of other fisheries.

## 7 Conclusion

The 2014 stock assessment of smooth oreo in OEO4 indicated that the stock status is 27%  $B_0$  and the stock is undergoing a long-term decline in abundance. The current status is below the management target range and is projected to decline below the soft limit in the next three years at the current catch level of 6,000 tonnes.

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<sup>26</sup> This approach is also used to set area-specific catch limits within a wider QMA e.g. there are separate catch limits for the eastern and western hoki stocks within the wider HOK1 TACC.

Based on the latest stock assessment, and subsequent projections provided by NIWA, MPI consulted on three options to reduce the TACC for SSO4. The submissions received all acknowledged that the status of the fishery required management action be taken to ensure the future sustainability of the fishery, although noted uncertainties in the information and lack of agreement from those who operate in the fishery, that the stock status is declining.

MPI considers that you should reduce the catch of smooth oreo to 2,000 tonnes, to provide the opportunity for the stock to rebuild, but to balance this rate of rebuild with the economic impact on the industry.

The 2,000 tonne catch limit for smooth oreo would be set by way of a non-regulatory catch split within a TACC of 3,150 tonnes, to allow ongoing catch of other oreo species at their current level (of 1,000 tonnes) and introduce an allowance for other sources of fishing related mortality (of 150 tonnes). As part of your decision MPI also recommends that you endorse the non-regulated catch split and instruct MPI to monitor and audit this agreement over the next year.

## PART B: INSHORE FISHERIES

### Red Gurnard 3 (GUR3)

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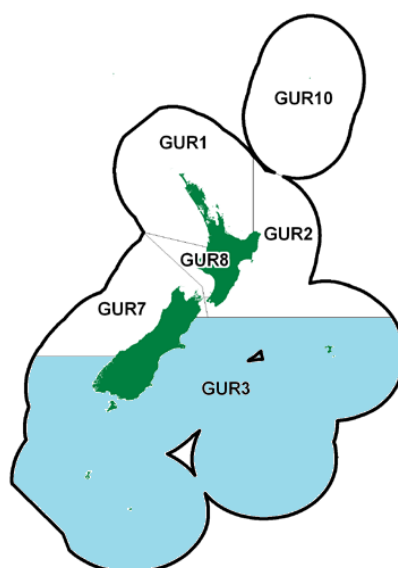


Figure 1: Quota Management Areas (QMAs) for gurnard (GUR) stocks. GUR3 indicated by shading.

## 1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits for the GUR3 fishstock (see Figure 1).

Best available information suggests there is an opportunity to provide for greater utilisation from GUR3 while ensuring sustainability. MPI consulted on three options for management settings for GUR3 for the upcoming fishing year – one that retains the *status quo*, and two options that increase the total allowable catch (TAC), the total allowable commercial catch (TACC), the recreational allowance and the allowance for all other mortality to the stock caused by fishing. These options are shown in Table 1.

Four submissions were received on the proposals for GUR3. One submission supporting Option 2 was received from a recreational fisher. Three submissions were received from commercial fishing stakeholders supporting Option 3.

After considering the submissions received, MPI recommends Option 3, that the TAC for GUR3 is increased by 127 tonnes from 1163 tonnes to 1290 tonnes, the TACC is increased by 120 tonnes from 1100 tonnes to 1220 tonnes, and the recreational allowance is increased by 1 tonne from 5 tonnes to 6 tonnes. In addition, MPI proposes that the allocation for other sources of fishing-related mortality be increased by 6 tonnes from 55 tonnes to 61 tonnes (5% of the TACC). Option 3 provides the greatest increase in utilisation and it is estimated that the associated TACC increase would result in a \$237,600 increase per annum in commercial revenue. Regular research is planned to support ongoing monitoring of GUR3 to ensure sustainability.

The best available information shows the customary take of red gurnard in GUR 3 is well within the existing allowance and MPI recommends that this allowance be retained.

Table 1: TACs, TACCs and allowance options consulted on for GUR3

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality
Option 1 ( <i>Status Quo</i> )	1163	1100	3	5	55
Option 2	1248	1180	3	6	59
Option 3 (MPI Preferred)	1290	1220	3	6	61

## 2 Context

### 2.1 BACKGROUND

#### 2.1.1 Biology

Red gurnard is a fast growing, moderately short lived species, with a maximum age of 16 years, reaching sexual maturity at 2-3 years old at a length of about 23cm. Due to the fast growth rate and short lifespan of red gurnard, fluctuations in recruitment can result in large fluctuations in stock biomass.

Large fluctuations in stock biomass can provide opportunities for increased exploitation when consecutive strong year classes appear in the population. However, this fluctuating characteristic also means that management measures would be required to rapidly reduce catches at times of persistent low recruitment.

#### 2.1.2 GUR3 Fishery

##### 2.1.2.1 Commercial

Red gurnard are a major bycatch of inshore trawl fisheries in most areas of New Zealand, including South Island West Coast fisheries for flatfish and red cod. They are also directly targeted in some areas. Some minor target fisheries for red gurnard are known in Pegasus Bay.

Red gurnard was introduced into the Quota Management System (QMS) in 1986. The 1986 TACCs were based on 1983 landings for the GUR3 area. For the 2009/10 fishing season, the TACC for GUR3 was increased from 800 t to 900 t, with allocations of 3t, 5t, and 45t for customary, recreational, and other sources of mortality respectively.



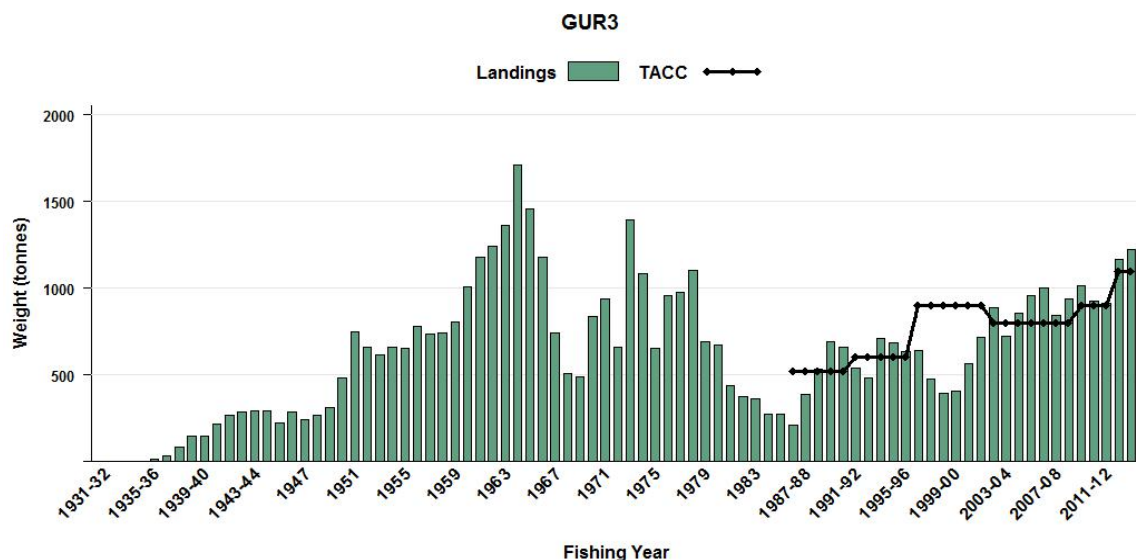


Figure 2: Historical GUR 3 TACCs and landings

#### 2.1.2.2 Recreational

While the species is important to recreational fishers across New Zealand, the sector's catch of red gurnard within GUR3 is relatively low compared to that of the commercial sector.

Red gurnard are mainly taken by recreational fishers using lines. The minimum legal size for recreational catch of red gurnard is 25 cm. The maximum daily bag limit is 30 (as part of the combined finfish daily bag limit of 30) in the GUR 3 area.

#### 2.1.2.3 Māori Customary

Customary catch data available for most of the GUR 3 area does not show a large take of red gurnard. Anecdotal information suggests catch by customary Māori fishers is occurring within the amateur daily bag limit.

In meeting its obligations to Māori, MPI is continuing to work together with the Te Waka a Māui me Ōna Toka Forum (the Forum) who has developed an iwi forum fisheries plan: Te Waipounamu Iwi Forum Fisheries Plan (the Iwi Forum Plan). The Forum identifies red gurnard (kumukumu) as a taonga species within the Iwi Forum. This plan includes objectives relating to supporting and providing for the customary and commercial interests of South Island iwi.

#### 2.1.2.4 Other Sources of Fishing-Related Mortality

This allowance covers the mortality of fish that results from various factors associated with fishing, but not reported as catch. This can include fish that escape the gear, but die after contact with fishing gear. In addition, this allowance covers any component of catch that is unwanted and unlawfully discarded (in the case of QMS species).

Quantitative estimates of other sources of fishing-related mortality are not available for GUR 3. The current allowance for other sources of fishing-related mortality is set at 55 t, which is approximately 5 % of the TACC. This proportion is based loosely on the how robust the species is and the fishing methods used to take the majority of catch.

### 2.1.3 Management Approach

The draft National Fisheries Plan for Inshore Finfish<sup>27</sup> acknowledges that it is currently not feasible or cost-effective to obtain robust estimates of biomass for a large number of inshore finfish stocks. The Plan refers to alternative approaches to monitoring stocks to inform management reviews, including an approach based on accepted indicators of relative abundance. In these circumstances it is appropriate to set the TAC under section 13(2A) of the Act.

GUR3 currently<sup>28</sup> falls within a group of stocks where a relative abundance monitoring approach is being used. Key indicators used to monitor and inform management of GUR3 include catch per unit effort from the commercial fishery (CPUE), which has been updated to the end of the 2013/14 fishing year, and a fishery-independent estimate of relative biomass from the East Coast South Island trawl survey from 2014. These abundance indicators are used to estimate relative changes in stock status in relation to the target level, which is a proxy for  $B_{MSY}$ .

## 2.2 RATIONALE FOR MANAGEMENT INTERVENTION

### 2.2.1 Previous Review

The GUR 3 TAC was last reviewed in 2012. At this time the TACC was increased to 1100 t (from 900 t). The recreational allowance was increased from 3 to 5 tonnes and an allowance for other sources of fishing-related mortality was set, at 55 t. The customary Maori allowance remained unchanged, at 3 t.

### 2.2.2 Current Status

The fishery independent East Coast South Island (ECSI) trawl survey<sup>29</sup> and CPUE analysis have been accepted as reliable indices of relative abundance for GUR 3. The indicators have enabled a target level (a proxy for  $B_{MSY}$  measured using CPUE) to be set through the MPI Science Working Group process. While the CPUE series has declined from a high in 2009/10, the 2015 Plenary report<sup>30</sup> concludes that it is likely (60% probability) that the GUR3 stock is currently above the MSY based target (see figure 3). This suggests that there is potential to secure greater benefits from the GUR3 stock at a higher TAC at least over the short to medium-term.

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<sup>27</sup> The Draft National Fisheries Plan for Inshore Finfish is a working document being used to guide management of fishstocks by the Ministry for Primary Industries. The plan will be refined further before being submitted for the Minister's approval under s11A of the Fisheries Act 1996.

<sup>28</sup> Given the data available, there is potential to undertake a quantitative stock assessment to estimate biomass for GUR3. The costs and benefits of prioritising this piece of work will need to be considered as part of the further development of the draft Fisheries Plan.

<sup>29</sup> The winter ECSI trawl survey employs a number of monitoring tools and, in 2012, the survey has been optimised for GUR. 3. The ECSI trawl survey was not carried out for a period from the mid 1990s until 2007.

<sup>30</sup> [http://fs.fish.govt.nz/Doc/23877/73\\_GUR\\_2015%20FINAL.pdf.ashx](http://fs.fish.govt.nz/Doc/23877/73_GUR_2015%20FINAL.pdf.ashx)

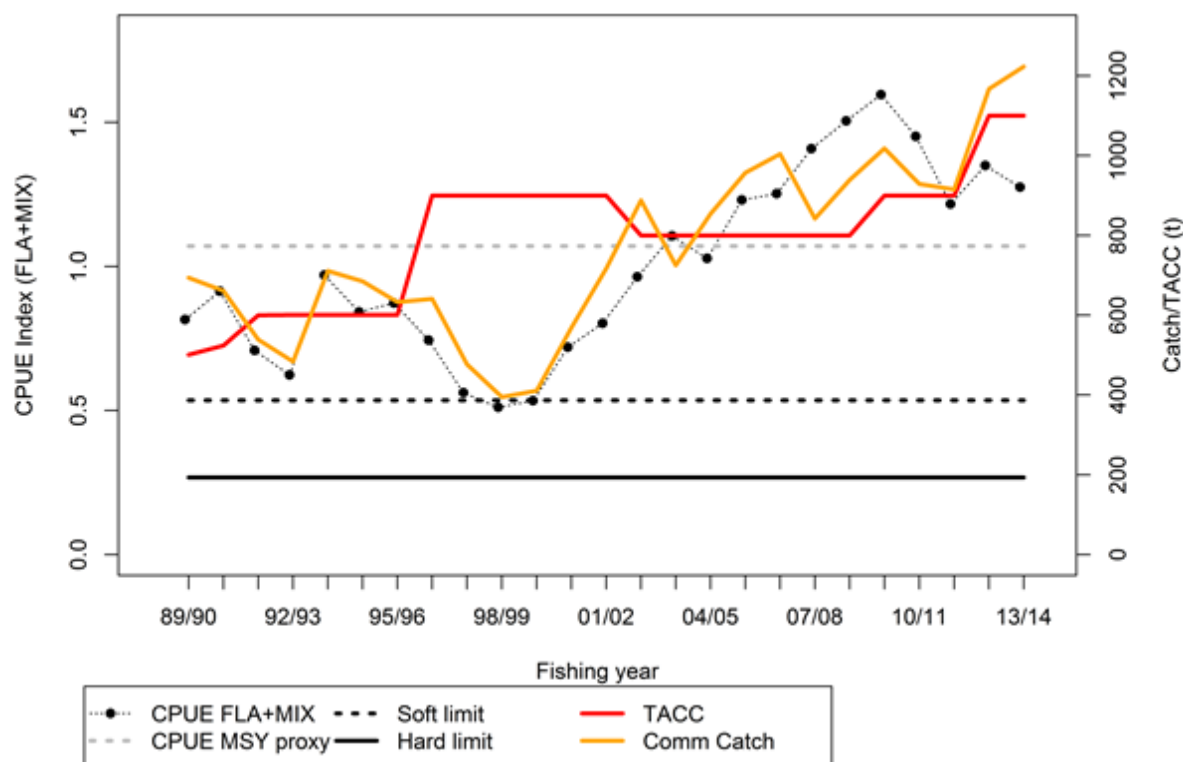


Figure 3: Comparison of CPUE indices (average FLA and MIX) and the trajectories of catch and TACCs from 1989–90 to 2013–14. The horizontal grey line represents the MSY proxy relative to the CPUE series.

The Plenary Report takes into account all the available information on relative abundance which includes the two bottom trawl CPUE indices (one targeted at flatfish and the other at red cod) that have been combined in figure 3 as well as estimates of relative abundance from the east coast South Island trawl survey (see figure 4). The CPUE series increased steadily from the late 1990s to 2009/10, and then declined, remaining above the target level. The resumed east coast South Island trawl survey has returned five biomass indices between 2007 and 2014 which are greater than the equivalent estimates from the early 1990s. The trawl survey biomass indices have continued to increase during the latter period.

The Plenary Report notes that current abundance is at historically high levels and is unlikely to decline (below the soft and hard limits) in 3 to 5 years under current levels of catch and TACC.

A programmed trawl survey in 2016 and CPUE update in 2017 will support monitoring of the stock abundance.

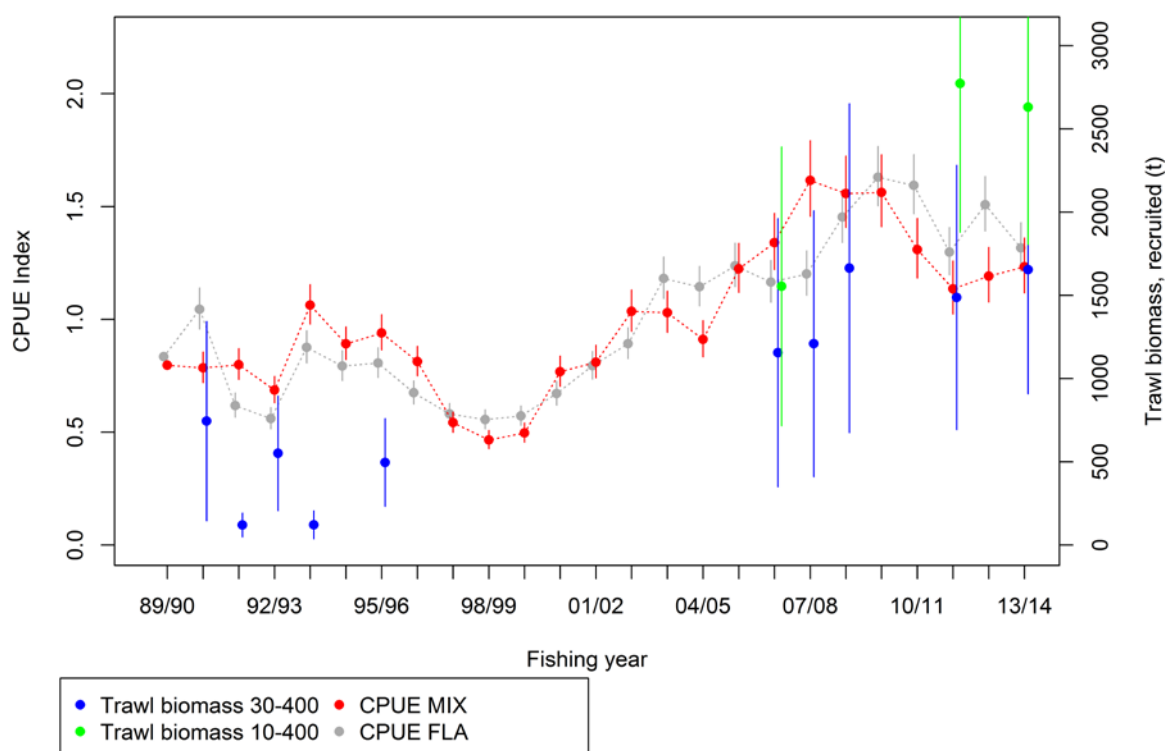


Figure 4: Standardised CPUE indices for two east coast South Island bottom trawl fisheries [BT(MIX) and BT(FLA)] compared to trawl survey estimates of recruited ( $\geq 30$  cm T.L.) biomass for red gurnard from the winter ECSI inshore trawl survey for two survey areas (30-400 m and 10-400 m). Error bars show  $\pm 95\%$  confidence intervals.

### 3 Consultation

MPI consulted on your behalf on the three options set out in Table 2 below. MPI followed its standard consultation process.

Table 2: TACs, TACCs and allowance options consulted on for GUR3

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality
Option 1 ( <i>Status Quo</i> )	1163	1100	3	5	55
Option 2	1248	1180	3	6	59
Option 3 (MPI Preferred)	1290	1220	3	6	61

#### 3.1 SUBMISSIONS RECEIVED

Submissions on the GUR3 proposals were received from the following:

- Fisheries Inshore New Zealand (FINZ)
- Gerald O'Rourke Recreational Fisherman Timaru
- Oceans Fisheries Ltd
- Southern Inshore Fisheries Management Company Limited (Southern Inshore)

## 3.2 SUMMARY OF SUBMISSIONS

A brief summary of the submissions<sup>31</sup> is outlined below. Further details of the submissions are discussed in the relevant sections of this paper.

Gerald O'Rourke supported changes in line with Option 2.

Oceans Fisheries and Southern Inshore support Option 3. The submission from Southern Inshore was endorsed by FINZ. Southern Inshore submitted that the results of the East Coast South Island trawl survey supported a higher increase to the TACC than proposed.

## 4 Legal Considerations

### 4.1 SECTION 8 – PURPOSE OF THE ACT

MPI considers that all options presented in this paper satisfy the purpose of the Act in that they provide for utilisation in the GUR3 fishery while ensuring sustainability.

Available information suggests both management options will ensure the long term sustainability of the stock. Option 1 is more cautious and reflects the uncertainty in information about the GUR3 stock status relative to default target levels and the level of increase in biomass. In contrast, increasing the TAC under Option 2 or 3 will allow for increased utilisation of the GUR3 stock. Options 2 & 3 involve a slightly higher risk to the sustainability of the stock over the longer-term. However, this risk would be mitigated by continuing the current monitoring programme for GUR3. This would allow any significant reductions in abundance to be identified and an appropriate management response initiated in a timely manner.

### 4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

MPI considers that all options presented in this paper satisfy your obligations under section 9 of the Act. A summary of the interactions between the GUR3 fishery and the aquatic environment, and how these are likely to be affected by the proposals in this paper are discussed below.

#### 4.2.1 Fish bycatch

MPI anticipates that all options presented for an increase in TACC for red gurnard will cover the additional catch of GUR3 taken as bycatch and will not result in additional catch of species taken in association.

#### 4.2.2 Protected species interactions

##### 4.2.2.1 Seabirds

Management of seabird interactions with New Zealand's commercial fisheries is driven through the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA-Seabirds). The NPOA-Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species to the extent practicable.

Inshore trawl fisheries in Fisheries Management Area 3 (the same boundaries as GUR3) were assessed as having very low levels of risk of mortality to a small number of seabird species. MPI does not anticipate any increased risk of mortality to seabird species as a result of any of

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<sup>31</sup> Copies of the submissions are available in Appendix 2

the proposals outlined in this paper as the increases to catch limits proposed are modest and will likely cover existing levels of bycatch only.

#### 4.2.2.2 *Marine mammals*

Hectors dolphins, New Zealand fur seals and New Zealand Sea lions are well represented on the East Coast of the South Island and consideration needs to be given to what are any possible implications of an increase in the GUR 3 TAC. MPI notes that red gurnard is substantially a bycatch of trawling. MPI does not anticipate any increased risk of mortality to marine mammal species as a result of any of the proposals outlined in this paper as the increases to catch limits proposed are modest and will likely cover existing levels of bycatch only.

#### 4.2.2.3 *Benthic impacts*

As red gurnard are largely a bycatch species, MPI does not anticipate any significant increase in trawling activity and, therefore, benthic impacts arising from the proposed TAC increases

Research has been reported to characterise both New Zealand's benthic environment and the level of benthic impact from fisheries activity.<sup>32</sup> This research has been combined the trawl footprint created for all target species for five years and overlaid benthic habitat classes to get a measure of the coverage of habitat classes by trawl gear.

As explained above, increasing the TACC for the bycatch GUR3 stock is unlikely to translate to a significant increase in overall trawling effort. Therefore, the trawl footprint and associated impacts on benthic habitat classes that have been assessed are unlikely to be altered under Option 2 or 3.

### 4.3 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations included in this paper.

### 4.4 SECTION 11 – SUSTAINABILITY MEASURES

Only section 11 measures that are directly relevant to GUR3 are discussed within this section. See Appendix 1 for consideration of other section 11 measures.

- a) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC, and allowances for customary take, recreational take, and other sources of fishing-related mortality. Other standard management controls apply to the GUR3 fishery, for example deemed values, amateur bag limits, and fishing method constraints. The proposed changes to the TAC do not affect these measures.
- b) Sections 11(2)(a) and (b): have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that you consider relevant. MPI considers that both options proposed are consistent with the Hector's Dolphin Threat Management Plan<sup>33</sup>. MPI is not aware of any other policy statements, plans or strategies that should be taken into account for GUR3.

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<sup>32</sup> <https://www.mpi.govt.nz/document-vault/5287>

<sup>33</sup> <http://www.fish.govt.nz/en-nz/Environmental/Hectors+Dolphins/default.htm>

## 4.5 SECTION 12- CONSULTATION

In addition to the consultation considerations discussed elsewhere, Section 12(1)(b) requires that you provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga before setting or varying a TAC. Te Waka a Māui me Ōna Toka iwi forum was approached for their collective view on the GUR3 proposals. No collective views were provided by Te Waka a Māui me Ōna Toka.

The Te Waka a Maui me ona Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan. This plan covers GUR3 and identifies red gurnard (kumukumu) as a taonga species. MPI considers that the management options presented in this advice paper are consistent with the Plan's six management objectives. Specifically, all management options ensure adequate allowances for customary harvest, the sustainability of the fishery and the appropriate management of environmental impacts. Option 2 or 3 would also increase the benefits from the GUR3 commercial fishery, contributing towards the achievement of Management Objective Three of the Plan.

## 4.6 SECTION 13 (2A) – SETTING THE TAC

The best available information that MPI currently has on GUR3 is insufficient to enable reliable estimation of  $B_{CURRENT}$  and  $B_{MSY}$ .

Where reliable estimates of stock status in relation to  $B_{MSY}$  are not available, s 13(2A) of the Act requires the Minister to use best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield. The TAC options presented in this paper take into account the requirements listed in s 13(2A) and 13(3) of the Act, and offer differing approaches to managing the sustainability of the fishery, and the way and rate GUR3 moves to at or above the target level, given the available information.

## 4.7 SECTIONS 20 & 21 – ALLOCATING THE TAC

The TAC must be apportioned among the relevant sectors and interests as required under sections 20 and 21 of the Act. Section 21 prescribes that you shall make allowances for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information. In the event of imperfect information, you are entitled to be cautious.

### 4.7.1 Recreational allowance

The 2011/12 National Panel Survey provided an estimate that 2.01 tonnes of gurnard (4605 individual fish) was harvested recreationally in GUR3 during the 2011/12 fishing year. Given uncertainty in using this estimate to predict current or future catches and the indications of increasing stock biomass, MPI considers it reasonable to provide for increases to the recreational allowance for GUR3 if the TAC is increased.

### 4.7.2 Customary allowance

There is no proposal to increase the customary allowance for GUR3. FINZ submits that MPI needs to review the reasonableness of customary allocations to reflect the available information. The GUR3 TAC was last reviewed in 2012. MPI has no information to indicate that customary catch has changed significantly over the last 3 years. The best available

information suggests that current settings will provide for both current levels of catch and increased customary harvest of gurnard in GUR3. MPI considers that any general shifts to the approach to the setting of the customary allowance for GUR3 as suggested by FINZ would be best considered as part of work to further develop management approaches for GUR3 and should include the input and participation of the Forum.

The East Otago, Akaroa Harbour, Te Taumanu O Te Waka Maui, Oaro-Haumuri Taiapure, and the Te Waha o te Marangi, Mangamaunu, Oaro, Rapaki, Koukourata, Te Kaio, Wairewa, Opihi, Waitarakao, Waihao, Moeraki, Puna-wai-Toriki, Waikawa Harbour/Tumu Toka, Motupohue, Oreti, Pikomamaku, Kaihuka, Horomamae, Waitutu mātaaitai reserves are all within the GUR3 quota management area. MPI notes that the proposals in this paper will not impact on, or be impacted by, these taiapure and mātaaitai reserves. The GUR3 QMA does overlap two areas covered by section 186B of the Act; but proposals in this paper will not impact or be impacted by these closures.

#### 4.7.3 Other sources of fishing-related mortality

Information to inform the setting of an allowance for other sources of fishing-related mortality in GUR3 is uncertain. Options 2 and 3 proposes an increase to this allowance that would result in the allowance being approximately 5% of the TACC. This proportion is based loosely on the how robust the species is and the main fishing methods used. No submissions were made to suggest alternative approaches to the setting of this allowance.

#### 4.7.4 TACC

Catches from the commercial sector have been near or above the TACC for over ten years. The consistent levels of catch indicate that there is capacity and desire to fully catch the TACC to the levels proposed.

Option 2 includes an increase to the TACC from 1100 to 1180 tonnes which aligns with reported landings in 2012/13. Option 3 proposes an increase to the TACC from 1100 to 1220 tonnes which aligns more closely with commercial landings in 2013/14. By increasing the TACC, fishers are more likely to be able to cover GUR3 catch with ACE and therefore, in addition to increased revenue from catches, will be less likely to incur deemed value payments.

### 4.8 SECTION 75 – DEEMED VALUE RATES

MPI has consulted on changes to GUR3 deemed values. A discussion of the deemed value rates for GUR3 is included in Part C of this document.

## 5 Management Options

### 5.1 ANALYSIS OF OPTIONS

The final options for setting the TAC, TACC, and allowances for GUR3 (Table 3) do not differ from those consulted on. Option 1 retains the *status quo*, while Option 2 and 3 increases the TAC, TACC, recreational allowance and allowance for other sources of fishing-related mortality. MPI notes that ongoing monitoring of the GUR3 stock is planned under all options to enable annual catch levels to be adjusted in response to future biomass changes.



Table 3: TAC, TACC and allowance options consulted on for GUR3

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality
Option 1 ( <i>Status Quo</i> )	1163	1100	3	5	55
Option 2	1248	1180	3	6	59
Option 3 (MPI Preferred)	1290	1220	3	6	61

### 5.1.1 Option 1

Option 1 is the *status quo* and proposes no changes to the TAC, TACC or allowances for customary Māori, recreational or other sources of fishing-related mortality.

Option 1 takes a cautious approach and does not respond to the indication that relative abundance is above the target level that has been set as a proxy for  $B_{MSY}$ . Given the CPUE series has recently declined, this cautious approach would be preferred if there were not plans to monitor the stock and review the management settings regularly.

#### Impact

The available information suggests there is potential for economic benefits that will not be realised under Option 1 and that the best value from the GUR3 fishery will not be achieved under this option.

The commercial catch over the last six years has generally exceeded the TACC. Since the TACC was increased in 2012 to its current 1100 tonnes, over catch has been 67 and 122 tonnes. Option 1 does not address this ongoing over catch. This option may create ongoing cost to fishers from avoiding bycatch of GUR3 or covering over-catch of GUR3 with deemed value payments. GUR3 deemed value payments in 2013/14 totalled \$207,864.85.

### 5.1.2 Option 2

Under Option 2:

- The TAC would be increased from 1164 tonnes to 1248 tonnes (an increase of 7%).
- The TACC would be increased from 1100 tonnes to 1180 tonnes (an increase of 7%).
- The customary Māori allowance would remain at 3 tonnes.
- The recreational allowance would be increased from 5 to 6 tonnes (an increase of 20%).
- The allowance for other sources of fishing-related mortality be set at 59 tonnes (5% of the TACC).

Option 2 provides a “midway” approach that responds to the indication that relative abundance is above the target level but provides for smaller utilisation increases than Option 3. While MPI was interested in the views of tangata whenua and stakeholders on this option, the difference in catch limits between Option 2 and Option 3 is not considered to provide a significant difference in relation to risk to sustainability.

MPI received one submission supporting changes in line with Option 2. This was from Gerald O Rourke, a recreational fisher. The submission did not comment on the TAC but noted agreement with a TACC of 1180 tonnes, with the proviso that if some time in the future other species of fish become scarce and gurnard attract more attention, that recreational fishers will receive an increase in allowance.

No information has been provided that justifies Option 2 as a better option than others in this paper. MPI recommends that you do not implement Option 2.

### 5.1.3 Option 3 (MPI Preferred)

Under Option 3:

- The TAC would be increased from 1164 tonnes to 1290 tonnes (an increase of 11%).
- The TACC would be increased from 1100 tonnes to 1220 tonnes (an increase of 11%).
- The customary Māori allowance would remain at 3 tonnes.
- The recreational allowance would be increased from 5 to 6 tonnes (an increase of 20%).
- The allowance for other sources of fishing-related mortality be set at 61 tonnes (5% of the TACC).

MPI recommends that you implement Option 3, and considers that this option best responds to the assessment that it is likely that GUR3 is currently at or above the target level. The increase to the TAC included within Option 3 allows for increased utilisation, while ongoing monitoring ensures sustainability.

Option 3 was supported by Oceans Fisheries Ltd, Southern Inshore and FINZ. However, Southern Inshore submits that the TAC and TACC increases should be higher, based on the latest ECSI Trawl Survey information.

Given the uncertainties in the available information MPI considers an increase of 11% to be a reasonable adjustment to the TAC.

Southern Inshore also submitted a desire to develop a set of decision rules that allow utilisation of stocks in a timelier manner.

MPI is working with FINZ to improve the management approaches for inshore stocks, including for GUR3. Any new approaches will be adopted over time and incorporated into future advice.

The TAC increase within Option 3 allows for increases to the allowances and TACC currently set for GUR3.

The increase to the recreational allowance of 1 tonne included within this option is a 20% increase. This adjustment recognises that GUR3 is currently at a relatively high level of abundance as well as the uncertainty in estimates of recreational harvest within GUR3.

Under Option 3 the allowance for other sources of fishing-related mortality is also increased from 55 tonnes to 61 tonnes to align with 5% of the revised TACC. No changes are proposed to the Maori customary allowance.

The TACC of 1220 tonnes included within Option 3 would enable the commercial fishing industry to increase value obtained from the fishery. Based on a 2015/16 port price of \$1.98/kg this would generate an additional \$237,600 of revenue. The TACC increase should also reduce concerns that the current abundance of GUR3 is creating extra costs within the mixed trawl fishery.

## 6 Other Matters

### 6.1 RECREATIONAL CONTROLS

There is no information to suggest a change to recreational regulations would be needed to implement your decisions and no changes to the relevant recreational daily bag limit are proposed.

## 7 Conclusion

MPI's preferred option is Option 3 – increasing the TAC of GUR 3 to 1290t, increasing the TACC to 1220 t, increasing the allowance for recreational interests to 6 tonnes and increasing the allowance for other sources of fishing-related mortality to 61 tonnes.

GUR 3 is experiencing a period of high relative abundance. The information available supports provision for an increase in catch. Ongoing monitoring, with a view to review the TAC again in two to three years, will ensure that the catch remains sustainable.

A TACC of 1220 tonnes would enable increased utilisation and economic benefit for the commercial sector.

MPI considers all three options are consistent with your statutory obligations.

MPI notes that you have broad discretion in exercising your powers of decision making, and may make your own independent assessment of the information presented to you in making your decision. You are not bound to choose the option recommended by MPI.

## Red Gurnard 7 (GUR7)

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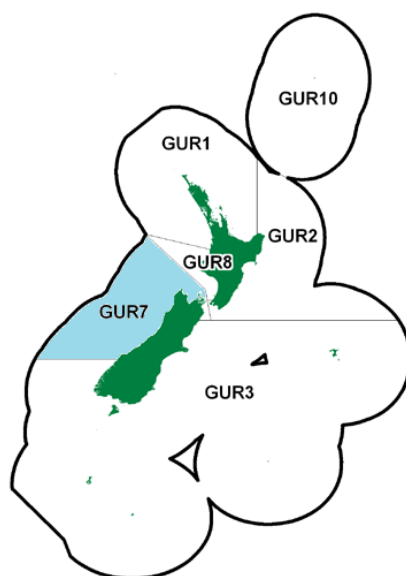


Figure 1: Quota Management Areas (QMAs) for red gurnard (GUR) stocks. GUR7 indicated by shading.

## 1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits for the GUR7 fishstock (see Figure 1).

The available information suggests that the abundance of GUR7 has increased in recent years. This information suggests that there is an opportunity to provide for greater utilisation from GUR7 while ensuring sustainability. MPI consulted on three options for management settings for GUR7 for the upcoming fishing year – one that retains the *status quo* and two that increase the total allowable catch (TAC) the total allowable commercial catch (TACC), the recreational allowance and the allowance for all other mortality to the stock caused by fishing. These options are shown in Table 1.

Two submissions were received on the proposals for GUR7, both from commercial stakeholder organisations. Both submissions support Option 3.

After considering the submissions received, MPI recommends Option 3, that the TAC for GUR7 is increased by 64 tonnes from 855 tonnes to 919 tonnes, the TACC is increased by 30 tonnes from 815 to 845 tonnes, and the recreational allowance is increased by 2 tonnes from 20 tonnes to 22 tonnes. In addition, MPI proposes that the allocation for other sources of fishing-related mortality be increased to 5% of the TAC. Option 3 provides the greatest increase in utilisation and it is estimated that the associated TACC increase would result in a \$109,200 increase in commercial revenue. Regular research is planned to support ongoing monitoring of GUR7 to ensure sustainability.

The best available information shows the customary take of red gurnard in GUR7 is well within the existing allowance and MPI recommends that this allowance be retained.

Table 1: Proposed Management Settings for GUR7

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other Sources of Fishing-Related Mortality
Option 1 ( <i>Status Quo</i> )	855	785	10	20	40
Option 2	887	815	10	21	41
Option 3 (MPI Preferred)	919	845	10	22	42

## 2 Context

### 2.1 BACKGROUND

#### 2.1.1 Biology

Red gurnard is a fast growing, moderately short lived species, with a maximum age of 16 years, reaching sexual maturity at 2-3 years old at a length of about 23cm. Due to the fast growth rate and short lifespan of red gurnard, fluctuations in recruitment can result in large fluctuations in stock biomass.

Large fluctuations in stock biomass can provide opportunities for increased exploitation when consecutive strong year classes appear in the population. However, this fluctuating characteristic also means that management measures would be required to rapidly reduce catches at times of persistent low recruitment.

#### 2.1.2 GUR7 Fishery

##### 2.1.2.1 Commercial

GUR7 is a major bycatch of inshore trawl fisheries including flatfish, red cod, stargazer, barracoutta, and tarakihi. Some target fishing for red gurnard occurs off the west coast South Island and a little in Tasman and Golden Bays (statistical reporting area 038).

Red gurnard was introduced into the Quota Management System (QMS) in 1986 and the TACC for GUR7 was based on the 1983 landings. The fishery landings have exhibited the peaks and troughs characteristic of changes in red gurnard abundance (see Figures 2 & 4).

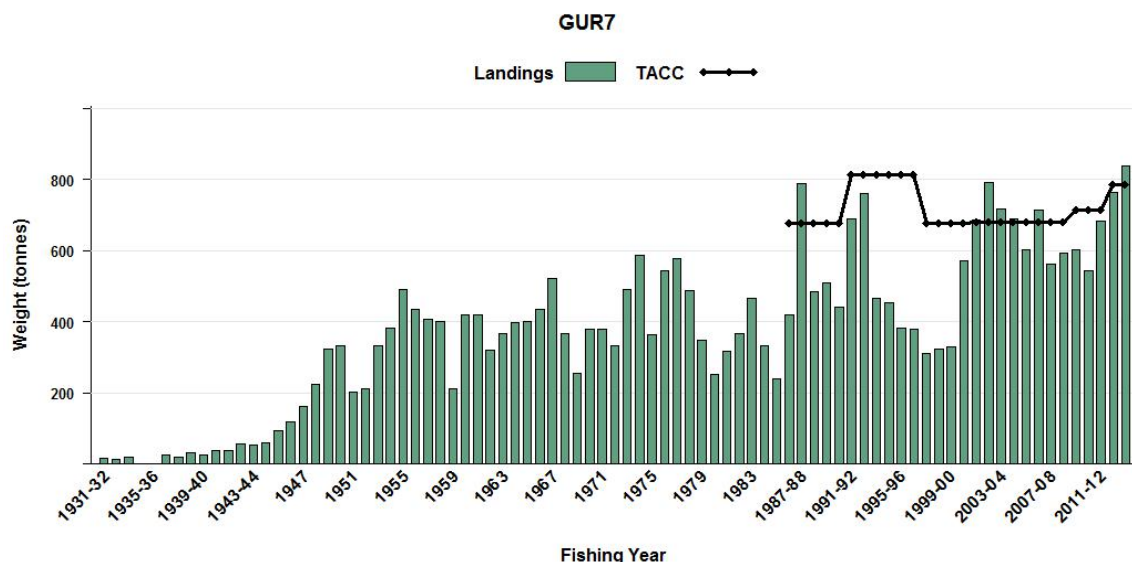


Figure 2: Historical GUR7 TACCs and landings

#### 2.1.2.2 Recreational

While red gurnard is an important recreational species across New Zealand, catches of gurnard by recreational fishers are relatively low within GUR7 compared to those of the commercial sector.

The National Panel Survey of Marine Recreational Fishers 2011/12<sup>34</sup> provides the best available information on recreational harvest for GUR7. This survey estimated 12 tonnes (cv of 0.24) of red gurnard were caught in GUR7 in the 2011/12 fishing year. This estimate is based on a modest number of events and fishers and, as a result, is subject to some uncertainty. Recreational catch is also likely to vary from year to year. Information on current catches is not available.

#### 2.1.2.3 Māori Customary

Red gurnard (kumukumu) is an important species for customary non-commercial fishing interests, by virtue of its wide distribution in shallow, accessible coastal waters. It is identified by Te Waka a Māui me Ōna Toka iwi forum<sup>35</sup> as a taonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the customary and commercial interests of South Island iwi.

Customary catch data available for GUR7 does not show a large take of red gurnard but there are some uncertainties surrounding this. Tangata whenua in the Tasman/Golden Bay and Marlborough Sounds area are still operating under regulations 51 and 52 of the Fisheries (Amateur Fishing) Regulations 2014 (the Amateur Regulations), which does not require the reporting of customary permits or catches.

Catch by customary Māori fishers may also be occurring within the amateur daily bag limit (and therefore currently provided for under the recreational allowance).

#### 2.1.2.4 Other Sources of Fishing-Related Mortality

This allowance covers the mortality of fish that results from various factors associated with fishing, but not reported as catch. This can include fish that escape the gear, but die. In

<sup>34</sup> Available at [http://fs.fish.govt.nz/Doc/23718/FAR\\_2014\\_67\\_2847\\_MAF2010-01.pdf.ashx](http://fs.fish.govt.nz/Doc/23718/FAR_2014_67_2847_MAF2010-01.pdf.ashx)

<sup>35</sup> The Te Waka a Māui me ōna toka iwi forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries.

addition, this allowance covers any component of catch that is unlawfully discarded (in the case of QMS species).

Quantitative estimates of other sources of fishing-related mortality are not available for GUR7. The current allowance for other sources of fishing-related mortality is set at 40 t, which is approximately 5 % of the TACC. This proportion is based loosely on how robust the species is to survive capture and release and the fishing methods used to take the majority of catch.

### 2.1.3 Management Approach

The draft National Fisheries Plan for Inshore Finfish<sup>36</sup> acknowledges that it is currently not feasible or cost-effective to obtain robust estimates of biomass for a large number of inshore finfish stocks. The Plan refers to alternative approaches to monitoring stocks to inform management reviews including an approach based on accepted indicators of relative abundance. In these circumstances it is appropriate to set the TAC under section 13(2A) of the Act.

GUR7 currently falls within a group of stocks where a relative abundance monitoring approach is being used. Key indicators used to monitor and inform management of GUR7 include catch per unit effort from the west coast commercial bottom trawl fishery (CPUE), which has been updated to the end of the 2012/13 fishing year, and an estimate of relative biomass from the West Coast South Island trawl survey from 2013 with preliminary information available for 2015. These abundance indicators are used to estimate relative changes in stock status in relation to two target levels, which are proxies for  $B_{MSY}$ .

## 2.2 RATIONALE FOR MANAGEMENT INTERVENTION

### 2.2.1 Previous Review

The most recent reviews of the management settings for GUR7<sup>37</sup> occurred in 2009 and 2012. In 2009 the TAC was set at 759 tonnes, the TACC was increased by 5% to 715 tonnes and allowances for Māori customary (10 tonnes), recreational (20 tonnes), and other sources of fishing-related mortality (14 tonnes), were set for the first time. In 2012 the TAC was increased to 855 tonnes and the TACC was increased to 785 tonnes, based on the evidence of an increasing index of abundance from the WCSI trawl survey. Settings for non-commercial harvest were unchanged, however, the allowance for other sources of fishing-related mortality was increased from 14 to 40 tonnes to align with the approach for similar stocks.

### 2.2.2 Current Status

In 2014, MPI's Fishery Assessment Working Group concluded that the current abundance of GUR7 is about as likely as not (40 to 60%) to be at or above the target, and that overfishing is unlikely (<40%) to be occurring.

The assessment uses information from the West Coast South Island (WCSI) trawl survey and catch per unit of effort (CPUE) analyses from the west coast bottom trawl fishery (mixed species and flatfish). These data series have been accepted as reliable indices of relative abundance for GUR7 and have enabled the setting of reference points.

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<sup>36</sup> The Draft National Fisheries Plan for Inshore Finfish is a working document being used to guide management of fishstocks by the Ministry for Primary Industries. The plan will be refined further before being submitted for the Minister's approval under s11A of the Fisheries Act 1996.

One reference point is based on the CPUE and another based on the trawl survey (using the abundance of gurnard above 30 cm in length) to support management. Both indices come from the west coast area and exclude Tasman/Golden Bays). CPUE shows the abundance of GUR7 increasing considerably since 2009/10, but the index has not been updated since the end of the 2012/13 fishing year (see Figure 4).

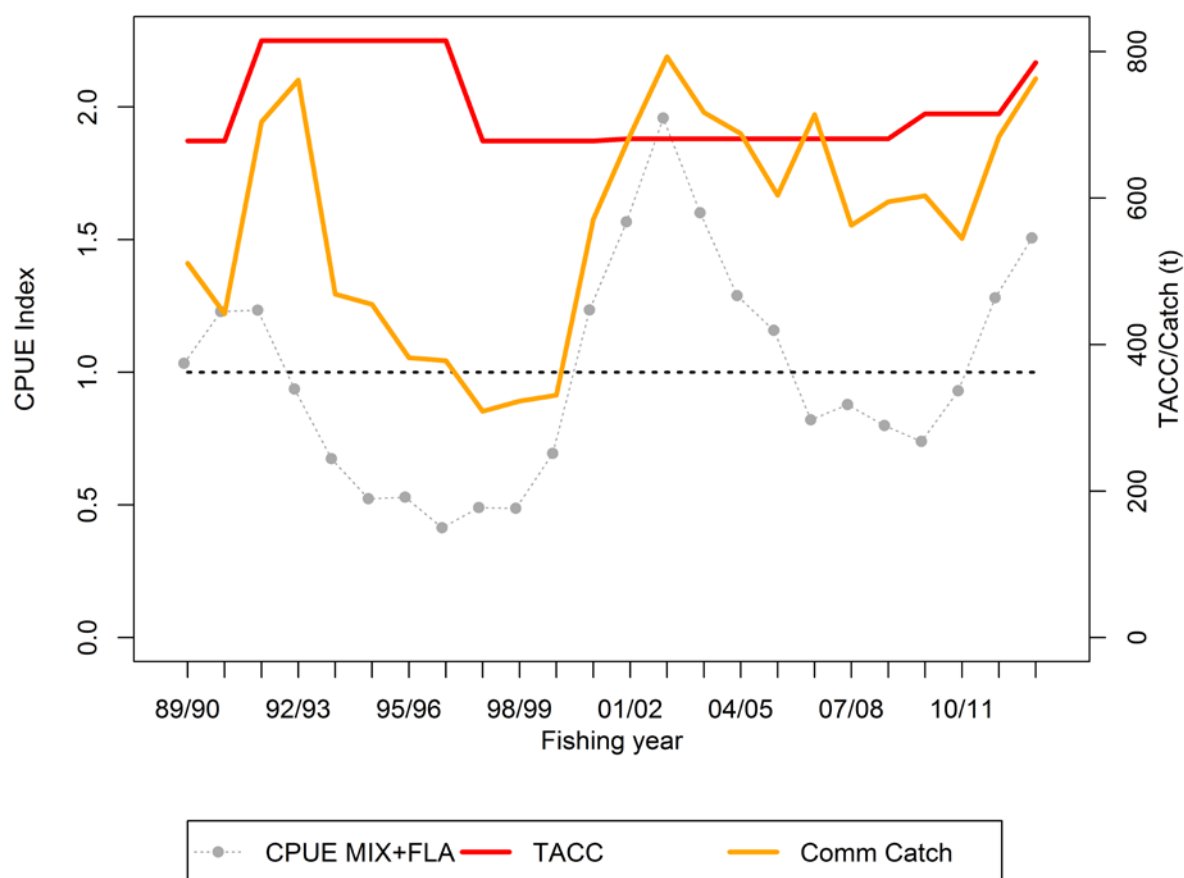


Figure 4: Standardised CPUE indices for GUR7 from a composite west coast inshore trawl fishery index series

The WCSI trawl survey relative biomass indices also indicate high abundance in recent years (see Figure 5). In 2013, estimates of pre-recruit fish from the WCSI trawl survey indicated moderate recruitment in recent years. The Working Group concluded that biomass has increased considerably since 2009/10 while there was only a moderate increase in annual catches.

Although yet to be considered by the Science Working Group process, preliminary estimates of relative biomass in GUR7 (gurnard above 30 cm) from the West Coast area of the recently completed WCSI trawl survey (March 2015) shows a substantial increase to 952.1 tonnes (lower bound: 496.0, upper bound: 1408.2; CV 24.0%). Initial analysis suggests that this estimate is likely to be accepted and used to update the survey series, which provides support for the recent increasing abundance.



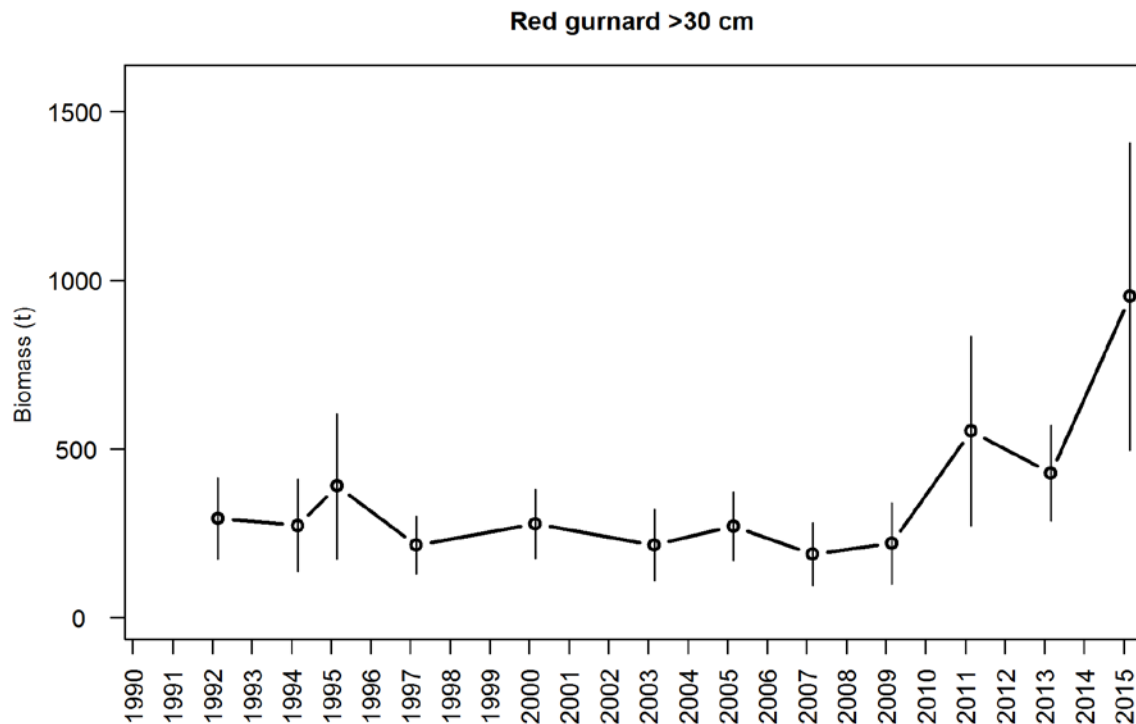


Figure 5: Red gurnard (>30 cm) biomass trends  $\pm$  95% CI (estimated from survey CVs assuming a lognormal distribution) from the West Coast part of the West Coast South Island trawl surveys.

### 3 Consultation

MPI consulted on your behalf on the three options set out in Table 2 below. MPI followed its standard consultation process.

Table 2: Proposed Management Settings for GUR7

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other Sources of Fishing-Related Mortality
Option 1 (Status Quo)	855	785	10	20	40
Option 2	887	815	10	21	41
Option 3 (MPI Preferred)	919	845	10	22	42

#### 3.1 SUBMISSIONS RECEIVED

Submissions on the GUR7 proposals were received from the following:

- Fisheries Inshore New Zealand (FINZ)
- Southern Inshore Fisheries Management Company Ltd (Southern Inshore).

## 3.2 SUMMARY OF SUBMISSIONS

A brief summary of the submissions is outlined below<sup>38</sup>. Further details of the submissions are discussed in the relevant sections of this paper.

Southern Inshore submits that it supports Option 3. FINZ submits it supports and endorses the Southern Inshore submission. FINZ further submits it considers that the proposed allowances for recreational and customary fishing are excessive and have not been set in accordance with the Act's provisions.

## 4 Legal Considerations

The following section provides information in addition to the considerations outlined in Appendix 1.

### 4.1 SECTION 8 – PURPOSE OF THE ACT

MPI considers that all options presented in this paper satisfy the purpose of the Act in that they provide for utilisation in the GUR7 fishery while ensuring sustainability.

Available information suggests all management options will ensure the long term sustainability of the stock. Option 1 is more cautious and reflects the uncertainty in information about the GUR7 stock status relative to default target levels and the level of increase in biomass. In contrast, increasing the TAC under Options 2 and 3 will allow for increased utilisation of the GUR7 stock while ensuring sustainability.

### 4.2 GENERAL OBLIGATIONS

MPI considers that the management options for GUR7 are consistent with the wide range of international obligations related to fishing, including the use and sustainability of fish stocks, and maintaining biodiversity. An assessment has been made to determine the GUR7 stock size in relation to an accepted management target and on that basis, review the catch limit to maintain the stock at or above the target. All options propose catch limits alongside a broader discussion of the monitoring approach to ensure sustainability.

MPI also considers the proposed management options to be consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. Ongoing work is being done within the area covered by GUR7 to promote policies that help to recognise customary use and management practices including, but not limited to, maintaining iwi forums and developing Iwi Fisheries Plans.

### 4.3 SECTION 9 – ENVIRONMENTAL PRINCIPLES

MPI considers that all options presented in this paper satisfy your obligations under section 9 of the Act. A summary of the interactions between the GUR7 fishery and the aquatic environment, and how these are likely to be affected by the proposals in this paper, is provided below.

#### 4.3.1 Fish bycatch

MPI anticipates that all options presented for an increase in TACC for red gurnard will cover the additional bycatch of GUR7 taken in fisheries targeting other species, including those whose TACCs are currently fully caught (eg snapper).

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<sup>38</sup> Copies of the submissions are available in Appendix 2

## 4.3.2 Protected species interactions

### 4.3.2.1 Seabirds

Management of seabird interactions with New Zealand's commercial fisheries is driven through the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA-Seabirds). The NPOA-Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species to the extent practicable.

Inshore trawl fisheries in Fisheries Management Area 3 (the same boundaries as GUR7) were assessed as having very low levels of risk of mortality to a small number of seabird species. MPI does not anticipate any increased risk of mortality to seabird species as a result of any of the proposals outlined in this paper as the increases to catch limits proposed are modest and will likely cover existing levels of bycatch only.

### 4.3.2.2 Marine mammals

Hector's dolphins, New Zealand fur seals and New Zealand sea lions occur on the west coast of the South Island and consideration needs to be given to the potential implications of an increase in the GUR7 TAC. The west coast South Island population of Hector's dolphins overlaps with the GUR7 trawl fishery. There is limited information on the interaction between Hector's dolphins and trawl fisheries, however, a trawl capture was observed as part of a scientific observer study on the east coast of the South Island in 1998 (Baird & Bradford 1999).

As discussed in relation to seabirds, red gurnard is substantially a bycatch of trawling. MPI does not anticipate any increased risk of mortality to marine mammal species as a result of any of the proposals outlined in this paper as the increases to catch limits proposed are modest and will likely cover existing levels of bycatch only.

### 4.3.2.3 Benthic impacts

Red gurnard is largely caught as a bycatch in mixed bottom trawl fisheries where trawl gear is on the seabed, as this is where the target fish species aggregate. The gear is generally fished hard down on the seabed, impacting benthic habitats.

Research has been reported to characterise both New Zealand's benthic environment and the level of benthic impact from fisheries activity.<sup>39</sup> This research combined the trawl footprint created for all target species for five years and overlaid benthic habitat classes to get a measure of the coverage of habitat classes by trawl gear.

As explained above, increasing the TACC for the bycatch GUR7 stock is unlikely to translate to a significant increase in overall trawling effort. Therefore, the trawl footprint and associated impacts on benthic habitat classes that have been assessed are unlikely to be altered under Options 2 and 3.

## 4.4 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations included in this paper.

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<sup>39</sup> <https://www.mpi.govt.nz/document-vault/5287>

## 4.5 SECTION 11 – SUSTAINABILITY MEASURES

Only section 11 measures that are directly relevant to GUR7 are discussed within this section. See Appendix 1 for consideration of other section 11 measures.

- a) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC, and allowances for customary take, recreational take, and incidental fishing-related mortality. Other standard management controls apply to the GUR7 fishery, for example deemed values, amateur bag limits, and fishing method constraints. The proposed changes to the TAC do not affect these measures.
- b) Sections 11(2)(a) and (b): have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that you consider relevant. MPI considers that both options proposed are consistent with the Hector's Dolphin Threat Management Plan<sup>40</sup>. MPI is not aware of any other policy statements, plans or strategies that should be taken into account for GUR7.

## 4.6 SECTION 12- CONSULTATION

In addition to the consultation considerations discussed elsewhere, Section 12(1)(b) requires that you provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga before setting or varying a TAC. Te Waka a Māui me Ōna Toka iwi forum was approached for their collective view on GUR7. No collective views were provided by Te Waka a Māui me Ōna Toka.

The Te Waka a Maui me ona Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan. This plan covers GUR7 and identifies red gurnard as a taonga species. MPI considers that the management options presented in this advice paper are consistent with the Plan's six management objectives. Specifically, both management options ensure adequate allowances for customary harvest, the sustainability of the fishery, and the appropriate management of environmental impacts. Options 2 and 3 would also increase the benefits from the GUR7 commercial fishery, contributing towards the achievement of Management Objective Three of the Plan.

## 4.7 SECTION 13(2A) – SETTING THE TAC

The best available information that MPI currently has on GUR7 is insufficient to enable reliable estimation of  $B_{CURRENT}$  and  $B_{MSY}$ .

Where reliable estimates of stock status in relation to  $B_{MSY}$  are not available, s 13(2A) of the Act requires the Minister to use best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield. The TAC options presented in this paper take into account the requirements listed in s 13(2A) and 13(3) of the Act, and offer differing approaches to managing the sustainability of the fishery, and the way and rate GUR7 moves to at or above the target level, given the available information.

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<sup>40</sup> <http://www.fish.govt.nz/en-nz/Environmental/Hectors+Dolphins/default.htm>

## 4.8 SECTIONS 20 & 21 – ALLOCATING THE TAC

The TAC must be apportioned among the relevant sectors and interests as required under sections 20 and 21 of the Act. Section 21 prescribes that you shall allow for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information. In the event of imperfect information, you are entitled to be cautious.

### 4.8.1 Recreational allowance

As discussed above, the 2011/12 National Panel Survey provided an estimate that 12 tonnes of red gurnard was harvested recreationally in GUR7 during the 2011/12 fishing year. Given uncertainty in using this estimate to predict current or future catches and the indications of increasing stock biomass, MPI considers it reasonable to provide for increases to the recreational allowance for GUR7 if the TAC is increased.

### 4.8.2 Customary allowance

There is no proposal to increase the customary allowance for GUR7. FINZ submits that MPI needs to review the reasonableness of customary allocations to reflect the available information. The GUR7 TAC was last reviewed in 2012. MPI has no information to indicate that customary catch has changed significantly over the last three years. The best available information suggests that current settings will provide for both current levels of catch and increased customary harvest of gurnard in GUR7. MPI considers that any general shifts to the approach to the setting of the customary allowance for GUR3 as suggested by FINZ would be best considered as part of work to further develop management approaches for GUR7 and should include the input and participation of the Forum.

The Whakapuaka (Delaware Bay) Taiapure, and the Te Tai Tapu (Kaihoka and Anatori), Manakaiaua/Hunts Beach, Mahitahi/Bruce Bay, Tauperikaka, Okarito Lagoon and Okura/Mussel Point mātaītai reserves are all within the GUR7 quota management area. MPI notes that the proposals in this paper will not impact on, or be impacted by, these taiapure and mātaītai reserves.

### 4.8.3 Other sources of fishing-related mortality

Information to inform the setting of an allowance for other sources of fishing-related mortality in GUR7 is uncertain. Options 2 and 3 proposes an increase to this allowance that would result in the allowance being approximately 5% of the TACC. This proportion is based loosely on the how robust the species is and the main fishing methods used. No submissions were made to suggest alternative approaches to the setting of this allowance.

### 4.8.4 TACC

Catches from the commercial sector have been near or above the TACC for the last three fishing years. The consistent levels of over catch indicate that there is the likelihood that the proposed increased TACCs will be fully caught.

Option 2 and Option 3 propose an increase to the TACC from 785 to 815 tonnes, and 785 to 845 tonnes respectively. These options more closely reflect the commercial catch of 837 tonnes in the 2013/14 fishing year. By increasing the TACC, fishers are more likely to be able

to cover GUR7 catch with ACE and, therefore, will be less likely to incur deemed value payments.

## 4.9 SECTION 75 – DEEMED VALUE RATES

MPI has consulted on changes to GUR7 deemed values. A discussion of the deemed value rates for GUR7 is included in Part C of this document.

# 5 Management Options

## 5.1 ANALYSIS OF OPTIONS

The final options for setting the TAC, TACC, and allowances for GUR7 (Table 3) do not differ from those consulted on. Option 1 retains the *status quo*, while Options 2 and 3 increase the TAC, TACC, recreational allowance, and allowance for other sources of fishing-related mortality. MPI notes that ongoing monitoring of the GUR7 stock is planned under all options to enable annual catch levels to be adjusted in response to future biomass changes.

Table 3: TAC, TACC and allowance options consulted on for GUR7

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other Sources of Fishing-Related Mortality
Option 1 ( <i>Status Quo</i> )	855	785	10	20	40
Option 2	887	815	10	21	41
Option 3 (MPI Preferred)	919	845	10	22	42

### 5.1.1 Option 1

Option 1 is the *status quo* and proposes no changes to the TAC, TACC or allowances for customary Māori, recreational or other sources of fishing-related mortality.

Option 1 takes a cautious approach and proposes not to respond to the indication of increased relative abundance given uncertainty about the level of the stock in relation to the target level, which is a proxy for  $B_{MSY}$ . This cautious approach may be preferred if there were not plans to monitor the stock and review the management settings regularly.

#### Impact

Given the information showing that relative abundance has increased, MPI considers it likely that the TACC could be exceeded again (the TACC was exceeded by 52 tonnes in 2013/14). As the majority of GUR7 is caught as bycatch, without additional annual catch entitlement (ACE) within the fishery, fishers might face higher deemed values bills. In 2013/14 GUR7 deemed value payments totalled \$4,168.74.

### 5.1.2 Option 2

Under Option 2:

- The TAC would be increased from 855 tonnes to 886 tonnes (an increase of 4%).
- The TACC would be increased from 785 tonnes to 815 tonnes (an increase of 4%).
- The customary Māori allowance would remain at 10 tonnes.
- The recreational allowance would be increased from 20 to 21 tonnes (an increase of 5%).

- The allowance for other sources of fishing-related mortality be set at 41 tonnes (5% of the TACC).

Option 2 provides a “midway” approach that responds to the indication that relative abundance is relatively high but provides for smaller utilisation increases than Option 3. While MPI was interested in the views of tangata whenua and stakeholders on this option, the difference in catch limits between Option 2 and Option 3 is not considered to provide a significant difference in relation to risk to sustainability.

No information has been provided that justifies Option 2 as a better option than others in this paper. MPI recommends that you do not implement Option 2.

### 5.1.3 Option 3

Under Option 3:

- The TAC be increased from 855 tonnes to 919 tonnes (an increase of 8%)
- The TACC be increased from 785 tonnes to 845 tonnes (an increase of 8%).
- The customary Māori allowance would remain at 10 tonnes.
- The recreational allowance would increase from 20 tonnes to 22 tonnes (an increase of 10%).
- The allowance for other sources of fishing-related mortality be set at 42 tonnes (5% of the TACC, an increase of 5%).

MPI recommends that you implement Option 3, and considers that this option best responds to the 2014 assessment that it is as likely as not, that GUR7 is currently at or above the target level combined with preliminary information from the 2015 WCSI trawl survey indicating a recent increase in abundance. The increase to the TAC included within Option 3 allows for increased utilisation, while ongoing monitoring ensures sustainability.

Option 3 was supported by Southern Inshore and FINZ.

Southern Inshore also submitted a desire to develop a set of decision rules that allow utilisation of stocks in a timelier manner.

MPI is working with FINZ to improve the management approaches for inshore stocks, including for GUR7. Any new approaches will be adopted over time and incorporated into future advice.

The TAC increase within Option 3 allows for increases to the allowances and TACC currently set for GUR7.

Option 3 also proposes a 10% (2 tonnes) increase to the recreational allowance. This adjustment recognises that GUR7 is currently at a relatively high level of abundance as well as the uncertainty in estimates of recreational harvest within GUR7.

FINZ submits that the proposed recreational allowances (10 tonnes above the 2011/12 estimate) is excessive.

Under Option 3 the allowance for other sources of fishing-related mortality is increased from 40 tonnes to 42 tonnes to align with 5% of the revised TACC. No changes are proposed to the Maori customary allowance.

The TACC of 845 tonnes within Option 3 would enable the commercial fishing industry to increase value obtained from the fishery. Based on a 2015/16 port price of \$1.82 per kilogram, a 60 tonne increase in commercial catch is worth approximately \$109,200 annually. The TACC increase should also reduce concerns that the current abundance of GUR7 is creating extra costs within the mixed trawl fishery.

## **5.2 RECREATIONAL CONTROLS**

There is no information to suggest a change to recreational regulations would be needed to implement your decisions and no changes to the relevant recreational daily bag limit are proposed.

## **6 Conclusion**

MPI's preferred option is Option 3 – increasing the TAC of GUR7 to 919 tonnes, increasing the TACC to 845 tonnes, increasing the allowance for recreational interests to 22 tonnes and increasing the allowance for other sources of fishing-related mortality to 42 tonnes.

The abundance indicators for GUR7 (CPUE analysis and the WCSI trawl survey) show relative biomass is at an historic high for the period monitored. Option 3 aligns with recent commercial landings and will provide for increased utilisation in the short term. Programmed updates to the abundance indicators will support ongoing monitoring to ensure that the catch remains sustainable over the longer term.

MPI considers all three options are consistent with your statutory obligations.

MPI notes that you have broad discretion in exercising your powers of decision making, and may make your own independent assessment of the information presented to you in making your decision. You are not bound to choose the option recommended by MPI.



## Rig 2 (SPO2)

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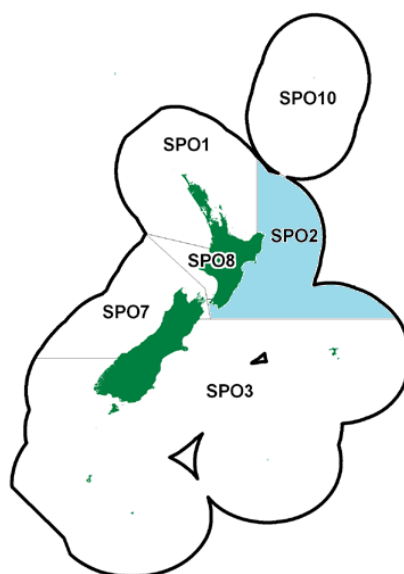


Figure 1: Quota Management Areas (QMAs) for rig (SPO) stocks. SPO2 indicated by shading.

### 1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits for the SPO2 fishstock (see Figure 1).

Recently updated indicators of abundance for SPO2 show the biomass has continued to increase since the last TAC change in 2011 (when the TACC went from 122 to 130 tonnes). The information indicates a possible opportunity to allow increased utilisation, however, the sustainability risks for this shark stock are difficult to ascertain. MPI consulted on two options for management settings for SPO2 for the upcoming fishing year – one that retains the *status quo* and one that increases the total allowable catch (TAC), the total allowable commercial catch (TACC), and the recreational allowance. These options are shown in Table 1.

Four submissions were received on the SPO2 proposals. One submission supporting the *status quo* option was received from recreational fishing interests in Hawkes Bay who have requested no changes to fisheries management in the area until current concerns about trawling and the recreational fishing experience have been addressed. Three submissions were received from commercial fishing stakeholders supporting Option 2.

After considering the submissions received and the available information, MPI recommends that you proceed with Option 1, and retain the *status quo*

While MPI acknowledges the submissions from commercial stakeholders, there is concern that the status of the SPO2 stock relative to  $B_{MSY}$  and the effect of increased utilisation are uncertain. The sustainability risk to the stock is further accentuated by the biological characteristics of the species which make rig susceptible to overfishing.

MPI notes that it is working with commercial stakeholders to develop improved approaches to managing stocks with limited information such as SPO2. In addition, new information on the

status of all rig stocks in New Zealand is scheduled to become available in 2016, and will support future reviews in line with new management approaches.

The best available information does not suggest the need to change the allowances for customary and recreational take of rig, nor the allocation for other sources of fishing-related mortality.

Table 1: TACs, TACCs and allowance options consulted on for SPO2

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality
Option 1 (MPI Preferred) ( <i>Status Quo</i> )	130	108	5	10	7
Option 2	148	124	5	12	7

## 2 Context

### 2.1 BACKGROUND

#### 2.1.1 Biology

Rig are found around New Zealand, usually in waters no more than 200m deep. Longevity is not known because few large fish have been aged, however, a male rig that was mature at tagging was recaptured after nearly 14 years, suggesting a longevity of 20 years or longer. Females reach a maximum length of 151 cm fork length (FL) and males 126 cm FL. In South Island waters, male and female rig attain maturity at 5–6 years (about 85 cm FL) and 7–8 years (about 100 cm FL), respectively.

Rig give birth to young during spring and summer following a 10-11 month gestation period. Most females begin a new pregnancy soon after giving birth, and therefore breed every year. The number of young produced increases exponentially with the length of the mother, and ranges from 2 to 37.

Young are generally born in shallow coastal waters, especially in harbours and estuaries, throughout North and South Island waters. Rig grow rapidly during their first summer, and then disappear as water temperatures drop in autumn–winter. They presumably move into deeper water.

Rig make extensive coastal migrations, with one tagged female moving at least 1160 km. Over half of tagged rig that have been recaptured had moved over 50 km, and over half of the females had moved more than 200 km. Females travel further than males, and mature females travel further than immature females.

Information relevant to determining rig stock structure in New Zealand was reviewed in 2009.<sup>41</sup> These reviews concluded that the boundaries between biological rig stocks are poorly defined, especially in the Cook Strait region. Biological links between the current management stocks will be investigated further in a research project scheduled for 2016.

<sup>41</sup> Francis, M P (2010) Movement of tagged rig and school shark among QMAs, and implications for stock management boundaries. New Zealand Fisheries Assessment Report 2010/03. 22 p.

## 2.1.2 SPO2 Fishery

### 2.1.2.1 Commercial

Rig are caught in coastal waters throughout New Zealand. Most of the catch is taken in water less than 50 m deep during spring and summer, when rig aggregate inshore. Following the introduction of rig into the QMS in 1986, landings declined to less than half those of the previous decade.

The majority of rig taken commercially in SPO2, is bycatch of other target fisheries. Rig is predominantly taken as bycatch from the tarakihi (TAR 2) and red gurnard (GUR 2) trawl fisheries (approximately 54%). Other fisheries catching rig include flatfish (FLA 2), rig target (SPO2), blue warehou (WAR 2) and blue moki (MOK 1) set net fisheries.

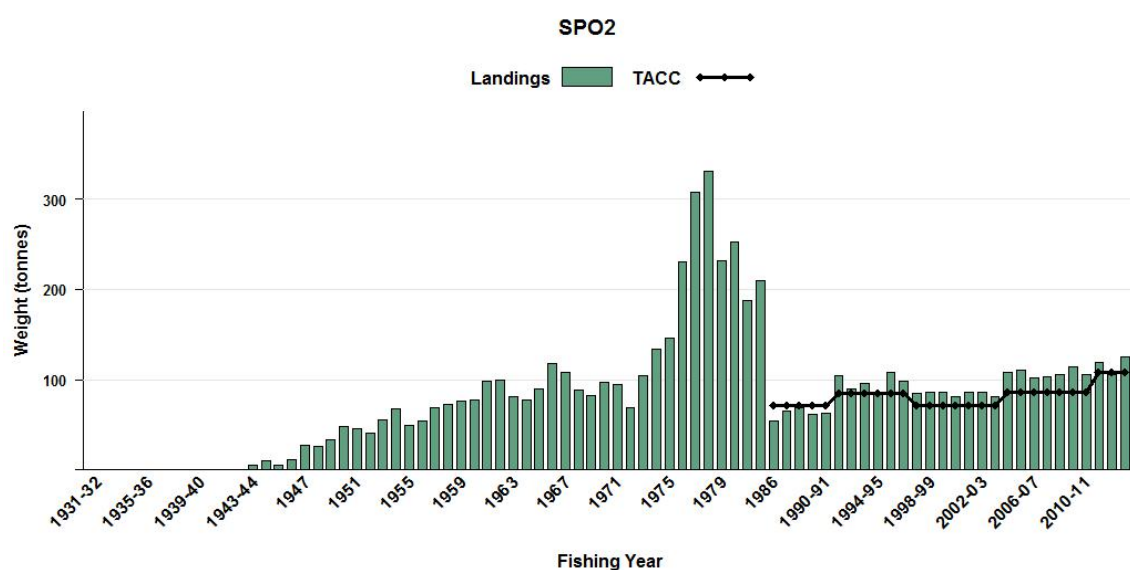


Figure 2: Landings and the TACC for SPO2 from 1931/32 to 2013/14

The TACC for rig has been exceeded every year since 1992/1993 except for the 2012/13 fishing year. Since 2006, the annual commercial landings have fluctuated between 101 and 127 tonnes (Figure 2). The average catch of SPO2 in the last 5 fishing years was 114.5 tonne.

In the 2013/14 fishing year, 20,395kg of SPO2 was landed in excess of the TACC (approximately 18.9%), with deemed values paid. In contrast 1462 kg of SPO2 was released under Schedule 6 of the Act, possibly indicating a misalignment between deemed value and port price, or that SPO caught has not survived capture. A discussion of the deemed value rates for SPO2 is included in the accompanying consultation document “Review of Deemed Value Rates for Selected Finfish Stocks.

### 2.1.2.2 Recreational

Rig are caught by recreational fishers throughout SPO2, although rig are not known to be a primary target species for recreational fishers in the Hawke Bay. The recreational harvest within SPO2 is managed under a mixed species total bag limit of 20 fish per person per day. No minimum legal size limit applies to rig and there is a minimum mesh size of 150mm for nets targeting rig in SPO2.

Due to the need for better information on recreational harvests, in 2011/12 MPI commissioned new recreational research (a large-scale, multi-species study called the National Panel Survey) to obtain better harvest estimates for a range of stocks. The National

Panel Survey<sup>42</sup> estimate for SPO2 is based on a relatively small number of events and fishers and, as a result, is subject to relatively high uncertainty. It also does not include amateur catch taken on charter vessels or by commercial fishers under section 111 approvals (which provide for recreational catch on board commercial vessels). The survey estimated that 7172 individual rig were taken in SPO2 in the 2011/12 fishing year. Using the average weight of rig from the survey (1.09kg), it has been calculated that around 7.8 tonnes of rig was harvested recreationally in SPO2 for the 2011/12 fishing year. In addition to the uncertainty in the harvest estimate, recreational catch is likely to vary from year to year. Information on current catches is not available.

#### 2.1.2.3 *Māori Customary*

Maori fishers traditionally caught large numbers of rig during the last century and early this century. Rig was probably an important species, although spiny dogfish and school shark were also taken. MPI recognises that customary fishers harvest rig and that rig was historically of importance to Māori.

Customary catch data available for SPO2 does not show a large take of rig but there are some uncertainties surrounding this. For those tangata whenua groups operating under the customary fishing regulations<sup>43</sup>, there is a requirement for Tangata Kaitiaki/Tiaki to provide MPI with information on Māori customary harvest of fish. However, some tangata whenua in SPO2 are still operating under regulation 50 and 51 of the Fisheries (Amateur Fishing) Regulations 2013 (the Amateur Regulations), and it is not mandatory to report customary permits or customary catch.

Catch by customary Māori fishers may also be occurring within the amateur daily bag limit (and therefore currently provided for under the recreational allowance).

#### 2.1.2.4 *Other Sources of Fishing-Related Mortality*

This allowance covers the mortality of fish that results from various factors associated with fishing, but not reported as catch. This can include fish that escape the gear, but die after contact with fishing gear. In addition, this allowance covers any component of catch that is unwanted and unlawfully discarded (in the case of QMS species).

The Schedule 6 provision only allows for the return of commercially caught SPO2 in the case that they are alive and likely to survive. Schedule 6 is only provided for species known to be robust and generally likely to survive capture and release. However, there is a risk that some rig released under the schedule will not survive, and this risk is likely greatest for rig caught with set nets.

Quantitative estimates of other sources of fishing-related mortality are not available for SPO2. MPI recommends retaining the current allowance for other sources of fishing-related mortality at 7 t.

### 2.1.3 **Management Approach**

The draft National Fisheries Plan for Inshore Finfish<sup>44</sup> acknowledges that it is currently not feasible or cost-effective to obtain robust estimates of biomass for a large number of inshore finfish stocks. The Plan refers to alternative approaches to monitoring stocks to inform

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<sup>42</sup> Available at [http://fs.fish.govt.nz/Doc/23718/FAR\\_2014\\_67\\_2847\\_MAF2010-01.pdf.ashx](http://fs.fish.govt.nz/Doc/23718/FAR_2014_67_2847_MAF2010-01.pdf.ashx)

<sup>43</sup> Fisheries (Kaimoana Customary Fishing) Regulations 1998 and/or Fisheries (South Island Customary Fishing) Regulations 1999.

<sup>44</sup> The Draft National Fisheries Plan for Inshore Finfish is a working document being used to guide management of fishstocks by the Ministry for Primary Industries. The plan will be refined further before being submitted for the Minister's approval under s11A of the Fisheries Act 1996.

management reviews including an approach based on accepted indicators of relative abundance. In these circumstances section 13(2A) of the Act allows the Minister to use the best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, the B<sub>MSY</sub> level.

MPI notes that the management of rig stocks should also take into account the National Plan of Action- Sharks 2013 (NPOA)<sup>45</sup>. This policy instrument is part of New Zealand's responsibility to act in accordance with the objectives of the International Plan of Action for the Conservation and Management of Sharks. Work to improve management of sharks in line with the objectives of the NPOA is ongoing, with further consideration of the management approach for all New Zealand rig stocks scheduled for 2016. In the meantime, SPO2 currently falls within a group of stocks where the relative abundance monitoring approach is being used. The key indicator for SPO2 is currently catch per unit effort from the commercial fishery (CPUE). This has recently been updated to the end of the 2013/14 fishing year.

Another key component of the management framework for SPO2 and other rig stocks is its inclusion on Schedule 6 of the Fisheries Act 1996. This has been in place since May 2012 and provides for commercially caught rig, which is likely to survive, to be returned to the sea, rather than the standard requirement to land all catch.

## 2.2 RATIONALE FOR MANAGEMENT INTERVENTION

### 2.2.1 Previous Review

The SPO2 TAC was last reviewed in 2011. The TAC was increased from 122 tonnes to 130 tonnes (6% increase). The TACC was increased from 86 tonnes to 108 tonnes (20% increase). The customary allowance was considered to not reflect the available information on customary catch levels and was adjusted down from 20 tonnes, to 5 tonnes. The recreational allowance was not adjusted and remained at 10 tonnes. The allowance for other sources of fishing-related mortality was increased by 1 tonne (17% increase).

### 2.2.2 Current Status

The best available information on stock status for SPO2 is a standardised trip-based bottom trawl CPUE index. A corresponding set net CPUE index has been investigated, but not accepted as a meaningful indicator of abundance due to small amounts of available data. Trawl CPUE indices have been updated in 2009, 2011, 2013 and in 2015. The most recent updated analysis was based on complete trips which landed SPO2 using the bottom trawl method from 1989/90 to 2013/14, adjusted for changes in conversion factors.

This CPUE series suggests biomass had an upward trend from the beginning of the series to the early 2000s, after which biomass fluctuated to a low in 2010/11 followed by a substantial increase over three successive years.

The status of the SPO2 stock was discussed in 2015 through MPI's Fishery Assessment Working Group process. It was concluded that current catches of SPO2 (which have exceeded the current TACC) are unlikely to cause the stock to decline.

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<sup>45</sup> <http://www.fish.govt.nz/en-nz/Environmental/Sharks/default.htm>

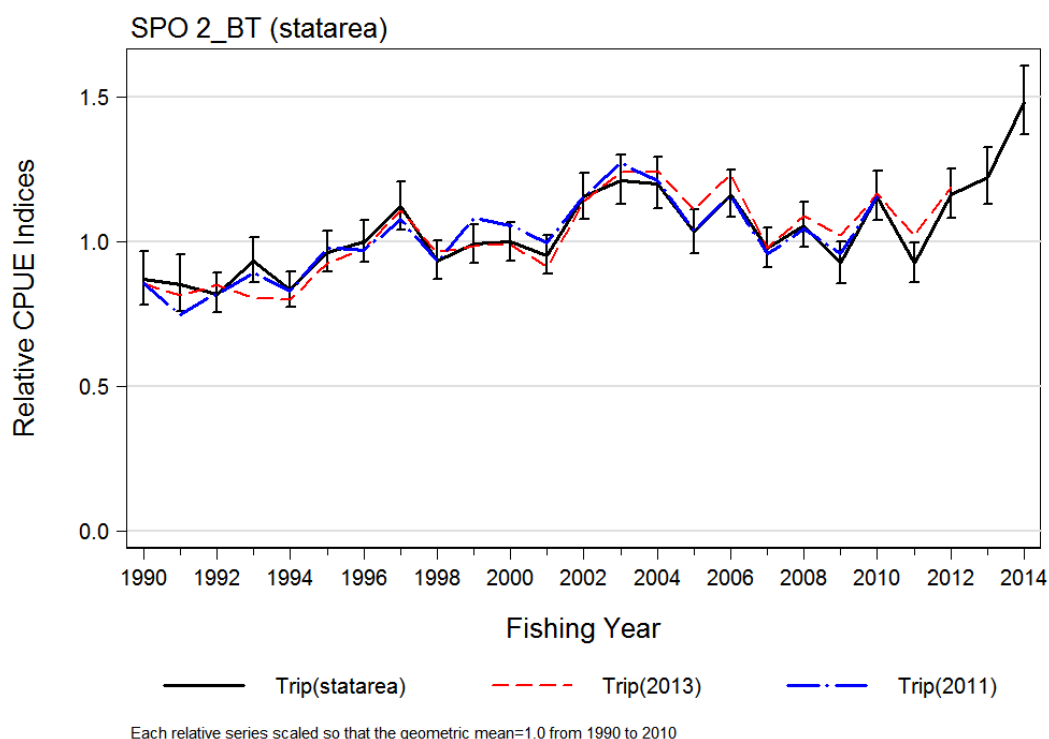


Figure 3: Lognormal standardised CPUE series and associated 95% error bars for SPO2 based on the “statarea” definition to identify valid bottom trawl setnet trips which landed to SPO2 up to 2013–14. Also shown for comparison are the equivalent SPO2 BT CPUE series calculated in 2011 (Kendrick & Bentley in prep) and 2013 (Starr & Kendrick in prep).

Information is not currently available to determine the stock size in relation to an accepted management target as promoted through the National Plan of Action for Sharks 2013 (NPOA-Sharks 2013). A process to determine the management target is planned for 2016 alongside updated information.

### 3 Consultation

MPI consulted on your behalf on the three options set out in Table 2 below. MPI followed its standard consultation process.

Table 2: TACs, TACCs and allowance options consulted on for SPO2

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality
Option 1 (MPI Preferred) ( <i>Status Quo</i> )	130	108	5	10	7
Option 2	148	124	5	12	7

#### 3.1 SUBMISSIONS RECEIVED

Submissions on the SPO2 proposals were received from the following:

- Area 2 Inshore Finfish Management Company Limited (Area 2)
- Fisheries Inshore New Zealand (FINZ)

- Wayne Bicknell on behalf of Hawkes Bay Sports Fishing Club, Legasea Hawkes Bay, Zone 5 Sports Fishing (“Hawkes Bay Sports Fishing submission”)
- Ngati Porou Seafood Limited

## 3.2 SUMMARY OF SUBMISSIONS

A brief summary of the submissions<sup>46</sup> is outlined below. Further details of the submissions are discussed in the relevant sections of this paper.

The Hawkes Bay Sports Fishing submission noted that information from a ramp survey that they had undertaken showed only 0.075 rig was caught per fisher per day and this was not perceived to align with the science information indicating increased abundance. Further, given recreational fishers were currently in discussions with commercial fishers and MPI regarding concerns about the Hawkes Bay area, they submit that no changes should be made to management settings within the wider Fisheries Management Area 2 (the same boundaries as SPO2) until concerns are resolved. Given a large proportion of rig are taken by the method of bottom trawl, concerns were raised that trawl activity may increase and exacerbate existing concerns in the Hawke Bay area.

Both Ngati Porou Seafoods and Area 2 Finfish, supported by Fisheries Inshore New Zealand, supported Option 2 because of the benefits from allowing for increased utilisation.

## 4 Legal Considerations

Legal considerations relevant to your decisions are discussed in the following paragraphs.

### 4.1 SECTION 8 – PURPOSE OF THE ACT

MPI considers that all options presented in this paper satisfy the purpose of the Act in that they provide for utilisation in the SPO2 fishery while ensuring sustainability.

Available information suggests both management options will ensure the sustainability of the stock. Option 1 is more cautious and reflects the uncertainty in information about the SPO2 stock status relative to default target levels and the level of increase in biomass. In contrast, increasing the TAC under Option 2 will allow for increased utilisation of the SPO2 stock, but with a greater risk to sustainability that MPI would manage via ongoing monitoring and future reviews.

### 4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

MPI considers that all options presented in this paper satisfy your obligations under section 9 of the Act. A summary of the interactions between the SPO2 fishery and the aquatic environment, and how these are likely to be affected by the proposals in this paper, is provided below.

#### 4.2.1 Fish bycatch

Retaining the *status quo* under Option 1 would not result in changes to fish bycatch. MPI anticipates that the increase in TACC for rig proposed under Option 2 would cover the additional catch of SPO2 taken as bycatch and would not result in additional catch of species taken in association. Given that rig is a Sixth Schedule species, it is unlikely that the supply of annual catch entitlement (ACE) for SPO2 has been constraining trawl fisheries for other stocks. An increase to the TACC would not be expected to translate to a significant increase in trawl fishing effort and associated impacts on other species.

<sup>46</sup> Copies of the submissions are available in Appendix 2

## 4.2.2 Protected species interactions

### 4.2.2.1 Seabirds

Management of seabird interactions with New Zealand's commercial fisheries is driven through the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA-Seabirds). The NPOA-Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species to the extent practicable.

Inshore trawl and setnet fisheries in Fisheries Management Area 2 (the same boundaries as SPO2) were assessed to contribute very low levels of risk to a small number of seabird species. Option 1 would not change current risks. A modest TACC increase under Option 2 would be unlikely to intensify effort associated with bycatch trawl fisheries, and MPI does not anticipate any significant change to the current practices within the mixed trawl fishery and, hence, no change in the interactions with seabirds under Option 2.

### 4.2.2.2 Benthic impacts

The majority of SPO2 taken is as a bycatch of the mixed species bottom trawl fleet in FMA 2. The trawl gear used by vessels in this fleet is often fished hard down on the seabed. Given that SPO2 is not a trawl target species it is highly unlikely that either option would result in a significant change in trawler behaviour. Furthermore, if vessels were to increase effort under Option 2, it is highly likely that any future fishing effort will occur over ground that has been trawled previously. MPI does not anticipate any significant increase in trawling activity and, therefore, benthic impacts arising from the proposed TAC increase under Option 2.

## 4.3 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations included in this paper.

## 4.4 SECTION 11 – SUSTAINABILITY MEASURES

Only section 11 measures that are directly relevant to SPO2 are discussed within this section. See Appendix 1 for consideration of other section 11 measures.

- a) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC, and allowances for customary take, recreational take, and other sources of fishing-related mortality. Other standard management controls apply to the SPO2 fishery, for example deemed values, amateur bag limits, and fishing method constraints. The proposed options do not affect these measures.
- b) Sections 11(2)(a) and (b): have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that you consider relevant. MPI considers that both options proposed are consistent with the Hector's Dolphin Threat Management Plan. MPI is not aware of any other policy statements, plans or strategies that should be taken into account for SPO2.



## 4.5 SECTION 13 (2A) – SETTING THE TAC

The best available information that MPI currently has on SPO2 is insufficient to enable reliable estimation of  $B_{CURRENT}$  and  $B_{MSY}$ .

Where reliable estimates of stock status in relation to  $B_{MSY}$  are not available, s 13(2A) of the Act requires the Minister to use best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield. The TAC options presented in this paper take into account the requirements listed in s 13(2A) and 13(3) of the Act, and offer different approaches to managing the sustainability of the fishery, and the way and rate SPO2 moves towards a level that is at or above the target level, given the available information.

## 4.6 SECTIONS 20 & 21 – ALLOCATING THE TAC

The TAC must be apportioned among the relevant sectors and interests as required under sections 20 and 21 of the Act. Section 21 prescribes that you shall make allowances for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information. In the event of imperfect information, you are entitled to be cautious.

### 4.6.1 Recreational allowance

The 2011/12 National Panel Survey provided an estimate that 7.8 tonnes of rig was harvested recreationally in SPO2 during the 2011/12 fishing year. Given uncertainty in using this estimate to predict current or future catches and the indications of increasing stock biomass, MPI considers it reasonable to provide for an increase to the recreational allowance for SPO2 if the TAC is increased.

### 4.6.2 Customary allowance

There is no proposal to increase the customary allowance for SPO2. FINZ submits that MPI needs to review the reasonableness of customary allocations to reflect the available information. The SPO2 TAC was last reviewed in 2011. Information on customary catch is uncertain, but MPI has no information to indicate that customary catch has changed significantly over the last four years. The best available information suggests that current settings will provide for both current levels of catch and a moderate level of increase in customary harvest of rig in SPO2. MPI considers that any general shifts to the approach to the setting of the customary allowance for SPO2 as suggested by FINZ would be best considered as part of work to further develop management approaches for SPO2 and should include the input and participation of tangata whenua.

The Hakihea, Horokaka, Toka Tumure, Te Hoe, and Moremore mātaihai reserves are all within the SPO2 quota management area. MPI notes that the proposals in this paper will not impact on, or be impacted by, these mātaihai reserves.

### 4.6.3 Other sources of fishing-related mortality

Information to inform the setting of an allowance for other sources of fishing-related mortality in SPO2 is uncertain. Both Options 1 and 2 propose retaining the current allowance that equates to approximately 5% of the TACC. This takes into account the various sources of

incidental fishing-related mortality present in SPO2, and is consistent with recently reviewed rig stocks and other inshore shark stocks on Schedule 6. No alternative views or approaches were put forward in submissions.

#### 4.6.4 TACC

Catches from the commercial sector have been near or above the TACC for over twenty years. The consistent levels of catch indicate that there is capacity and desire to fully catch the TACC to the levels proposed under either option.

Option 2 proposes an increase to the TACC from 108 to 124 tonnes, which aligns with the commercial catch of 125 tonnes taken in the 2013/14 fishing year. By increasing the TACC, Option 2 provides for an increase in value to be obtained from the stock without compromising sustainability. However, Option 2 would carry a slightly higher sustainability risk than Option 1, given the uncertainty in stock status and the susceptibility of this shark species to overfishing.

### 4.7 SECTION 75 – DEEMED VALUE RATES

MPI has consulted on changes to SPO2 deemed values. A discussion of the deemed value rates for SPO2 is included in Part C of this document.

## 5 Management Options

### 5.1 ANALYSIS OF OPTIONS

The final options for setting the TAC, TACC, and allowances for SPO2 (Table 3) do not differ from those consulted on. Option 1 retains the *status quo*, while Option 2 increases the TAC, TACC, and recreational allowance.

Table 3: TAC, TACC and allowance options consulted on for SPO2

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality
Option 1 (MPI Preferred) ( <i>Status Quo</i> )	130	108	5	10	7
Option 2	148	124	5	12	7

#### 5.1.1 Option 1 (MPI Preferred)

Under Option 1, the existing TAC would be retained. This option, which is supported by the Hawkes Bay Sport Fishing submission, reflects a cautious approach which gives greatest weight to uncertainty in information on stock status.

MPI recommends that you implement Option 1. MPI considers that this option appropriately reflects the biological characteristics of rig which make them susceptible to overfishing and the uncertainty in stock status of SPO2.

While adopting Option 1 would be at the expense of obtaining a modest increase in value from the stock, MPI notes that future reviews will be informed by better information and opportunities for greater utilisation will be explored. Research is underway to improve our

understanding of the stock structure of SPO, and collaboration with industry will develop improved approaches to managing SPO stocks.

### *Impact*

Commercial fishers are currently facing deemed value payments as a result of overcatch of the TACC. Under this option these deemed value payments would continue to be incurred. To reduce the amount of overcatch occurring MPI is intending to increase the interim deemed values. This change will provide greater incentives for fishers to balance their catch with ACE during the fishing year.

In addition, deemed values paid for over catch of the SPO2 TACC, reduce the value of catch landings in target fisheries that take rig as bycatch in instances where Schedule 6 cannot be used.

### 5.1.2 Option 2

Under Option 2:

- The TAC would be increased from 130 tonnes to 148 tonnes (an increase of 14%).
- The TACC would be increased from 108 tonnes to 124 tonnes (an increase of 15%).
- The customary Māori allowance would remain at 5 tonnes.
- The recreational allowance would be increased from 10 tonnes to 12 tonnes (an increase of 20%).
- The allowance for other sources of fishing-related mortality would remain at 7 tonnes (approximately 5% of the TACC).

The increase to the TAC, included within Option 2, allows for increased utilisation, without exposing the stock to significant sustainability risk. Best available scientific information suggests that the stock is unlikely to decline under current catches. However, given that the status of the stock is uncertain and it is characterised by relatively low productivity, this option would be associated with a greater level of risk than the *status quo*. Should you prefer this option, MPI notes that new research information will be available next year to inform further adjustments to sustainability measures for the stock if required.

Option 2 is supported by Ngati Porou Seafoods, Area 2 Finfish and FINZ.

Hawkes Bay Sport Fishing does not support Option 2. While MPI acknowledges concerns from recreational fishers about changes to the *status quo*, it is noted that the proposed provision for increased utilisation is not expected to increase trawl activity and is for a species that has not been identified as of concern during recent discussions with the recreational sector.

While estimates of SPO2 commercial catch from the Hawkes Bay are uncertain, the available information suggests that no more than 30% of the total SPO2 commercial catch is taken from the bay.

Regardless of the option chosen for SPO2, MPI will continue to work with the recreational and commercial sectors, through a separate process, to address concerns about Hawkes Bay fishing. Should you prefer Option 2, MPI notes that this should not prevent other fisheries management processes and decisions occurring in the wider management area if supported by best available information.

Option 2 proposes an increase to the TAC, provides for a TACC that would be 10 tonnes above the average commercial catch over the last five years, and provides for an increase to the recreational allowance of 2 tonnes.

No changes are proposed to the Māori customary allowance as best available information available suggests that current settings will provide for current levels of catch.

No change is proposed to the allowance for other sources of fishing-related mortality which would be approximately 5% of the proposed TACC.

The TACC of 124 tonnes proposed under Option 2 would provide for the commercial fishing industry to increase the value obtained from the fishery. Based on a 2015/16 port price of \$5.28/kg, this would generate additional revenue of \$84,480.00.

## 6 Other Matters

### 6.1 RECREATIONAL CONTROLS

There is no information to suggest a change to recreational regulations would be needed to implement your decisions and no changes to the relevant recreational daily bag limit are proposed.

## 7 Conclusion

MPI recommends Option 1 – retaining the status quo. Available information from CPUE analysis suggests the biomass of SPO2 has continued to increase since the TAC and TACC were increased in 2011. However, although it is unlikely that the stock will decline under current catches, the current status of SPO in relation to  $B_{MSY}$  is unknown.

Option 1 proposes a cautious approach of retaining the current TAC, TACC, and allowances to recognise the uncertainty in information and the biological characteristics of the stock. This approach is supported by the Hawkes Bay Sport Fishing submission as it recognises uncertainty in information and the biological characteristics of shark species which make them vulnerable to overfishing. More generally the Club opposes changes to management settings at this time.

Option 2 provides a more responsive approach to the relative abundance information that indicates the stock is increasing in size, although carrying a greater risk to sustainability. The increase to the TAC, included within Option 2, would permit enhanced utilisation of the SPO2 stock. The increased risk to sustainability under this option would be managed by ongoing monitoring of stock status and adjustment to sustainability measures as required.

Both options presented in this paper will enable you to set a TAC that is not inconsistent with the objective of moving the stock towards or above  $B_{MSY}$ .

MPI notes that you have broad discretion in exercising your powers of decision making, and you may make your own independent assessment of the information presented to you in making your decision. You are not bound to choose the option recommended by MPI.

## Rig 7 (SPO7)

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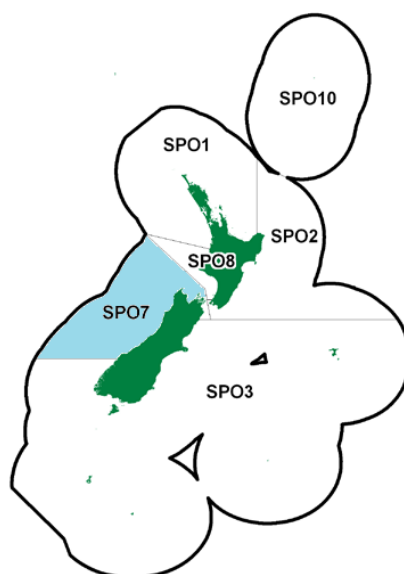


Figure 1: Quota Management Areas (QMAs) for rig (SPO) stocks. SPO7 indicated by shading.

## 1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits for the SPO7 fishstock (see Figure 1).

The available information suggests that the abundance of SPO7 has increased in recent years. This information suggests that there is an opportunity to provide for greater utilisation from SPO7 while ensuring sustainability. MPI consulted on two options for management settings for SPO7 for the upcoming fishing year – one that retains the *status quo* and one that increases the total allowable catch (TAC) the total allowable commercial catch (TACC), the recreational allowance and the allowance for all other mortality to the stock caused by fishing. These options are shown in Table 1.

Two submissions were received on the proposals for SPO7. These submissions were both from commercial stakeholder organisations and both were in support of Option 2, although it was suggested that the stock could support higher TACs than proposed.

After considering the submissions received, MPI recommends Option 2, that the TAC for SPO7 is increased by 36 tonnes, from 270 tonnes to 306 tonnes, the TACC is increased by 25 tonnes, from 221 tonnes to 246 tonnes, and the recreational allowance is increased by 4 tonnes, from 29 tonnes to 33 tonnes. In addition, MPI proposes that the allowance for other sources of fishing-related mortality be increased by 7 tonnes, from 5 tonnes to 12 tonnes (5% of the TACC) to be consistent with allowances set for other recently reviewed rig stocks. Option 2 provides for an increase in utilisation and it is estimated that the associated TACC increase would result in an \$82,500.00 increase in commercial revenue per annum. New information for all rig stocks in New Zealand is scheduled to become available in 2016 and will support future reviews if required.

The best available information shows the customary take of rig is well within the existing allowance and MPI recommends that this allowance be retained.

Table 1: TACs, TACCs and allowance options consulted on for SP07

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality (t)
Option 1 ( <i>Status Quo</i> )	270	221	15	29	5
Option 2 (MPI Preferred)	306	246	15	33	12

## 2 Context

### 2.1 BACKGROUND

#### 2.1.1 Biology

Rig are found around New Zealand, usually in waters no more than 200m deep. Longevity is not known because few large fish have been aged, however, a male rig that was mature at tagging was recaptured after nearly 14 years, suggesting a longevity of 20 years or longer. Females reach a maximum length of 151 cm fork length (FL) and males 126 cm FL. In South Island waters, male and female rig attain maturity at 5–6 years (about 85 cm FL) and 7–8 years (about 100 cm FL), respectively.

Rig give birth to young during spring and summer following a 10–11 month gestation period. Most females begin a new pregnancy soon after giving birth, and therefore breed every year. The number of young produced increases exponentially with the length of the mother, and ranges from 2 to 37 (mean about 11).

Young are generally born in shallow coastal waters, especially in harbours and estuaries, throughout North and South Island waters. Rig grow rapidly during their first summer, and then disappear as water temperatures drop in autumn–winter. They presumably move into deeper water.

Rig make extensive coastal migrations, with one tagged female moving at least 1160 km. Over half of tagged rig that have been recaptured had moved over 50 km, and over half of the females had moved more than 200 km. Females travel further than males, and mature females travel further than immature females.

Information relevant to determining rig stock structure in New Zealand was reviewed in 2009.<sup>47</sup> These reviews concluded that the boundaries between biological rig stocks are poorly defined, especially in the Cook Strait region. Biological links between the current management stocks will be investigated further in a research project scheduled for 2016.

#### 2.1.2 SP07 Fishery

##### 2.1.2.1 Commercial

Rig are caught in coastal waters throughout New Zealand. Most of the catch is taken in water less than 50 m deep during spring and summer, when rig aggregate inshore. Before the introduction of the Quota Management System (QMS) in 1986, 80% of the commercial catch

<sup>47</sup> Francis, M P (2010) Movement of tagged rig and school shark among QMAs, and implications for stock management boundaries. New Zealand Fisheries Assessment Report 2010/03. 22 p.

was taken by bottom set net and most of the remainder by trawl. Total reported landings of rig increased rapidly during the 1970s, and averaged about 3200 tonnes per year during the late 1970s and early 1980s. Since then, a larger proportion has been taken by trawlers as bycatch.

Around 44% of rig in SPO7 are caught in a targeted setnet fishery, which also targets school shark and spiny dogfish. The bulk of the remaining catch comes as bycatch from a bottom trawl fishery mainly targeting flatfish, gurnard and tarakihi. The set net fishery has historically been focused in statistical area 038 (Tasman and Golden Bays). Setnet catches are mainly taken in the spring and summer, and have reduced relative to other fishing methods as a result of setnetting area restrictions implemented to protect Hector's dolphins. The seasonal distribution of catch from the bottom trawl fishery extends more or less evenly through the fishing year, with some attenuation of the catch in the latter months.

Following the introduction of rig to the QMS in 1986, landings declined to less than half those of the previous decade in response to the lower catch limits (see Figure 2). The TACC for SPO7 was increased by 20% for the 1991/92 fishing year under the adaptive management programme (AMP). The last review was for the 2006/07 fishing year, in which the TACC was decreased from 350 tonnes to its current level of 221 tonnes based on information showing the SPO7 stock was almost certainly below the management target. Since this review, the reported annual commercial catch has consistently exceeded the TACC, although by relatively small volumes.

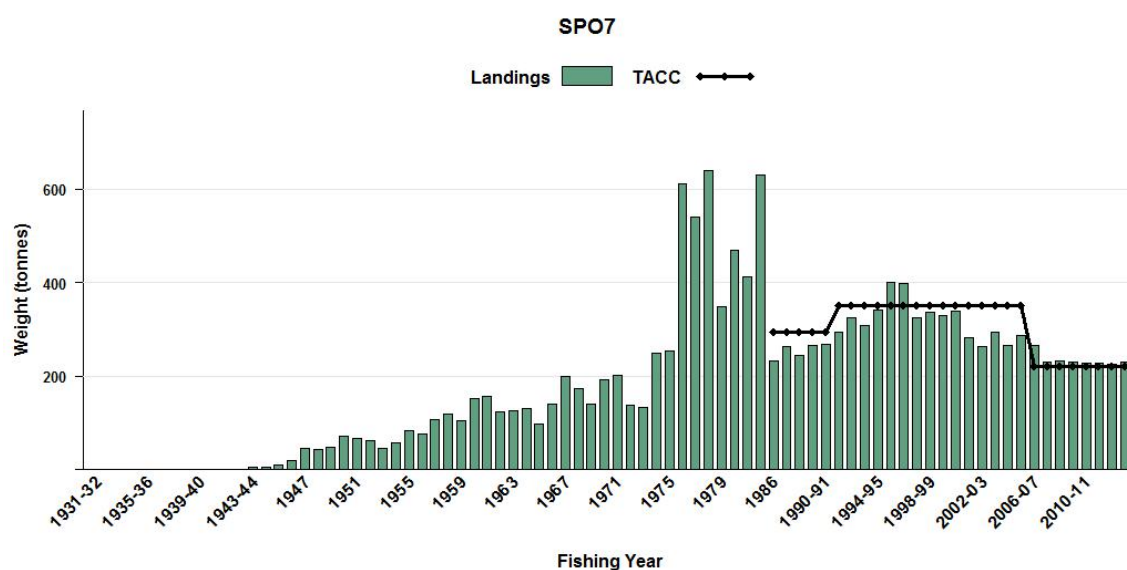


Figure 2: Historical SPO 7 TACCs and landings

In SPO7, commercial set netting was banned to 2 nautical miles offshore from Awarua Point north of Fiordland to the tip of Cape Farewell at the top of the South Island, as part of a suite of regulations implemented in 2008 to protect Hector's dolphins. The commercial closure is restricted to the period 1 December to the end of February each year. Since this closure, there has been a decline in the number of commercial setnet vessels on the west coast of the South Island as much of the rig fishery was within the restricted boundary during the summer months. Industry has also voluntarily refrained from fishing in an area around Farewell Spit since the 2004/05 fishing year in order to protect pupping females.

#### 2.1.2.2 Recreational

Rig are caught by recreational fishers throughout SPO7. Due to the need for better information on recreational harvests, in 2011/12 MPI commissioned the National Panel

Survey<sup>48</sup> (a large-scale, multi-species recreational fishing study) to obtain better harvest estimates for a range of stocks. The National Panel Survey estimate for SPO7 is based on a relatively moderate number of events and fishers and, as a result, is characterised by moderate uncertainty. It also does not include amateur catch taken by commercial fishers under section 111 approvals (which provide for recreational catch on board commercial vessels).

The survey estimated that 19,126 individual rig were taken in FMA7 by recreational fishers in the 2011/12 fishing year. Using the average weight of rig from the survey (1.09kg), it has been calculated that around 21 tonnes of rig was harvested recreationally in SPO 7 for the 2011/12 fishing year. However, the National Panel Survey was not optimised for rig stocks; therefore estimates of numbers of SPO7 harvested recreationally are less certain than for stocks of greater recreational importance. In addition to the uncertainty in the harvest estimate, recreational catch is likely to vary from year to year and information on current catches is not available.

The recreational harvest of rig in FMA7 is managed under a mixed species total bag limit of 20 fish per person per day. No minimum legal size limit applies to rig. There is a minimum mesh size of 150mm for nets targeting rig in FMA7. Recreational setnetters are subject to the same spatial closure as commercial fishers to protect Hector's dolphins, although the recreational closure applies year round.

#### *2.1.2.3 Māori Customary*

MPI recognises that customary fishers harvest rig and that rig was historically of importance to Māori. It is identified by Te Waka a Māui me Ōna Toka iwi forum<sup>49</sup> as a taonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the customary and commercial interests of South Island iwi.

Customary catch data available for SPO7 does not show a large take of rig but there are some uncertainties surrounding this estimate. For those tangata whenua groups operating under the customary fishing regulations<sup>50</sup>, there is a requirement for Tangata Kaitiaki/Tiaki to provide MPI with information on Māori customary harvest of fish. However, for those tangata whenua groups still operating under regulations 50 and 51 of the Fisheries (Amateur Fishing) Regulations 2013 (the Amateur Regulations), it is not mandatory to report permits that are issued or catch taken. There have been few customary authorisations for SPO7 reported to MPI in recent years.

Catch by customary Māori fishers may also be occurring within the amateur daily bag limit (and therefore currently provided for under the recreational allowance).

#### *2.1.2.4 Other Sources of Fishing-Related Mortality*

The allowance for other sources of fishing-related mortality covers the mortality of fish that results from various factors associated with fishing, but is not reported as catch. There are various potential sources of incidental fishing-related mortality in SPO7, but the impact of these sources is not able to be quantified.

Rig stocks are included in Schedule 6 of the Act. Schedule 6 provides for commercially caught rig that are likely to survive to be returned to the sea, rather than the standard requirement to land all catch. Schedule 6 is only provided for species known to be robust and

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<sup>48</sup> Available at [http://fs.fish.govt.nz/Doc/23718/FAR\\_2014\\_67\\_2847\\_MAF2010-01.pdf.aspx](http://fs.fish.govt.nz/Doc/23718/FAR_2014_67_2847_MAF2010-01.pdf.aspx)

<sup>49</sup> The Te Waka a Māui me ōna toka iwi forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries.

<sup>50</sup> Fisheries (Kaimoana Customary Fishing) Regulations 1998 and/or Fisheries (South Island Customary Fishing) Regulations 1999.



generally likely to survive capture and release. However, there is a risk that some rig released under the schedule will not survive.

Quantitative estimates of other sources of fishing-related mortality are not available for SPO2. The current allowance for other sources of fishing-related mortality is set at 5 t, which is approximately 2 % of the TACC. MPI has recommended a standard approach of 5% of the TACC across all stocks included within this paper based loosely on the robustness of species and the fishing methods used to take the majority of catch.

### 2.1.3 Management Approach

The draft National Fisheries Plan for Inshore Finfish<sup>51</sup> acknowledges that it is currently not feasible or cost-effective to obtain robust estimates of biomass for a large number of inshore finfish stocks. The Plan refers to alternative approaches to monitoring stocks to inform management reviews including an approach based on accepted indicators of relative abundance.

MPI notes that the management of rig stocks should also take into account the National Plan of Action-Sharks 2013 (NPOA-Sharks).<sup>52</sup> This policy instrument is part of New Zealand's responsibility to act in accordance with the objectives of the International Plan of Action for the Conservation and Management of Sharks. Work to improve management of sharks in line with the objectives of the NPOA-Sharks is ongoing with further consideration of the management approach of all rig stocks scheduled for 2016. While an estimate of the biomass of SPO7 was determined in 2006, SPO7 currently falls within a group of stocks where a relative abundance monitoring approach is being used.

Key indicators used to monitor and inform management of SPO7 include catch per unit effort from the commercial fishery (CPUE), which has been updated to the end of the 2013/14 fishing year, and an estimate of relative biomass from the West Coast South Island trawl surveys from 1992-2013 with preliminary information available for 2015. The management approach is to use these sources of information to estimate relative changes in stock status in relation to a target level that is a proxy for  $B_{MSY}$ .

Another key component of the management framework for SPO7 and other rig stocks is its inclusion on Schedule 6 of the Act. SPO7 has been listed on the schedule since May 2012 and provides for commercially caught rig that are likely to survive to be returned to the sea, rather than the standard requirement under the QMS to land all catch.

## 2.2 RATIONALE FOR MANAGEMENT INTERVENTION

### 2.2.1 Previous Review

SPO7 was last reviewed for the 2006/07 fishing year. Information from a stock assessment at that time indicated that the stock size was almost certainly below  $B_{MSY}$ . In conjunction with this assessment, the commercial setnet CPUE and relative biomass estimates from trawl survey data were both declining. In light of this information the TAC was reduced from 403 tonnes to 270 tonnes.

To implement the TAC decrease, the TACC was reduced from 350 tonnes to 221 tonnes. It was considered appropriate to apply the greatest reduction to the TACC because commercial

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<sup>51</sup> The Draft National Fisheries Plan for Inshore Finfish is a working document being used to guide management of fishstocks by the Ministry for Primary Industries. The plan will be refined further before being submitted for the Minister's approval under s11A of the Fisheries Act 1996.

<sup>52</sup> <http://www.fish.govt.nz/en-nz/Environmental/Sharks/default.htm>

fishers harvested the majority of the SPO7 TAC and had benefitted from a high TACC under the AMP framework for 15 years. Commercial catches in the years leading up to that review were significantly less than the TACC in place.

The customary allowance for SPO7 was reduced to 15 tonnes because the previous allowance was not considered to accurately reflect customary catch levels or likely needs for the foreseeable future. On the other hand, the recreational allowance remained unchanged at 29 tonnes because there was no information to suggest recreational catch levels had increased or contributed significantly to the decline in the SPO7 stock size.

### 2.2.2 Current Status

Updated information suggests that the abundance of SPO7 has increased following catch reductions in 2006, and that the biomass is currently as likely as not to be at or above the proxy  $B_{MSY}$  target.

The best available information on abundance to inform TAC setting for SPO7 at this time is the West Coast South Island (WCSI) trawl survey and catch per unit effort (CPUE) analyses. These have been accepted as reliable indices of relative abundance for adult male and sub-adult female rig in SPO7 and have enabled the setting of reference points, based on the trawl survey series of relative abundance, to support management. The series of relative abundance indices are shown in Figure 3.

The accepted bottom trawl CPUE and WCSI trawl survey series do not representatively sample large female rig, but they cover the whole SPO7 QMA. In 2015, the WCSI setnet CPUE series, previously also used to assess SPO7, was dropped from consideration due to data scarcity. However, another set net index (which does provide an index of mature female abundance) provides an index of abundance for SPO7 in the Tasman and Golden Bays portion of SPO7 (SN038 - statistical area 038). The target setnet fishery in this area accounts for approximately 35% of the total SPO7 commercial catch.

The WCSI trawl survey estimated that the relative biomass of SPO7 was stable, at around the target level, from 2007 to 2013, but preliminary information from 2015 suggests a sharp increase in abundance. Size composition analysis of SPO7 from WCSI trawl survey catches also suggests strong recruitment in recent years.

The SPO7 bottom trawl CPUE series also shows a strong increasing trend in recent years from a low point in 2004/05, while the SPO7 setnet (statistical area 038) series has flattened out after showing an increase from 2006/07.

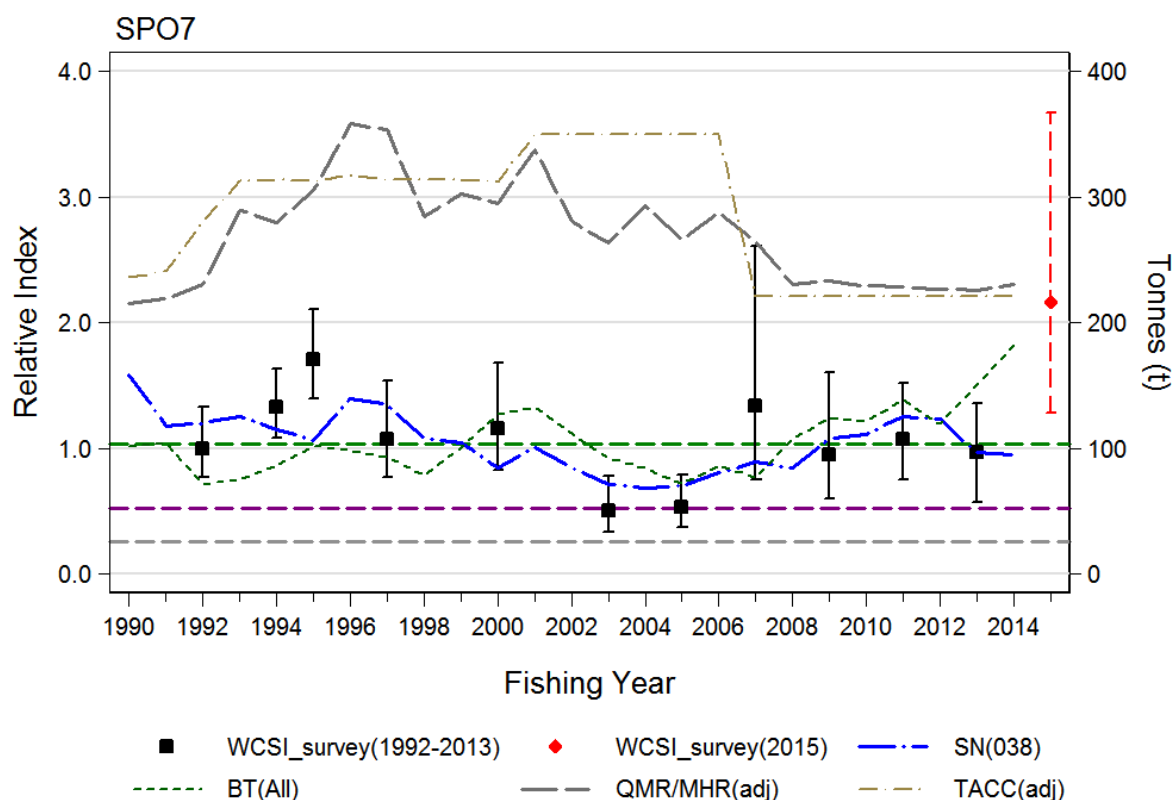


Figure 3: Comparison of the two accepted CPUE trend plots setnet (SN038) and bottom trawl (BTALL) with the adjusted QMR/MHR landings and TACC for SPO7. Also shown are index values for the West Coast South Island trawl survey. The most recent WCSI survey value is indicated in red because it is preliminary. The agreed Soft Limit is shown as a purple line, the  $B_{MSY}$  proxy target is shown as a green line and the Hard Limit is shown as a grey line (discussed under 'Management Approach' above)

In summary, these indicators collectively suggest that the SPO7 stock is increasing and about as likely as not (40 to 60% probability) to be at or above the proxy target. Given this information, MPI considers that sustainability would be ensured under both management options.

### 3 Consultation

MPI consulted on your behalf on the three options set out in Table 2 below. MPI followed its standard consultation process.

Table 2: TACs, TACCs and allowance options consulted on for SPO7

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality (t)
Option 1 (Status Quo)	270	221	15	29	5
Option 2 (MPI Preferred)	306	246	15	33	12

#### 3.1 SUBMISSIONS RECEIVED

Submissions on the SPO7 proposals were received from the following:

- Fisheries Inshore New Zealand (FINZ)
- Southern Inshore Fisheries Management Company Ltd (Southern Inshore)

## 3.2 SUMMARY OF SUBMISSIONS

Both submissions received regarding SPO7 are from commercial stakeholder organisations and support Option 2. A brief summary of these submissions is outlined below<sup>53</sup>. Further details of the submissions are discussed in the relevant sections of this paper.

Although Southern Inshore supports Option 2, it believes the proposed TACC increase does not reflect current stock status and is unduly conservative. The submission notes that management measures such as set net closures on the West Coast South Island, the voluntary closure at Farewell Spit and inclusion of SPO 7 on Schedule 6 of the Act have enabled the stock to rebuild at a faster rate than expected. Southern Inshore considers that catch of SPO7 has become much more prevalent and it is inappropriate for fishers to increase their deemed value payments and avoid catching SPO7. Southern Inshore also argues that Option 2 sets the recreational allowance too high, further constraining utilisation opportunities for the commercial sector.

FINZ supports and endorses Southern Inshore's submission on SPO7. FINZ specifically notes that the proposed recreational allowance for SPO7 under Option 2 is excessive, given the current estimate of catch is below the existing allowance. FINZ also considers the best available information on customary harvest suggests the proposed allowances for customary fishing should be reduced.

## 4 Legal Considerations

The following section provides information in addition to the considerations outlined in Appendix 1.

### 4.1 SECTION 9 – ENVIRONMENTAL PRINCIPLES

MPI considers that all options presented in this paper satisfy your obligations under section 9 of the Act. A summary of the interactions between the SPO7 fishery and the aquatic environment, and how these are likely to be affected by the proposals in this paper, is provided below.

#### 4.1.1 Fish bycatch

Although the target setnet fishery spanning the SPO7 QMA accounts for around 44% of the catch, roughly the same amount of rig is taken as bycatch in trawl fisheries for other QMS stocks in QMA 7, particularly those targeting flatfish, gurnard and tarakihi.

MPI anticipates that the proposed increase in TACC for rig will cover the additional catch of SPO7 taken as bycatch and will not result in additional catch of species taken in association. Given that rig is a Sixth Schedule species, it is unlikely that the supply of annual catch entitlement (ACE) for SPO7 has been constraining trawl fisheries for other stocks. An increase to the TACC is not expected to translate to a significant increase in trawl fishing effort and associated impacts on other species.

<sup>53</sup> Copies of the submissions are available in Appendix 2

## 4.1.2 Protected species interactions

### 4.1.2.1 Seabirds

Management of seabird interactions with New Zealand's commercial fisheries is driven through the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA-Seabirds). The NPOA-Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species to the extent practicable.

Inshore trawl and setnet fisheries in Fisheries Management Area 7 (the same boundaries as SPO7) were assessed to contribute very low levels of risk to a small number of seabird species. MPI does not anticipate any increased risk of mortality to seabird species as a result of any of the proposals outlined in this paper as the increases to catch limits proposed are modest and will likely cover existing levels of catch only.

### 4.1.2.2 Marine mammals

Hector's dolphins, New Zealand fur seals and New Zealand sea lions occur on the west coast of the South Island and consideration needs to be given to the potential implications for interactions with marine mammals of an increase in the SPO7 TAC.

The west coast South Island population of Hector's dolphins overlaps with the SPO7 trawl fishery. There is limited information on the interaction between Hector's dolphins and trawl fisheries however a trawl capture of a dolphin was observed as part of a scientific observer study on the east coast of the South Island in 1998 (Baird & Bradford 1999). MPI does not anticipate any increased risk of mortality to marine mammal species from the trawl fishery as a result of the proposal outlined in this paper as the increase to catch limits proposed are modest and will likely cover existing levels of bycatch only.

In SPO7 setnet fisheries, there is a risk of incidental capture of Hector's dolphins, other dolphins and New Zealand fur seals. In particular, the west coast South Island population of Hector's dolphins overlaps with the SPO7 setnet fishery. However, this risk has been mitigated by a suite of regulations intended to protect Maui and Hector's dolphins implemented from 1 October 2008 onwards for all of New Zealand. For SPO7, both commercial and recreational setnetting were banned to 2 nautical miles offshore, with the recreational closure effective for the entire year and the commercial closure in place between 1 December and the end of February (the main target months for rig). The closed area extends from Awarua Point north of Fiordland to the tip of Cape Farewell at the top of the South Island.

### 4.1.2.3 Benthic impacts

Due to negligible bottom contact, the SPO7 setnet fishery has minimal impacts on the benthic environment. On the other hand, SPO7 bycatch trawl fisheries use bottom trawl gear on the seabed, as this is where the target fish species aggregate. The gear is generally fished hard down on the seabed, impacting benthic habitats.

Increasing the TACC for the bycatch SPO7 stock is unlikely to translate to a significant increase in overall trawling effort. Therefore, the trawl footprint and associated impacts on benthic habitat classes that have been assessed are unlikely to be altered under Option 2.

## 4.2 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations included in this paper.

## 4.3 SECTION 11 – SUSTAINABILITY MEASURES

Only section 11 measures that are directly relevant to SPO7 are discussed within this section. See Appendix 1 for consideration of other section 11 measures.

- a) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC, and allowances for customary take, recreational take, and other sources of fishing-related mortality. Other standard management controls apply to the SPO7 fishery, for example deemed values, amateur bag limits, and fishing method constraints. The proposed options do not affect these measures, but the Hector's dolphin setnetting closures discussed under 'Marine mammals' above are likely to protect significant pupping areas thereby potentially improving future recruitment.
- b) Sections 11(2)(a) and (b): have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that you consider relevant. MPI considers that both options proposed are consistent with the Hector's Dolphin Threat Management Plan. MPI is not aware of any other policy statements, plans or strategies that should be taken into account for SPO7.

## 4.4 SECTION 12- CONSULTATION

In addition to the consultation considerations discussed elsewhere, Section 12(1)(b) requires that you provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga before setting or varying a TAC. Te Waka a Māui me Ōna Toka iwi forum was approached for their collective view on SPO7. No collective views were provided by Te Waka a Māui me Ōna Toka.

The Te Waka a Maui me ona Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan. This plan covers SPO7 and identifies rig as a taonga species. MPI considers that the management options presented in this advice paper are consistent with the Plan's six management objectives. Specifically, both management options ensure adequate allowances for customary harvest, the sustainability of the fishery and the appropriate management of environmental impacts. Option 2 would also increase the benefits from the SPO7 commercial fishery, contributing towards the achievement of Management Objective Three of the Plan.

## 4.5 SECTION 13(2A) – SETTING THE TAC

The best available information on SPO7 is insufficient to enable reliable estimates of  $B_{CURRENT}$  and  $B_{MSY}$  to be determined.

Where reliable estimates of stock status in relation to  $B_{MSY}$  are not available, s 13(2A) of the Act requires you to use best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield. The options proposed provide you with a choice on how to fulfil your obligations under section 13(2A).

The best available information shows that the SPO7 stock has increased in size relative to the proxy  $B_{MSY}$  target. The TAC options proposed take into account that new information from monitoring the abundance of all New Zealand rig stocks is scheduled to become available next year and will support further consideration of the management of the SPO7 fishery is needed.

MPI notes that, while s 13 of the Act obliges you to set a TAC at a level that will achieve  $B_{MSY}$  or above, you also have discretion about the way and rate that  $B_{MSY}$  is achieved. SPO7 has a probability of 40 to 60% of being at or above the management target level, and stock size is increasing. While increasing the TAC under Option 2 would slow the rate at which biomass is increasing toward or above  $B_{MSY}$ , both Options 1 and 2 will enable you to set a TAC that is not inconsistent with the objective of maintaining the stock at or above  $B_{MSY}$ , or moving the stock towards or above,  $B_{MSY}$ .

## **4.6 SECTIONS 20 & 21 – ALLOCATING THE TAC**

The TAC must be apportioned among the relevant sectors and interests as required under sections 20 and 21 of the Act. Section 21 prescribes that you shall make allowances for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information. In the event of imperfect information, you are entitled to be cautious.

### **4.6.1 Recreational allowance**

As discussed above, the 2011/12 National Panel Survey provided an estimate that 21 tonnes of rig was harvested recreationally in SPO7 during the 2011/12 fishing year. Given the uncertainty in using this estimate to predict current or future catches and the indications of increasing stock biomass, MPI considers that it is reasonable to provide for an increase to the recreational allowance for SPO7 if the TAC is increased.

### **4.6.2 Customary allowance**

There is no proposal to increase the customary allowance for SPO7. FINZ submits that MPI needs to review the reasonableness of customary allocations to reflect the available information.

The SPO7 TAC was last reviewed in 2006. Information on customary catch is uncertain but MPI has no information to indicate that customary catch has changed significantly over the last 9 years. The best available information suggests that current settings will provide for both current levels of catch and a modest increase to customary harvest of rig in SPO7 that may occur as abundance increases. The allowance for customary use is not set to constrain catch, but to reflect levels of current utilisation. MPI considers that any general shifts in the approach to setting the customary allowance for SPO7, as suggested by FINZ, would be best considered as part of work to further develop management approaches for SPO7 and should include the input and participation of the Te Waka a Maui me Ōna Toka iwi Forum.

The Whakapuaka (Delaware Bay) Taiapure, and the Te Tai Tapu (Kaihoka and Anatori), Manakaiaua/Hunts Beach, Mahitahi/Bruce Bay, Tauperikaka, Okarito Lagoon and Okura/Mussel Point mātaihai reserves are all within the SPO7 quota management area. MPI

notes that the proposals in this paper will not impact on, or be impacted by, these taiapure and mātaītai reserves.

#### 4.6.3 Other sources of fishing-related mortality

Information to inform the setting of an allowance for other sources of fishing-related mortality in SPO7 is uncertain. Option 2 proposes an increase to this allowance that would result in the allowance being approximately 5% of the TACC. This would take account of the various sources of incidental fishing-related mortality present in SPO7, and be consistent with allowances set for recently reviewed rig stocks and other inshore shark stocks on Schedule 6. No alternative views or approaches were put forward in submissions.

#### 4.6.4 TACC

Commercial catches have exceeded the TACC by between 5 and 45 tonnes for the last seven fishing years. The consistent levels of over catch indicate that the TACC will be fully caught at the level proposed under Option 2.

Option 2 proposes an increase to the TACC from 221 to 246 tonnes, which provides for a small increase to the current commercial catch levels and associated increases in value derived from the stock.

### 4.7 SECTION 75 – DEEMED VALUE RATES

MPI has consulted on changes to SPO7 deemed values. A discussion of the deemed value rates for SPO7 is included in Part C of this document.

## 5 Management Options

### 5.1 ANALYSIS OF OPTIONS

The options for setting the TAC, TACC, and allowances for SPO7 are outlined in Table 3. The options do not differ from those consulted on. Option 1 retains the *status quo*, while Option 2 increases the TAC, TACC, recreational allowance and allowance for other sources of fishing-related mortality.

Table 3: TAC, TACC and allowance options consulted on for SPO7.

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality (t)
Option 1 ( <i>Status Quo</i> )	270	221	15	29	5
Option 2 (MPI Preferred)	306	246	15	33	12

#### 5.1.1 Option 1

Option 1 would retain the *status quo* for SPO7. MPI did not receive any submissions in support of Option 1.

Option 1 takes a cautious approach, reflecting that in 2006 the SPO7 stock was considered to be almost certainly below  $B_{MSY}$  and there is some uncertainty regarding how much the SPO7 biomass has increased. SPO7 has been assessed as likely as not, to be at or above, the  $B_{MSY}$  proxy based target and Option 1 gives more confidence that the SPO7 biomass will be above the proxy target in future.



The available information suggests there is potential for economic benefits that will not be realised under Option 1 and that the best value from the SPO7 fishery will not be achieved under this option. In addition, \$23,873.00 in deemed values were paid for over-catch of SPO7 in the 2013/14 fishing year. Abundance and catchability of rig in SPO7 currently seems such that commercial over-catch of SPO7 in the flatfish, gurnard, tarakihi and baracoutta target fisheries is difficult to avoid. This has been the case even though rig is a Schedule 6 species able to be returned if caught alive.

### 5.1.2 Option 2

Under Option 2:

- The TAC would be increased from 270 tonnes to 306 tonnes (an increase of 13%).
- The TACC would be increased from 221 tonnes to 246 tonnes (an increase of 11%).
- The customary Māori allowance would remain at 15 tonnes.
- The recreational allowance would be increased from 29 tonnes to 33 tonnes (an increase of 14%).
- The allowance for other sources of fishing-related mortality would be set at 12 tonnes (5% of the TACC).

MPI recommends that you implement Option 2, and considers that this option best responds to indications of increasing abundance of SPO7. The increase to the TAC included within Option 2 allows for increased utilisation. New information on rig stocks available next year will allow sustainability measures for the stock to be altered again, if necessary.

Option 2 received support from Southern Inshore and FINZ, because it offered greater utilisation opportunities than Option 1. However, both organisations note the preference for the TAC and TACC to be increased further than provided under this option.

Given the uncertainties in the available information, MPI considers an increase of 11% to the TAC provides an appropriate balance between utilising the likely increased abundance of SPO7 and ensuring sustainability.

Increased catch under Option 2 may slow the rate at which biomass is increasing toward or above  $B_{MSY}$ . However, MPI considers that some of the risk as to how the SPO7 stock will respond to increased catch levels under Option 2 is mitigated for two reasons: (1) TACs for rig may be adjusted after the planned characterisation for all rig stocks and their boundaries in 2016; and (2) the Hector's dolphin setnetting closure and the voluntary commercial closure of Farewell Spit protect significant pupping areas thereby potentially improving future recruitment. Therefore, in view of the current increase in abundance, and on-going monitoring, MPI considers that Option 2 is consistent with the objective of moving the stock towards or above  $B_{MSY}$ .

Option 2 proposes that the recreational allowance be increased by 4 tonnes to 33 tonnes, which is a 14% increase. This increase recognises the likelihood that SPO7 is currently at a relatively high level of abundance and catches could increase. Option 2 also takes into account the uncertainty in the estimates of recreational harvest within SPO7.

Southern Inshore submits that the proposed allowances are too high and will not be fully caught by recreational fishers. FINZ submits that the proposed recreational allowances (8-12 tonnes above the 2011/12 estimate) are excessive.

Under Option 2 the allowance for other sources of fishing-related mortality is increased from 5 tonnes to 12 tonnes to align with 5% of the revised TACC. No changes are proposed to the Maori customary allowance.

The TACC of 246 tonnes, included within Option 2, would enable commercial fishers to obtain greater value from the fishery. Based on a 2015/16 port price of \$3.30 per kilogram for the 2013/14 fishing year, a 25 tonne increase in commercial catch is worth \$82,500.00 to commercial fishers per annum. Any increase in TACC will also reduce deemed value payments.

MPI also considers Option 2 to be consistent with the NPOA-Sharks. In particular an assessment has been made to determine the SPO7 stock size in relation to an accepted management target and on that basis review the catch limit to maintain the stock at or above the target.

## 6 Other Matters

### 6.1 RECREATIONAL CONTROLS

There is no information to suggest a change to recreational regulations would be needed to implement your decisions and no changes to the relevant recreational daily bag limit are proposed.

## 7 Conclusion

MPIs preferred option is Option 2 – increasing the TAC of SPO7 to 306 tonnes, increasing the TACC to 246 tonnes, increasing the allowance for recreational interests to 33 tonnes and the allowance for other sources of fishing-related mortality to 12 tonnes.

Available information from CPUE analysis and the WCSI trawl survey suggests the SPO7 stock size has increased in recent years.

Option 1 places greater weight on the biological vulnerability of rig and takes a cautious approach by proposing to retain existing settings. Benefits of Option 1 could include the improvement of the recreational fishing experience and possible efficiency and future yield benefits to commercial fishers under a SPO7 biomass that is increasing at a faster rate.

Option 2 proposes to increase the TAC by 11%. Although this may slow the rate of increase of the stock size, Option 2 provides for enhanced utilisation and is not inconsistent with the objective of moving the stock towards or above  $B_{MSY}$ . Option 2 provides for a greater economic return from SPO7 during this period of increasing abundance and an increase to the recreational allowance. Under Option 2, risks to the sustainability of the stock could be mitigated by the potential for another review after the anticipated national characterisation of rig stocks and updated CPUE analysis in 2016, and regulatory and non-regulatory setnetting closures already in place for SPO7.

Both options presented in this paper will enable you to set a TAC that is not inconsistent with the objective of moving the stock towards or above  $B_{MSY}$ . However, MPI recommends Option 2 as this option provides an appropriate balance between the opportunity to enhance utilisation of the SPO7 stock and the need to ensure that catches are sustainable.

MPI notes that you have broad discretion in exercising your powers of decision making, and may make your own independent assessment of the information presented to you in making your decision. You are not bound to choose the option recommended by MPI.

# Stargazer 7 (STA7)

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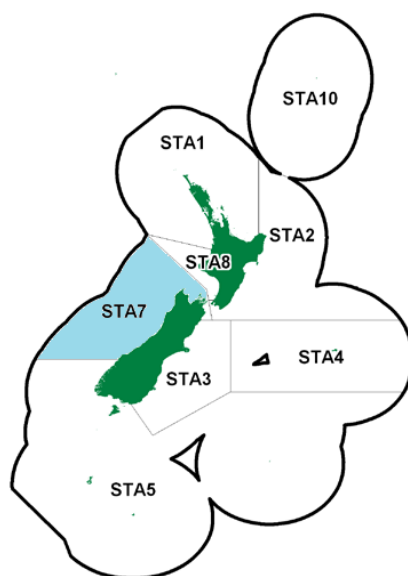


Figure 1: Quota Management Areas (QMAs) for rig (STA) stocks. STA7 indicated by shading.

## 1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits for the STA7 fish stock (see Figure 1).

The available information suggests that the abundance of STA7 has increased in recent years. This information suggests that there is an opportunity to provide for greater utilisation from STA7 while ensuring sustainability. MPI consulted on three options for management settings for STA7 for the upcoming fishing year – one that retains the *status quo* and two that increase the total allowable catch (TAC), the total allowable commercial catch (TACC), the recreational allowance and the allowance for all other mortality to the stock caused by fishing. These options are shown in Table 1.

Two submissions were received on the proposals for STA7. Both submissions were from commercial stakeholder organisations and supported Option 3, the greatest increase to the TAC and TACC. The submissions stated that a TACC increase will appropriately provide for additional utilisation from a fishery that is currently constrained by the TACC.

After considering the submissions received, MPI recommends Option 3, that the TAC for STA7 is increased by 109 tonnes, from 1072 tonnes to 1181 tonnes, the TACC is increased by 80 tonnes, from 1042 tonnes to 1122 tonnes, and the recreational allowance is increased 2 tonnes, from 2 tonnes to 4 tonnes. In addition, MPI proposes the allocation for other sources of fishing-related mortality be increased by 27 tonnes, from 27 tonnes to 54 tonnes (5% of the TACC). Option 3 provides the greatest increase in utilisation and it is estimated that the associated TACC increase would result in a \$94,400.00 per annum increase in commercial revenue.

The best available information shows the customary take of STA7 is within the existing allowance and MPI recommends that this allowance be retained.

Table 1: Proposed Management Settings for STA7

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality
Option 1 ( <i>Status Quo</i> )	1072	1042	1	2	27
Option 2	1138	1082	1	3	52
Option 3 (MPI Preferred)	1181	1122	1	4	54

## 2 Context

### 2.1 BACKGROUND

#### 2.1.1 Biology

Two species of stargazer, (the giant stargazer (*Kathetostoma giganteum*) and the banded giant stargazer (*Kathetostoma* sp.) are included within the STA7 stock. Banded giant stargazer is thought to be relatively uncommon.

Stargazer is widely distributed around New Zealand. It is generally found on muddy and sandy substrates to depths of 500m, but is most common between 50 and 300m on the continental shelf around the South Island.

Age and growth studies indicate giant stargazer reach sexual maturity at a total length of about 40-55cm depending on sex, at an age of 5-7 years. Giant stargazer are known to reach a total length of approximately 90cm and can reach a maximum age of at least 25 years. Spawning occurs annually during winter, most likely in mid and outer shelf waters.

#### 2.1.2 STA7 Fishery

##### 2.1.2.1 Commercial

Stargazer stocks, including STA7, were introduced into the QMS in 1986. Landings from STA7 have increased since 1986, and TAC/TACC increases have been provided. However, landings have frequently exceeded TACCs, with a period through the 1990s when landings peaked well above the limits (see Figure 2).

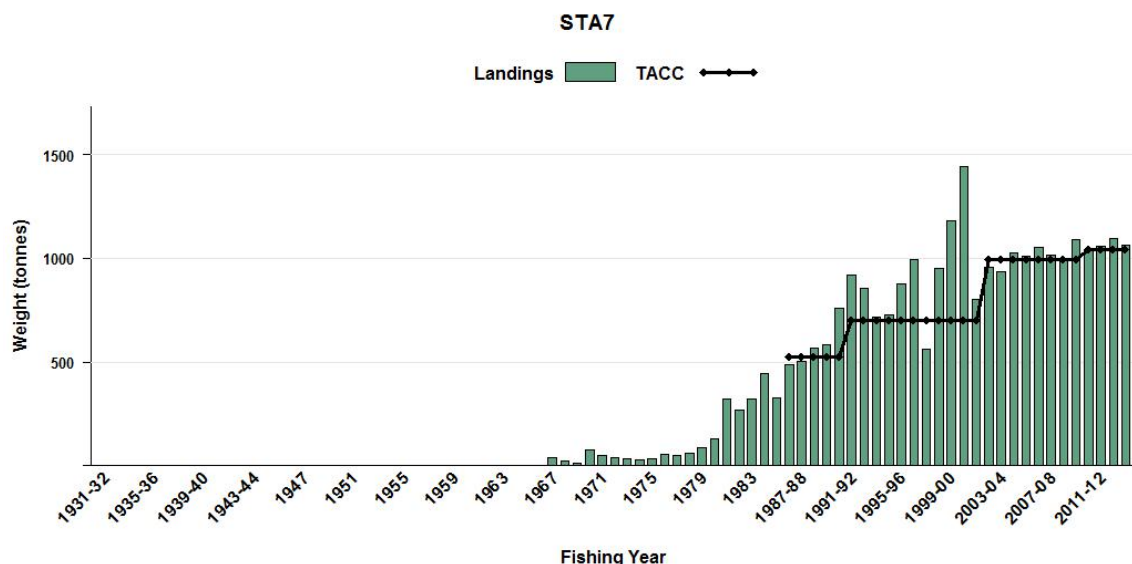


Figure 2: STA7 reported commercial landings and TACC between 1986/87 and 2013/14

The vast majority of STA7 is caught by the method of bottom trawl.

While there is some fishing effort targeted at STA7, it is primarily caught as a bycatch of fisheries targeting other species. In particular, within the inshore fisheries, vessels targeting red cod, tarakihi, flatfishes and barracouta report stargazer bycatch, as well as those deepwater vessels targeting hoki, ling, and jack mackerels. All of these target species are also managed within the QMS.

#### 2.1.2.2 Recreational

Stargazer is not generally targeted by recreational fishers and only a small quantity is taken as a bycatch targeting other species. The data from the National Panel Survey of marine recreational fishers 2011/12<sup>54</sup> estimated that 481 stargazer were taken from STA7 by recreational fishers using set nets. The estimate is based on a relatively small number of events and fishers and, as a result, is highly uncertain. Recreational catch is also likely to vary from year to year. Information on current catch is not available.

Currently there are no specific management controls for the recreational take of stargazer.

#### 2.1.2.3 Māori Customary

While stargazer is not specifically identified by Te Waka a Māui me Ōna Toka iwi forum<sup>55</sup> as a tāonga species in the Te Waipounamu Iwi Fisheries Plan, it is acknowledged that all species are tāonga. The Te Waka a Maui plan includes objectives relating to supporting and providing for the customary and commercial interests of South Island iwi.

MPI currently has one record of a customary permit being issued for the take of stargazer under which 3kg was taken. However, tangata whenua in the Tasman/Golden Bay and Marlborough Sounds area are still operating under regulations 51 and 52 of the Fisheries (Amateur Fishing) Regulations 2014 (the Amateur Regulations), which does not require the reporting of customary permits or catches.

<sup>54</sup> Available at [http://fs.fish.govt.nz/Doc/23718/FAR\\_2014\\_67\\_2847\\_MAF2010-01.pdf.ashx](http://fs.fish.govt.nz/Doc/23718/FAR_2014_67_2847_MAF2010-01.pdf.ashx)

<sup>55</sup> The Te Waka a Māui me ōna toka iwi forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries.

Catch by customary Māori fishers may also be occurring within the amateur daily bag limit (and therefore currently provided for under the recreational allowance). This is likely because stargazer caught using non-commercial methods are unlikely to have been targeted and no recreational bag limits are currently in place.

#### 2.1.2.4 Other Sources of Fishing-related Mortality

This allowance covers the mortality of fish that results from various factors associated with fishing, but that is not recorded under the catch reporting framework. This can include fish that escape fishing gear, but subsequently perish. In addition, this allowance covers any component of commercial catch that may be unlawfully discarded.

Quantitative estimates of other sources of fishing-related mortality are not available for STA7. The current allowance for other sources of fishing-related mortality is set at 27 t, which is approximately 3 % of the TACC. MPI has recommended a standard approach of 5% of the TACC across all inshore stocks included within this document based loosely on the robustness of species and the fishing methods used to take the majority of catch.

### 2.1.3 Management Approach

The draft National Fisheries Plan for Inshore Finfish<sup>56</sup> acknowledges that it is currently not feasible or cost-effective to obtain robust estimates of biomass for a large number of inshore finfish stocks. The Plan refers to alternative approaches to monitoring stocks to inform management reviews including an approach based on accepted indicators of relative abundance.

While a biomass estimate has been obtained in the past, MPI considers that the information from the West Coast South Island trawl survey series is appropriate to support a management approach based relative abundance estimated from the surveys. The results from the West Coast South Island trawl survey series are discussed alongside other relevant information in the Rationale for Management Intervention section below.

## 2.2 RATIONALE FOR MANAGEMENT INTERVENTION

### 2.2.1 Previous Review

The management settings for STA7 have been reviewed 3 times since stargazer was introduced into the quota management system on 1 October 1986. On all three occasions, catch limits have been increased.

The most recent review on 1 October 2010 increased the TAC to the current setting of 1072 tonnes based on stock assessment information. The TAC increase of 72 tonnes (7%) included a 42 tonne (4%) increase to the TACC and an allocation of 27 tonnes to account for other sources of fishing-related mortality (OSFRM). The allowances for Māori customary and recreational catch were retained at 1 tonne and 2 tonnes respectively.

### 2.2.2 Current Status

In 2014, MPI's Fishery Assessment Working Group concluded that STA7 is likely (>60% probability) to remain at or above  $B_{MSY}$  at current catch levels. In addition, it has been concluded that overfishing is unlikely (<40% probability) to be occurring in this fishery. The preliminary abundance estimate from the trawl survey in 2015 does not suggest a substantial change in status.

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<sup>56</sup> The Draft National Fisheries Plan for Inshore Finfish is a working document being used to guide management of fishstocks by the Ministry for Primary Industries. The plan will be refined further before being submitted for the Minister's approval under s11A of the Fisheries Act 1996.

The target reference biomass for STA7 is  $B_{MSY}$ , which is assumed to be 40% of the virgin or unfished biomass ( $B_0$ ). Under the Harvest Strategy Standard Guidelines, 40%  $B_0$  is the recommended proxy for  $B_{MSY}$  for stocks with productivity characteristics such as STA7, in the absence of any other information.

The stock assessment of STA7 in 2008 estimated the 2008 biomass at 24.1-51%  $B_0$  with a median of 38.8%  $B_0$  for the base case model. The stock assessment showed that, at the time, and provided the assumptions about recruitment held, STA7 was likely to be at or near  $B_{MSY}$ .

The West Coast South Island (WCSI) trawl survey provides a means for tracking relative abundance since this survey. The WCSI trawl survey occurs every two to three years and the series provides relative biomass indices for STA7 from 1992 (see Figure 4). The most recent survey was completed in 2015 and preliminary results provide a point estimate of 1981 tonnes (indicated in red below). While the 2015 estimate is down slightly on the previous survey (2013), it is still above the series mean. Overall the survey series indicates that abundance is at least relatively stable since 2009, and is likely to have doubled since 2003.

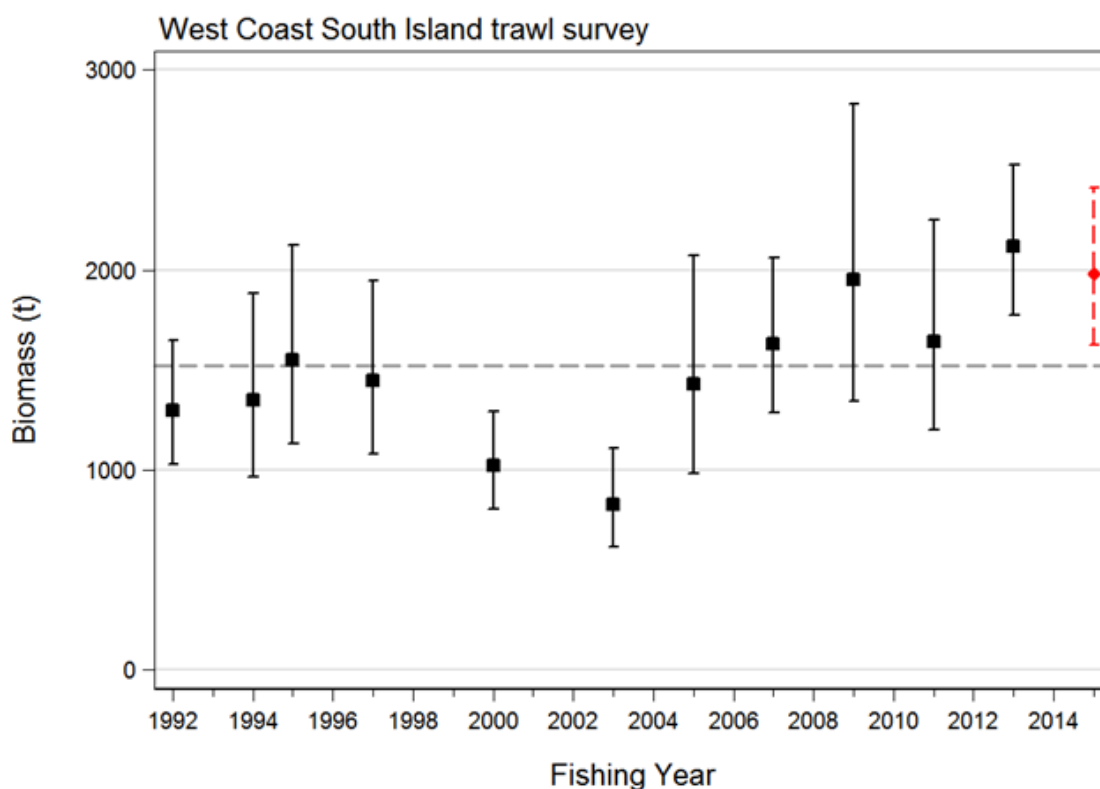


Figure 4: Stargazer biomass estimates and c.v.'s from the West Coast South Island trawl survey series and mean biomass for the survey (dotted line) from 1991 to 2015. Note the 2015 point estimate (in red) is preliminary and has not yet been formally accepted.

Catch per unit effort (CPUE) indices have also been investigated as a monitoring tool for STA7. Latest analyses for the fishing years 2007/08-2012/13 indicated a relatively stable trend, however, further analysis is required before this tool will be accepted as a reliable indicator of abundance.

### 3 Consultation

MPI consulted on the three options set out in Table 2 below. MPI followed its standard consultation process.



Table 2: Proposed Management Settings for STA7

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality
Option 1 ( <i>Status Quo</i> )	1072	1042	1	2	27
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### 3.1 SUBMISSIONS RECEIVED

Submissions on the STA7 proposals were received from the following:

- Fisheries Inshore New Zealand (FINZ)
- Southern Inshore Fisheries Management Company Limited (Southern Inshore)

### 3.2 SUMMARY OF SUBMISSIONS

Both submissions received regarding STA7 support Option 3. A brief summary of the submissions is outlined below<sup>57</sup>. Further details of the submissions are discussed in the relevant sections of this paper.

Southern Inshore supports Option 3, stating that a TACC increase will appropriately provide for additional utilisation from a fishery that is currently constrained by the TACC setting. They also noted that fishers have observed STA7 appearing in catches in different places. MPI notes that this might reflect increased abundance.

Southern Inshore submits that fishers are having to actively avoid stargazer bycatch, which is impacting on their ability to target and catch other, more valuable, QMS species.

Fisheries Inshore New Zealand supports and endorses the submission made by Southern Inshore with regard to STA7.

## 4 Legal Considerations

The following section provides information in addition to the considerations outlined in Appendix 1.

### 4.1 SECTION 9 – ENVIRONMENTAL PRINCIPLES

MPI considers that all options presented in this paper satisfy your obligations under section 9 of the Act. A summary of the interactions between the STA7 fishery and the aquatic environment, and how these are likely to be affected by the proposals in this paper, is provided below.

#### 4.1.1 Fish bycatch

Smooth skates are caught alongside stargazer as a bycatch in FMA7 bottom trawl fisheries. The biomass index for smooth skates in the west coast trawl survey has declined substantially

<sup>57</sup> Copies of the submissions are available in Appendix 2

since 1997. There may be similar concerns for rough skates, but the evidence is less conclusive.

Increasing the TACC for the STA7 stock is unlikely to translate to a significant increase in overall trawling effort because it will cover existing catch only. Therefore, the management proposals should have limited effects on the catch levels of smooth and rough skates. In addition, both skate species are included on Schedule 6 in the Act which, despite being a QMS species, allows them to be released alive if they have a likely chance of survival. As such, any increased catch of skates could be mitigated, where possible, through their live release.

#### 4.1.2 Protected species interactions

##### 4.1.2.1 *Seabirds*

The management of seabird interactions with New Zealand's commercial fisheries is guided by the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA-Seabirds). The NPOA-Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk, but also aiming to minimise captures of all species to the extent practicable.

Inshore and deepwater trawl fisheries in Fisheries Management Area 7 (the same boundaries as STA7) were evaluated as contributing low levels of risk to a small number of seabird species. MPI does not anticipate any increased risk of mortality to seabird species as a result of any of the proposals outlined in this paper, as the increases to catch limits proposed are modest and will cover existing levels of catch.

##### 4.1.2.2 *Marine mammals*

Hector's dolphins, New Zealand fur seals, and New Zealand sea lions occur on the west coast of the South Island and consideration needs to be given to the potential implications of an increase in the STA7 TAC.

MPI notes that stargazer is taken mostly as a bycatch of trawling. The west coast South Island population of Hector's dolphins overlaps with the STA7 trawl fishery. There is limited information on the interaction between Hector's dolphins and trawl fisheries, however, a trawl capture was observed as part of a scientific observer study on the east coast of the South Island in 1998 (Baird & Bradford 1999).

MPI does not anticipate any increased risk of mortality to marine mammal species as a result of any of the proposals outlined in this paper, as the increases to catch limits proposed are modest and will cover existing levels of catch.

##### 4.1.2.3 *Benthic impacts*

Bottom trawl fisheries, such as those which catch STA7, use trawl gear that is towed along the sea floor. The gear is generally fished hard down on the seabed, impacting benthic habitats.

Increasing the TACC for the STA7 stock as proposed is unlikely to translate to a significant increase in overall trawling effort. Therefore, the trawl footprint and associated impacts on benthic habitat classes that have been assessed, are not expected to change under the proposed options.

## 4.2 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations included in this paper.

## 4.3 SECTION 11 – SUSTAINABILITY MEASURES

Only section 11 measures that are directly relevant to STA7 are discussed within this section. See Appendix I for consideration of other section 11 measures.

- a) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC, and allowances for customary take, recreational take, and incidental fishing-related mortality. Other standard management controls apply to the STA7 fishery, for example deemed values, and fishing method constraints. The proposed changes to the TAC do not affect these measures.
- b) Sections 11(2)(a) and (b): have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that you consider relevant. MPI considers that the three options proposed are consistent with the Hector's Dolphin Threat Management Plan<sup>58</sup>. MPI is not aware of any other policy statements, plans or strategies that should be taken into account for STA7.

## 4.4 SECTION 13 (2A) – SETTING THE TAC

The best available information is insufficient to enable the reliable estimation of  $B_{CURRENT}$  and  $B_{MSY}$  for STA7.

Where reliable estimates of stock status in relation to  $B_{MSY}$  are not available, s 13(2A) of the Act requires the Minister to use the best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield. The TAC options presented in this paper take into account the requirements listed in s 13(2A) and 13(3) of the Act. The options offer differing approaches to managing the sustainability of the fishery, and the way and rate at which STA7 would move towards or above the target level, given the available information.

## 4.5 SECTIONS 20 & 21 – ALLOCATING THE TAC

The TAC must be apportioned among the relevant sectors and interests as required under sections 20 and 21 of the Act. Section 21 prescribes that you shall make allowances for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups, either in terms of a quantitative measure, or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on the best available information. In the event of imperfect information, you are entitled to be cautious.

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<sup>58</sup> <http://www.fish.govt.nz/en-nz/Environmental/Hectors+Dolphins/default.htm>

#### 4.5.1 Recreational allowance

The 2011/12 National Panel Survey provided an estimate of 481 stargazer harvested by recreational fishers in STA7 during the 2011/12 fishing year. Given the uncertainty in using this estimate to predict current or future catches, and the indications of relatively high stock biomass, MPI considers it is reasonable to provide for increases to the recreational allowance for STA7 if the TAC is increased. The proposed change would allow for any increase in recreational catch as abundance of stargazer increases.

#### 4.5.2 Customary allowance

There is no proposal to increase the customary allowance for STA7. FINZ submits that MPI needs to review the reasonableness of customary allocations to reflect the available information. Information on customary catch is uncertain, but MPI has no information to indicate that customary catch has changed significantly since the last management review in 2010. The best available information suggests that current settings will provide for both current levels of catch and any potential increase in customary harvest of stargazer in STA7 as a result of increased abundance. MPI considers that any general shifts in the approach to setting the customary allowance for STA7, as suggested by FINZ, would be best considered as part of work with FINZ to further develop management approaches for inshore stocks (including STA7) and should include the input and participation of the Forum.

The Whakapuaka (Delaware Bay) Taiapure, and the Te Tai Tapu (Kaihoka and Anatori), Manakaiaua/Hunts Beach, Mahitahi/Bruce Bay, Tauperikaka, Okarito Lagoon and Okura/Mussel Point mātaītai reserves are all within the STA7 quota management area. MPI notes that the proposals in this paper will not impact on, or be impacted by, these taiapure and mātaītai reserves.

#### 4.5.3 Other sources of fishing-related mortality

Information to inform setting an allowance for other sources of fishing-related mortality in STA7 is uncertain. Options 2 and 3 propose to increase this allowance to a level that equates to approximately 5% of the TACC. This would take account of the various sources of incidental fishing-related mortality likely to be occurring in STA7, and be consistent with other recently reviewed stocks. No submissions were made to suggest alternative approaches to the setting of this allowance.

#### 4.5.4 TACC

Catches from the commercial sector have been near or above the TACC for twelve years. The consistent levels of over catch indicate that the proposed increased TACCs are likely to be fully caught.

Options 2 and 3 propose increases to the TACC from 1072 to 1138 tonnes, and 1072 to 1181 tonnes respectively. These options provide for small increases to the current commercial catch levels (1062 tonnes in the 2013/14 fishing year). By increasing the TACC, greater value can be obtained from the fishery and fishers are more likely to be able to cover STA7 catch with ACE and therefore, will be less likely to incur deemed value payments.

### 4.6 SECTION 75 – DEEMED VALUE RATES

Section 75 of the Act requires that you set deemed value rates for every stock in the QMS. This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient ACE so that fishing effort does not result in catch limits being exceeded.

MPI has consulted on STA7 deemed values. A discussion of the deemed value rates for STA7 is included in Part C of this document.

## 5 Management Options

### 5.1 ANALYSIS OF OPTIONS

The final options for setting the TAC, TACC, and allowances for STA7 (Table 3) do not differ from those consulted on. Option 1 retains the *status quo*, while Options 2 and 3 increase the TAC, TACC, recreational allowance, and allowance for other sources of fishing-related mortality. MPI notes that ongoing monitoring of the STA7 stock is also planned under all options to enable annual catch levels to be adjusted in response to future biomass changes.

Table 3: TAC, TACC and allowance options consulted on for STA7

Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality
Option 1 ( <i>Status Quo</i> )	1072	1042	1	2	27
Option 2	1138	1082	1	3	52
Option 3 (MPI Preferred)	1181	1122	1	4	54

#### 5.1.1 Option 1

Option 1 is the *status quo* and proposes no changes to the TAC, TACC, or allowances for customary Māori, recreational, or other sources of fishing-related mortality.

Option 1 takes a cautious approach and does not respond to the indication that STA7 is likely to remain at or above  $B_{MSY}$  at current catch levels.

#### Impact

Given that reported commercial landings of STA7 have been constrained at or near the TACC for the last 10 years, retaining the current TACC despite evidence to support increased abundance may result in opportunity loss for the commercial sector. This is because Option 1 does not enable industry to fully utilise elevated biomass in a way that could allow them to maximise value. Deemed values for STA7 in 2013/14 totalled \$21,042.00.

#### 5.1.2 Option 2

Under Option 2:

- The TAC would be increased from 1072 tonnes to 1138 tonnes (an increase of 6%).
- The TACC would be increased from 1042 tonnes to 1082 tonnes (an increase of 4%).
- The customary Māori allowance would remain at 1 tonne.
- The recreational allowance would be increased from 2 tonnes to 3 tonnes (an increase of 50%).
- The allowance for other sources of fishing-related mortality would be set at 52 tonnes (5% of the TACC).

Option 2 provides a “midway” approach that responds to information that STA7 will likely remain at or above  $B_{MSY}$  under current catches, but provides for smaller utilisation increases than Option 3. While MPI was interested in the views of tangata whenua and stakeholders on this option, the difference in catch limits between Option 2 and Option 3 is not considered to provide a significant difference in relation to the possible risk to sustainability.

No information has been provided that justifies Option 2 as a better option than others in this paper.

### 5.1.3 Option 3 (MPI Preferred)

Under Option 3:

- The TAC would be increased from 1072 tonnes to 1181 tonnes (an increase of 10%).
- The TACC would be increased from 1042 tonnes to 1122 tonnes (an increase of 8%).
- The customary Māori allowance would remain at 1 tonne.
- The recreational allowance would be increased from 2 tonnes to 4 tonnes (an increase of 100%).
- The allowance for other sources of fishing-related mortality would be set at 54 tonnes (5% of the TACC).

MPI recommends that you implement Option 3. MPI considers that this option best responds to the assessment that it is likely that STA7 is currently at or above the target level and recent indications that relative biomass is stable. The increase to the TAC included within Option 3 allows for increased utilisation while continuing to ensure sustainability. Any increased sustainability risk under this option can be managed via ongoing monitoring of the stock using fishery independent trawl surveys, and future adjustment to sustainability measures.

Option 3 was supported by Southern Inshore and FINZ.

The TAC increase within Option 3 allows for increases to the allowances and TACC currently set for STA7.

The increase to the recreational allowance of 2 tonne included within this option is a 100% increase. This adjustment recognises that STA7 is currently at a relatively high level of abundance as well as the uncertainty in estimates of recreational harvest within STA7. The high abundance could result in increased recreational catch which would be allowed for within the revised allowance.

Under Option 3, the allowance for other sources of fishing-related mortality is increased from 27 tonnes to 54 tonnes to align with 5% of the revised TACC. No changes are proposed to the Maori customary allowance.

A TACC of 1122 tonne is moderately higher than recent average annual landings (1062 tonnes in the 2013/14 fishing year). An increase of 8% to the TACC will provide for greater utilisation opportunities than Options 1 and 2. Based on the 2015/15 port price of \$1.18 per kilogram, an 80 tonne increase would generate an additional \$94,400.00 of revenue. In addition, relief from STA7 deemed value pressure through increasing the TACC will provide maximised benefit from the available catch.

## 6 Other Matters

### 6.1 RECREATIONAL CONTROLS

There is no information to suggest a change to recreational regulations would be needed to implement your decisions.

## 7 Conclusion

MPI recommends Option 3 – increasing the TAC of STA7 to 1181 tonnes, increasing the TACC to 1122 tonnes, increasing the allowance for recreational interests to 4 tonnes and the other sources of fishing-related mortality to 54 tonnes. The customary allowance of 1 tonne remains unchanged.

The 2008 stock assessment of the STA7 fishery suggested that, at that time, the stock was likely to be at or above  $B_{MSY}$ . Biennial trawl surveys since then have indicated that the biomass has at least remained stable, but more likely increased. This is despite annual catch levels being at or above the TACC during this period.

Option 3 best provides for an increase in utilisation of STA7 and the programmed biennial trawl survey will provide for ongoing monitoring and future reviews to ensure fishing is sustainable. The two submissions that were received both support this approach.

MPI notes that you have broad discretion in exercising your powers of decision making, and you may make your own independent assessment of the information presented to you in making your decision. You are not bound to choose the option recommended by MPI.

# PART C: DEEMED VALUE RATES

## 1 Executive Summary

The Ministry for Primary Industries (MPI) recommends that you consider the deemed value rates for the fish stocks identified below. Your decisions will be effective from 1 October 2015.

MPI has identified seventeen stocks for which deemed value require review. Proposals for adjustments to these deemed value rates were developed based on statutory requirements, the Guidelines<sup>59</sup>, and key information. These reviews have been undertaken because the TAC for the relevant stock is also being reviewed in 2015, which has consequential implications for deemed value rates, or the TACC has been overcaught for a period.

The majority of the stocks reviewed have recommendations to increase interim deemed value rates from 50% to 90% of the annual deemed value rate to encourage more regular balancing throughout the year with Annual Catch Entitlement (ACE). If fishers do not regularly balance catch with ACE during the year, then there is a risk of insufficient ACE being available to cover catch at the end of the year and therefore increasing risk of overcatch of the TACC. In addition, it is recommended that the annual deemed value rate for GUR1 is adjusted.

A review of deemed value rates for KIN7 and KIN8 was requested by Industry. MPI does not consider there to be strong rationale for change to the deemed value rates for these stocks and recommends that the underlying issues require a more comprehensive review of the management framework for these stocks. As kingfish is a high value recreational species, a multi-sector group is being considered to progress this work. We will provide you further advice on our proposals for review of these fisheries in the next few months.

MPI has also analysed relevant information for STA7 and is not recommending any changes to deemed value rates for this stock.

The proposals have been assessed in terms of the relevant statutory requirements, the best available information, and tangata whenua and stakeholder input.

## 2 Purpose

Section 75 of the Fisheries Act 1996 (the Act) requires that you set deemed value rates for every stock in the Quota Management System (QMS). The changes proposed in this paper are intended to improve the performance of the deemed value settings in providing incentives for fishers to obtain ACE, without encouraging discarding or misreporting.

## 3 The Deemed Value Framework

The QMS is the backbone of the New Zealand fisheries management regime which covers 100 species managed within 638 fish stocks. The framework that encourages balancing catch against catching rights (ACE) is known as the catch balancing regime and is fundamental to ensuring integrity of the overall system.

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<sup>59</sup> The Guidelines are explained in Section 5.2 'Deemed Value Guidelines' of this document (see Appendix 1 for the full Guidelines)



On the first day of the fishing year, all quota owners for a given stock are provided with ACE based on their quota share and the current TACC. Under the catch balancing regime, fishers are required to balance their catch with ACE or pay a deemed value on catch in excess of the ACE they hold.

Effective deemed value rates contribute to both sustainability and utilisation objectives. Sustainability objectives are achieved as deemed value rates encourage fishers to balance catch with ACE and, in doing so, encourage harvesting to remain within the TACC. Utilisation objectives are achieved by maintaining the long term value of the stock by ensuring sustainable harvesting but also providing limited flexibility to allow fishers to manage occasional, small amounts of over catch in multi species fisheries.

There are two different deemed values used as part of the balancing regime. The annual deemed value is charged at the end of the fishing year on catch in excess of ACE held at the time. Interim deemed value rates are charged each month to commercial fishers for every kilogram of fish landed in excess of the ACE they hold. Interim deemed value rates are intended to provide an incentive for fishers to source ACE during the year instead of leaving catch balancing until the end of the year, while not unduly penalising them. Typically, the interim deemed value rates are set less than the annual rates. If the fisher sources enough ACE to cover his or her catch, the interim rates paid are remitted. If the fisher does not source enough ACE by the end of the fishing year, the difference between the interim and annual deemed value rates is charged for all catch in excess of ACE.

Differential deemed value rates, if applicable, are also charged at the end of the fishing year if the fisher harvested well in excess of his or her ACE holdings. Differential rates reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and on the long-term value of the resource. They are intended to provide increasingly stronger incentives to avoid excessive over-catch. This results in an escalated schedule of rates as the percentage by which catch exceeds ACE increases. The standard differential rate increases in 20% increments up to a maximum of 200% of the annual deemed value. However, for stocks that are more biologically vulnerable or for rebuilding stocks, a more stringent non-standard differential or variable deemed value schedule (e.g. applying from 5% or 10% over-catch) may be more appropriate than the standard schedule.

### 3.1 IDENTIFYING STOCKS FOR DEEMED VALUE REVIEW

Before determining which stocks to review deemed value rates for, MPI:

- assessed October stocks against the Performance Measures outlined in the Guidelines for the deemed value framework, as follows:
  - Whether catch was in excess of the TACC;
  - The percentage of catch for each stock not balanced with ACE;
  - The ratio of the total deemed value payments to the value of quota.
- considered stocks for which the total allowable catch (TAC) levels were being reviewed for 1 October 2015;
- considered whether or not interim deemed value rates were consistent with the Guidelines used by MPI for the past few years when reviewing deemed value rates (90% of annual rate and how deemed value rates relate to ACE and port price); and
- invited the fishing industry to nominate stocks for deemed value rate reviews, in the context of discussions as part of the annual fisheries planning process.

Table 1 sets out the prioritised stocks and the reasons for consideration in this review.

Table 1: Rationale for fish stocks prioritised for review

Stock	Rationale for review
Frostfish in FRO8	- TACC exceeded by 25% in 2013/14 - Ratio of DV to QV is 3.86%
Frostfish in FRO9	- TACC exceeded by 98% in 2013/14 - Ratio of DV to QV is 12.62%
Grey mullet in GMU1	- TACC exceeded by 6% in 2013/14 - Ratio of DV to QV is 1.21%
Red gurnard in GUR3	- Subject of sustainability review in 2015 - TACC exceeded by 11% in 2013/14 - Ratio DV to QV is 1.93%
Red gurnard in GUR7	- Subject of sustainability review in 2015 - TACC exceeded by 7% in 2013/14 - Ratio DV to QV is 0.11%
Kingfish in KIN7	- Industry request as a consequence of DV payments of \$149,000 in 2013/14 - TACC exceeded by 71% in 2013/14 - Ratio of DV to QV is 17.21% in 2013/14
Kingfish In KIN8	- Industry request as a consequence of DV payments of \$748,000 in 2013/14 - TACC exceeded by 98% in 2013/14 - Ratio of DV to QV is 27.56% in 2013/14
Look down dory in LDO1	- TACC exceeded by 22% in 2013/14 - Ratio of DV to QV is 7.03% in 2013/14
Pilchard in PIL8	- TACC exceeded by 49% in 2013/14 - Ratio of DV to QV is 38.56% in 2013/14
Redbait in RBT3	- TACC exceeded by 27% in 2013/14 - Ratio of DV to QV is 6.19% in 2013/14
Rubyfish in RBY7	- TACC exceeded by 46% in 2013/14 - Ratio of DV to QV is 21.39% in 2013/14
Ribaldo in RIB4	- TACC exceeded by 38% in 2013/14 - Ratio of DV to QV is 12.25% in 2013/14
Ribaldo in RIB8	- TACC exceeded by 97% in 2013/14 - Ratio of DV to QV is 5.84% in 2013/14
Red snapper in RSN2	- TACC exceeded by 21% in 2013/14 - Ratio of DV to QV is 7.65%
Rig or spotted dogfish in SPO2	- TACC exceeded by 16% in 2013/14 - Ratio of DV to QV is 3.68% - Subject to a sustainability review in 2015
Rig or spotted dogfish in SPO7	- Subject of a sustainability review in 2015 - TACC exceeded by 4% in 2013/14 - Ratio of DV to QV is 0.61%
Stargazer in STA7	- Subject of a sustainability review in 2015 - TACC exceeded by 2% in 2013/14 - Ratio of DV to QV is 0.33%

## 4 Consultation

MPI consulted on the proposed changes, following its standard consultation process.

Initial proposals are outlined in Table 2 below.

Table 2: Current and recommended deemed value rates for October stocks

Species	Stock	Current				Recommended			
		Interim \$	Annual \$	Annual 200% \$	Differential	Interim	Annual \$	Annual 200% \$	Differential
Frostfish	FRO8	0.08	0.15	0.15	Not set	0.135	0.15	0.15	Not set
	FRO9	0.08	0.15	0.15	Not set	0.135	0.15	0.15	Not set
Grey mullet	GMU1	0.61	1.21	2.42	Standard	1.35	1.50	3.00	Standard
Gurnard	GUR3	0.85	1.70	2.42	Standard	1.53	1.70	3.40	Standard
	GUR7	0.85	1.70	2.42	Standard	1.53	1.70	3.40	Standard
Kingfish	KIN7	8.00	8.90	17.80	Variable			No change	
	KIN8	4.45	8.90	17.80	Variable			No change	
Lookdown Dory	LDO1	0.21	0.42	0.42	Not set	0.378	0.42	0.42	Not set

Species	Stock	Current				Recommended			
		Interim \$	Annual \$	Annual 200% \$	Differential	Interim	Annual \$	Annual 200% \$	Differential
Pilchard	PIL8	0.30	0.60	1.20	Standard	0.54	0.60	1.20	Standard
Redbait	RBT3	0.25	0.50	1.00	Standard	0.45	0.50	1.00	Standard
Ruby fish	RB7	0.21	0.42	0.42	Not set	0.378	0.42	0.42	Not set
Ribaldo	RIB4	0.15	0.30	0.60	Standard	0.27	0.30	0.60	Standard
	RIB8	0.15	0.30	0.30	Not set	0.27	0.30	0.60	Standard
Red snapper	RSN2	2.05	4.09	8.18	Standard	3.681	4.09	8.18	Standard
Rig	SPO2	1.50	3.00	6.00	Variable	2.70	3.00	6.00	Variable
	SPO7	1.50	3.00	6.00	Standard	2.70	3.00	6.00	Standard
Stargazer	STA7	0.90	1.00	2.00	Standard	No change			

## 4.1 SUBMISSIONS RECEIVED

MPI received five submissions relating to the recommended changes. Submissions were received from:

- Fisheries Inshore NZ Limited (FINZ) and the Deepwater Group Ltd (DWG)
- Southern Inshore Fisheries (Southern Inshore) that represents quota owners throughout the South Island and Taranaki regions (fisheries management areas 3, 5, 7 & 8) and is a member of FINZ
- Ocean Fisheries Ltd and Ocean Fisheries Quota Holding Ltd (Ocean Fisheries)
- Sanford Ltd
- Independent Fisheries, Maruha (NZ) and Sealord Charters Limited (Independent, Maruha & Sealord)

## 4.2 SUMMARY OF SUBMISSIONS

Submitters' comments on rate changes for specific stocks are addressed in the analysis of each species below. Full copies of submissions are available in Appendix 2.

Other issues raised in the submissions centre around the deemed value framework itself. Though not within the scope of this deemed value review for individual stocks, these views are summarised below for your information, and brief MPI responses are provided.

A recurrent issue raised by FINZ & DWG, Ocean Fisheries and Independent, Maruha & Sealord is that TACCs for many stocks, particularly bycatch species (including KIN7 and KIN8), are set too low and do not reflect the abundance of the stocks. However, submitters' recognise that some stocks covered in this review are recommended for TACC increases.

The setting of deemed value rates is a separate process from setting TACCs. Your decision to set deemed value rates should not be influenced by whether or not submitters' consider the TACC for a stock is set correctly. This is reinforced by case law, which indicates that the appropriateness of the TACC is not a relevant consideration, when setting deemed value rates.

Every year the Ministry reviews TACCs, prioritising stocks based on available information and stakeholder input. The Ministry has noted commercial submitters' views on the TACCs for several stocks for which deemed value rates are being reviewed. Those views will be taken into account in processes for both research planning and identification of candidate stocks for catch limit reviews during 2016. In the meantime, the deemed value rates recommended in this paper are aimed at encouraging fishers to cover all catch with ACE and at maintaining the integrity of current TACCs to ensure sustainability.

FINZ & DWG supported by Southern Inshore note that a previous Final Advice Paper on the Deemed Value Standard indicated that the Ministry was changing its stakeholder engagement process from a Joint Working Group to greater reliance on engagement through the fisheries planning process, however, there was no discussion with Industry on the current deemed value proposals prior to release of the consultation document.

Engagement with Commercial Stakeholder Entities (CSEs) and Commercial Stakeholder Organisations (CSOs) is now mainly through the fisheries planning process for inshore, deepwater, and highly migratory species fisheries. However, despite consultation in 2011 and the use of these Guidelines thereafter from 2012 for developing final advice, Industry has not accepted the Deemed Value Guidelines.

FINZ & DWG supported by Southern Inshore are concerned about the deemed value framework itself and the application of relevant policy. In particular, concerns are that the Deemed Value Standard that was approved by a previous Minister has not informed decisions since 2007. Industry asserts it is not in the Ministry's powers to ignore a process approved by the Minister.

The Deemed Value Standard was superseded by the Deemed Value Guidelines following a review of the performance of the deemed value framework over the years 2008-11. These changes were consolidated and summarised into Guidelines, and consulted on during 2011. This resulted in the adoption of the current Guidelines which clarify the reasons given for advice on deemed value rate adjustments and replace the Deemed Value Standard. Further details are provided in section 4.2 'Deemed Value Guidelines'.

FINZ & DWG question the value of calculating the ratio of the total deemed value payments to the value of quota. MPI developed this criterion to identify the deemed value rates that are not creating an effective incentive for fishers to balance catch with ACE. In this review, the criterion was used for that purpose only, and it was used in association with the other criteria. MPI intends to monitor the utility of the indicator target of less than 0.1% of the value of quota in future deemed value reviews.

FINZ & DWG submits that lifting an interim deemed value rate to 90% in the absence of any sustainability or over-catch issue is unnecessary tinkering.

MPI notes that under the previous Standard, interim deemed value rates generally were set at 50% of the annual rates. However, the more recent Guidelines suggest that higher interim deemed value rates may be appropriate, and should be set generally at 90% of the annual rates. This increase addresses the risk that if the interim deemed value rate is below the ACE price, then fishers have an incentive to delay acquiring ACE until the end of the fishing year. If balancing of catch does not occur throughout the year, permit holders may arrive at the end of the year expecting to buy ACE, only to find that all ACE has been used resulting in overcatch of the TACC and increased sustainability risk.

MPI notes that the level at which annual deemed value rates are set is directly related to an array of complex variables such as operating costs, ACE prices, transaction costs of acquiring ACE, and landed fish prices. When any factor changes, so do the incentives created by the deemed value rates. Accordingly, deemed value rates are reviewed annually and assessed to ensure incentives remain effective. MPI has designed an administrative system to support

deemed value rate settings that is proactive and anticipates, and addresses problems. MPI favours making frequent, small changes to deemed value rates, rather than waiting for major problems to arise and then make very large changes which can have significant impacts on industry. We consider this approach best incentivises fishers to make changes to their fishing behaviour.

## 5 Legal Considerations

### 5.1 FISHERIES ACT

Section 75 of the Act provides the statutory framework for setting deemed value rates. Section 75(1) requires you to set annual and interim deemed value rates for all stocks managed under the QMS.

When setting these rates, you are required under section 75(2)(a) to take into account the need to provide an incentive for every commercial fisher to acquire or maintain sufficient ACE each fishing year that is not less than the total catch of the stock taken by that commercial fisher.

Section 75(2)(b) specifies the matters that you may have regard to when setting deemed value rates for a stock. These are:

- the desirability of commercial fishers landing catch for which they do not have ACE;
- the market value of ACE for the stock;
- the market value of the stock;
- the economic benefits obtained by the most efficient commercial fisher, licensed fish receiver, retailer, or any other person from the taking, processing, or sale of fish, aquatic life or seaweed;
- the extent to which catch of that stock has exceeded or is likely to exceed the TACC for the stock in any year; and
- any other matters that you consider relevant.

Section 75(3) specifies that the annual deemed value rate must be greater than the interim deemed value rate. Furthermore, you may choose to set, under section 75(4), differential deemed value rates for specific stocks. Section 75(5) allows you to set different deemed value rates for fish landed in the Chatham Islands, reflecting the unique marketing conditions of those landings. Section 75(6) requires that you should not have regard to personal circumstances or set separate deemed value rates in individual cases. Under section 75(7) you may vary deemed value rates to take effect at the start of the next fishing year. Before setting deemed value rates, you must consult with stakeholders and tangata whenua that have an interest in the stock, as required by section 75A.

### 5.2 DEEMED VALUE GUIDELINES

Within the statutory framework, you have considerable discretion when setting deemed value rates. In developing advice to you, MPI recommends deemed value settings that are consistent with section 75 and other relevant provisions of the Act. In doing so, Guidelines have been developed after consulting with stakeholders.

However, the Guidelines do not bind you. They serve only as a guide and do not preclude you from taking into account relevant information on a case by case basis. When making

decisions on deemed value rates, you use the statutory criteria in making decisions and can act within the bounds of the statute, notwithstanding the Guidelines.

The practical application of the statutory criteria is expressed in the Guidelines, as summarised below (see Appendix 1 for the full Guidelines):

- deemed value rates must generally be set between the ACE price and the port price;
- deemed value rates must generally exceed the ACE price by transaction costs;
- deemed value rates must avoid creating incentives to misreport;
- deemed value rates for constraining bycatch species may be higher than for target species;
- deemed value rates must generally be set at twice the port price for high value single species fisheries and species subject to international catch limits;
- deemed value rates for Chatham Island landings may be lower;
- interim deemed value rates must generally be set at 90% of the annual deemed value rate;
- differential deemed value rates must generally be set.

## 6 Management Options

### 6.1 ANALYSIS OF OPTIONS

MPI recommends that you approve changes to deemed value rates for selected stocks as outlined in Table 3. These options are the same as those consulted on.

Relevant fishery information is also discussed alongside the proposals in this section.

Table 3: Current and recommended deemed value rates for October stocks

Species	Stock	Current				Recommended			
		Interim \$	Annual \$	Annual 200% \$	Differential	Interim	Annual \$	Annual 200% \$	Differential
Frostfish	FRO8	0.08	0.15	0.15	Not set	0.135	0.15	0.15	Not set
	FRO9	0.08	0.15	0.15	Not set	0.135	0.15	0.15	Not set
Grey mullet	GMU1	0.61	1.21	2.42	Standard	1.35	1.50	3.00	Standard
Gurnard	GUR3	0.85	1.70	2.42	Standard	1.53	1.70	3.40	Standard
	GUR7	0.85	1.70	2.42	Standard	1.53	1.70	3.40	Standard
Kingfish	KIN7	8.00	8.90	17.80	Variable			No change	
	KIN8	4.45	8.90	17.80	Variable			No change	
Lookdown Dory	LDO1	0.21	0.42	0.42	Not set	0.378	0.42	0.42	Not set
Pilchard	PIL8	0.30	0.60	1.20	Standard	0.54	0.60	1.20	Standard
Redbait	RBT3	0.25	0.50	1.00	Standard	0.45	0.50	1.00	Standard
Ruby fish	RBY7	0.21	0.42	0.42	Not set	0.378	0.42	0.42	Not set
Ribaldo	RIB4	0.15	0.30	0.60	Standard	0.27	0.30	0.60	Standard
	RIB8	0.15	0.30	0.30	Not set	0.27	0.30	0.60	Standard
Red snapper	RSN2	2.05	4.09	8.18	Standard	3.681	4.09	8.18	Standard
Rig	SPO2	1.50	3.00	6.00	Variable	2.70	3.00	6.00	Variable
	SPO7	1.50	3.00	6.00	Standard	2.70	3.00	6.00	Standard
Stargazer	STA7	0.90	1.00	2.00	Standard			No change	

## 6.2 STOCKS TO BE CONSIDERED IN CONJUNCTION WITH CURRENT TACC DECISIONS

A review of the deemed value rates has been put forward to accompany your reviews of TACCs for GUR3, GUR7, SPO2, SPO7 and STA7. Fishery information and TACC recommendations for these stocks are outlined in Part B of this paper.

MPI proposed increasing the interim deemed value rates from 50% to 90% of the annual deemed value rate for four of these stocks; GUR3, GUR7, SPO2 and SPO7. No changes were proposed for STA7, as settings for this stock were adjusted in the 2013/14 fishing year.

Table 4: Information to support review of deemed value rates for GUR3, GUR7, SPO2 and SPO7

Stock	TACC (tonnes)	%Caught	Quota Value (QV) \$/kg	ACE \$/kg	Interim Deemed Value (DV)\$/Kg	Annual DV \$/kg	Port Price \$/kg	Ratio of total DV paid to total QV
GUR3	1100	111	\$11.24	\$0.97	0.85	1.70	\$1.98	0.02
GUR7	785	107	\$5.38	\$0.49	0.85	1.70	\$1.82	0.00
SPO2	108	116	\$19.75	\$1.78	1.50	3.00	\$2.76	0.04
SPO7	221	104	\$17.59	\$1.58	1.50	3.00	\$3.73	0.01

### 6.2.1 Submissions

Southern Inshore request no change be made to deemed value rates for GUR3 and GUR7 until the deemed value regime is reviewed. No submissions were received on the proposal to increase deemed value rates for SPO2 and SPO7 stocks.

### 6.2.2 MPI Response

MPI considers that matters related to the review of the deemed value framework itself are beyond the scope of this advice.

MPI propose to increase the interim deemed value rate from 50% to 90% of the annual deemed value rate. This increase addresses the risk that if the interim deemed value rate is below the ACE price, then fishers have an incentive to delay acquiring ACE. This can result in fishers not balancing catch until the end of the fishing year. If insufficient ACE is available at the end of year to cover the catch, then overcatch of the TACC can result.

### 6.2.3 Recommendation

MPI recommends that the interim deemed value rates for GUR3, GUR7, SPO2 and SPO7 are adjusted as outlined in Table 5. Regular balancing should support greater awareness of the availability of ACE and promote catches being constrained within the TACC.

Table 5: Current and recommended deemed value rates/kg for GUR3, GUR7, SPO2, SPO7 and STA7

Stock	Option	Interim	Annual 100-120%	Annual 120-140%	Annual 140-160%	Annual 160-180%	Annual 180-200%	Annual 200%+
GUR3	Current	0.8500	1.7000	2.0400	2.3800	2.7200	3.0600	3.4000
GUR3	Recommended	1.5300	1.7000	2.0400	2.3800	2.7200	3.0600	3.4000
GUR7	Current	0.8500	1.7000	2.0400	2.3800	2.7200	3.0600	3.4000
GUR7	Recommended	1.5300	1.7000	2.0400	2.3800	2.7200	3.0600	3.4000
SPO2	Current	1.5000	3.0000	variable	6.000	6.000		
SPO2	Recommended	2.700	3.0000	variable	6.000	6.000		
SPO7	Current	1.5000	3.0000	3.6000	4.2000	4.8000	5.4000	6.0000
SPO7	Recommended	2.700	3.0000	3.6000	4.2000	4.8000	5.4000	6.0000
STA7	No Change	0.9000	1.0000	1.2000	1.4000	1.6000	1.8000	2.0000

## 6.3 STOCKS WITH MULTIPLE YEARS OF OVER-CATCH

Six stocks were identified for review that have had the TACC over-caught in recent years as well as the 2013/14 fishing year. These stocks, discussed further in this section, are FRO8, FRO9, KIN7, KIN8, LDO1 and RIB8.

### 6.3.1 Frostfish (FRO8 and FRO9)

Frostfish are primarily taken as a bycatch species of jack mackerel target fisheries by mid-water trawl. FRO8 catch has exceeded the TACC eight times in the last 10 fishing years. FRO9 catch has exceeded the TACC nine times in the last eleven fishing years.

The key rationale for reviewing the deemed value is that the performance criteria of over-catch and high deemed value payments compared to quota value have been triggered. In addition, the interim deemed value rate for frostfish is set at 50% of the annual rate meaning there is weak incentives for fishers to balance catch with ACE before the end of the fishing year, and there is no differential rate for increasing levels of over-catch. Both of these issues increase risk of over-catch of the TACC.

Table 6: Information to support review of deemed value rates

Stock	TACC (tonnes)	%Caught	Quota Value (QV) \$/kg	ACE \$/kg	Interim Deemed Value (DV) \$/Kg	Annual DV \$/kg	Port Price \$/kg	Ratio of total DV paid to total QV
FRO8	649	125	\$1.01	\$0.09	0.08	0.15	\$0.17	0.04
FRO9	138	198	\$1.22	\$0.11	0.08	0.15	\$0.21	0.13

Consistent with the Guidelines, MPI proposed to increase the proportion of the annual deemed value rate at which interim deemed value rates are set from 50% to 90%.

MPI did not propose to apply differential rates given that FRO8 and 9 have low value and a less stringent rate schedule is appropriate.

Table 7: Current and recommended deemed value rates/kg for FRO8 and FRO9

Stock	Option	Interim	Annual 100-120%	Annual 120-140%	Annual 140-160%	Annual 160-180%	Annual 180-200%	Annual 200%+
FRO8	Current	0.0800	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500
FRO8	Recommended	0.1350	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500
FRO9	Current	0.0800	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500
FRO9	Recommended	0.1350	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500

#### 6.3.1.1 Submissions

FINZ & DWG submits that there is no need to amend the deemed value rates for frostfish since:

- there has been no review of the circumstances of over-catch
- there has been no assessment of the most appropriate options
- FRO8 and FRO9 have had a long history of over-catch and since no sustainability issue has been identified a TACC increase would be the most appropriate response and
- there is under-catch in adjoining QMAs.



### 6.3.1.2 MPI Response

MPI agrees that these stocks of frofish have a long history of being over-caught; and FRO7-9 likely comprise one biological stock. Rather than retaining the existing management units, MPI's preference would be to amalgamate the FRO7-9 stocks into a single quota management area. A provision exists in the Act for industry-led QMA alterations and MPI would welcome such an initiative.

The setting of deemed value rates is a separate process from setting TACCs. Your decision to set a deemed value rate cannot be influenced by whether or not submitters consider the TACC for a stock is set correctly.

The Act (section 75(3)) requires you to set annual deemed value rate that is greater than the corresponding interim deemed value rate. Interim deemed value rates are intended to provide an incentive for fishers to source ACE during the year instead of leaving catch balancing until the end of the year, while not unduly penalising them. Under the previous Standard, interim deemed value rates have been set at 50% of the annual rates for frofish stocks, but the Guidelines suggest that higher interim deemed value rates may be appropriate.

MPI proposed to increase the proportion of the annual deemed value rate at which interim deemed value rates are generally set from 50% to 90%. This increase addresses the risk that if the interim deemed value rate is below the ACE price, then fishers have an incentive to delay acquiring ACE. The result can be to delay the balancing of catch until the end of the fishing year. Permit holders may arrive at the end of the year expecting to buy ACE, only to find that all ACE has been used. Therefore low interim deemed values interfere with the signalling functions of ACE markets.

### 6.3.1.3 Recommendation

MPI recommends that interim deemed value rates for FRO8 and FRO9 be adjusted from \$0.08 per kg to \$0.135 per kg. The recommended increased interim deemed value rate from 50% to 90% of the annual deemed value rate is expected to lead to more regular balancing throughout the year with ACE and is consistent with the Guidelines.

## 6.3.2 Kingfish (KIN7 and KIN8)

Kingfish is primarily taken as a bycatch species of jack mackerel and trevally target fisheries by bottom and mid-water trawl in these stock areas. The TACCs for both KIN7 and KIN8 have been significantly overcaught for the last three fishing years.

Table 8: Information to support review of deemed value rates

Stock	TACC (tonnes)	%Caught	Quota Value (QV) \$/kg	ACE \$/kg	Interim Deemed Value (DV)\$/Kg	Annual DV \$/kg	Port Price \$/kg	Ratio of total DV paid to total QV
KIN7	15	171	\$66.40	\$5.98	8.00	8.90	\$2.78	0.17
KIN8	45	198	\$69.38	\$6.24	4.45	8.90	\$4.15	0.28

The key rationale for undertaking this review are the performance triggers of over-catch and high deemed value payments compared to quota value.

The current deemed value rates for KIN7 and KIN8 are set well above the ACE price and reported port price and the ramping rates recognise the significance of the stocks to the

recreational sector. This level of deemed value rate is intended to encourage fishers to balance catch with ACE and return live kingfish to the water when possible. The interim deemed value rate of KIN7 is 90% of the annual deemed value rates in accordance with the Guidelines and to encourage regular balancing with ACE. The interim deemed value rate for KIN8 is set at 50% of the annual rate. A differential deemed value schedule is set for both stocks that financially penalises higher levels of over-catch to a greater degree than the standard schedule.

#### *6.3.2.1 Submissions*

FINZ & DWG request that the deemed value rates for KIN7 and KIN8 be decreased to be consistent with a port price of \$2.78 for KIN7 and \$4.15 for KIN8. They submit poor management has brought about market failure as indicated by the high ACE price.

#### *6.3.2.2 MPI Response*

MPI has evaluated reducing the annual deemed value rate to a level between the ACE and port price, but closer to the ACE price than the port price. Adopting this option takes into account that the frozen product taken by the jack mackerel fleet is low value and a reduced deemed value rate will maintain incentives where possible to catch within ACE. There is also evidence based on information gained by fishery observers in the jack mackerel fleet that the high level of catch of KIN7 and KIN8 is unavoidable with current fishing practices. If the current landings are unavoidable and the bycatch rate of kingfish cannot be reduced by modifications to fishing practices, this option has the advantage of lowering future deemed value payments by up to 48%. The Industry proposal would confer greater potential savings.

MPI is aware that deemed value rates are failing to provide an effective incentive for commercial fishers to constrain catch to the TACC. In circumstances such as this, the Guidelines suggest that deemed value rates should be increased.

Current deemed value rates for KIN7 and KIN8 are already set well above the port price and ACE price. However, in this circumstance, these prices may not be the best indicator of the value of harvesting KIN7 and KIN8. The majority of kingfish is taken as bycatch while taking the much higher value by volume overall of jack mackerel. This creates a shadow value (derived by its ability to allow a fisher to continue to catch the target species) for kingfish greater than its landed value. MPI estimates the maximum shadow price of kingfish in the jack mackerel fishery is about \$40/kg and should be considered alongside port price and ACE price. This estimate of shadow price suggests deemed value rates need to be set much higher before fishing for jack mackerels would be influenced by economic considerations due to payments of deemed value for kingfish.

Adopting deemed value rates based on the shadow price, in theory, means that fishers unable to source enough ACE to cover their catch of kingfish would need to change their fishing method selectivity, or practices, to avoid catching kingfish, or stop fishing altogether. However, MPI considers that there would be unacceptable incentives to discard and/or higher costs associated with adopting this option.

#### *6.3.2.3 Submissions on proposal to increase TAC/TACC for KIN7 and KIN8*

FINZ & DWG note that although Industry sought the review of deemed value rates for KIN7 and KIN8 because of the protracted over-catch in the stocks, an increase in the TAC/TACC is their preferred response. They submit that:

- the fisheries have had a fundamental change since the growth of jack mackerel fishing and bycatch has increased
- the TACCs set at the introduction of kingfish into the QMS were not based on 80% of the 2001-02 catch history years as stated in the IPP, but set at unreasonable levels much lower, and
- MPI has made no attempt to review the source of the over-catch and determine the most appropriate management response.

In the 2015 consultation document on the deemed value review, MPI proposed a multi-sector collaborative working group be set up to consider these issues afresh from a shared fishery harvest strategy perspective. FINZ & DWG is critical of a multi-sector collaborative working group approach because:

- It is yet to be established and the terms of reference promulgated
- The inclusion of KIN7 and KIN8 in that process has not been considered
- There are no compelling reason to consider KIN7 and KIN8 to be shared fisheries
- No timeline has been advanced and the membership yet to be appointed

Sanford notes that the multi-sector collaborative working group for SNA1 has yet to make substantive progress despite 18 meetings. Sanford submits that before replicating it in other fisheries it would be prudent to evaluate the model's success in terms of benefits and costs in SNA1.

#### *6.3.2.3 MPI response on proposal to increase TAC/TACC for KIN7 and KIN8*

MPI reiterates the setting of deemed value rates is a separate process from setting TACCs. Though not within the scope of this deemed value review, MPI's response to these more generalised submissions on KIN7 and KIN8 are summarised below for your information.

When introduced into the QMS in 2003, the TACs for KIN7 and KIN8 were set at levels designed to raise the biomass to a higher level. Catch reductions of 20% for all the fishing sectors were required to achieve this management objective. TACCs were set at 80% of the average landings reported from 1993-2002 (adjusted downward to account for when no MLS applied to trawling of KIN). Note that this does differ slightly from the 80% of catch history years (1990-92) stated in the 2015 consultation document on the deemed value review.

Since 2003, the TACs for KIN7 and KIN 8 have been reviewed upwards to provide for use, while recognising the importance of the species to recreational fishers. MPI considers current TACCs are broadly set at the levels of unavoidable bycatch reported in the past and hence cannot be considered unreasonable.

MPI has reviewed how to better manage the bycatch of kingfish in the trawl fisheries, and has taken various steps to address the matter. These include:

- The TAC and TACC for KIN 8 were increased in 2011/12, and in 2013/14 for KIN 7.
- The release of live kingfish was permitted under Schedule 6 of the Act. This allows fishers to return kingfish to the sea that are not taken by the use of set netting and that are likely to survive return. In these circumstances, fishers do not necessarily have to retain, land, and balance kingfish with ACE. This provides fishers with some flexibility to manage unintended bycatch.

- The current deemed value rates for KIN7 and KIN8 have been set well above the ACE price and reported port price and, alongside the differential rates, recognise the significance of the stocks to the recreational sector.
- Consideration of raising the commercial minimum legal size (MLS) to reduce the number of fish extracted from the stock and take advantage of biological advantages in moving the MLS closer to the size of maturity for kingfish. However, the biological benefits of an increased MLS are likely to be outweighed by the increase in fishing-related mortality associated with an increase in MLS for commercial fisheries.
- Reviewing the use of generic conversion factors found to overestimate the landed catch. Continued use of the generic conversion factors will result in kingfish landings being over-reported. MPI has consulted on a concurrent review of the conversion factor for dressed kingfish.

In addition, MPI does not consider that recent reported commercial kingfish landings necessarily represent a minimum level in terms of a manageable bycatch. The distribution or location of some fishing methods is likely to influence the level of bycatch of kingfish. Recently reported catch levels are based on current methods in use in the fishery. MPI is disappointed there has been no attempt to develop new methods or novel technology (such as Precision Harvesting) to manage the catch rates of kingfish.

On the matter of industry views regarding MPI's proposal to adopt a collaborative, multi-stakeholder approach to managing kingfish, MPI recognises further improvements to the management of KIN7 and KIN8 stocks may be required.

Given the range of interests in KIN7 and KIN8 (The National Panel Survey estimates of recreational harvest of kingfish are broadly equivalent to commercial landings in both stocks in 2011/12), development of an agreed management approach is preferred. The terms of reference could include refining the harvest strategy, recommending options for cost-effective monitoring of abundance, and evaluating management options for KIN7 and KIN8. MPI considers that this is best advanced through a multi-sector collaborative working group.

#### *6.3.2.4 Recommendation*

MPI has reviewed submissions and the current deemed value rate settings for KIN7 and KIN8 given the high levels of over-catch and deemed value payments for these fishstocks. MPI does not consider there to be sufficient rationale to support either increases or decreases to the deemed value rates of KIN7 or KIN8. MPI recommends no changes to the deemed values for these stocks.

### **6.3.3 Lookdown dory (LDO1)**

Lookdown dory are primarily taken as a bycatch species by bottom trawl. Landings of LDO1 have increased over the last three years and exceeded the TACC in the last two fishing years.

The key triggers for the review of LDO1 deemed value rates are over-catch and high deemed value payments compared to quota value.

MPI did not propose to apply differential rates given that LDO1 has low value and a less stringent rate schedule is appropriate (see Table 10).

Table 9: Information to support review of deemed value rates

Stock	TACC (tonnes)	%Caught	Quota Value (QV) \$/kg	ACE \$/kg	Interim Deemed Value (DV)\$/Kg	Annual DV \$/kg	Port Price \$/kg	Ratio of total DV paid to total QV
LDO1	168	122	\$1.58	\$0.14	0.21	0.42	\$2.02	0.07

Table 10: Current and recommended deemed value rates \$/kg for LDO1

Stock	Option	Interim	Annual 100-120%	Annual 120-140%	Annual 140-160%	Annual 160-180%	Annual 180-200%	Annual 200%+
LDO1	Current	0.2100	0.4200	0.4200	0.4200	0.4200	0.4200	0.4200
LDO1	Recommended	0.378	0.4200	0.4200	0.4200	0.4200	0.4200	0.4200

#### 6.3.3.1 Submissions

FINZ & DWG submits that LDO1 has had a history of the TACC being fully or nearly fully utilised and with no sustainability issues noted, an increase in the TACC would have been the most appropriate management response.

#### 6.3.3.2 MPI Response

LDO1 is taken primarily as bycatch in a number of deepwater target fisheries off the West Coast of the South Island. MPI concurs that catches have been above or close to the TACC in recent years. MPI will continue to monitor the available information for this stock, however, the setting of deemed value rates is a separate process from setting TACCs. Your decision to set a deemed value rate cannot be influenced by whether or not submitters consider the TACC for a stock is set correctly.

MPI proposed to increase the proportion of the annual deemed value rate at which interim deemed value rates are generally set from 50% to 90%. This increase addresses the risk that if the interim deemed value rate is below the ACE price, then fishers have an incentive to delay acquiring ACE until the end of the fishing year. Permit holders may arrive at the end of the year expecting to buy ACE, only to find that all ACE has been used. Therefore, low interim deemed value rates interfere with the signalling functions of ACE markets.

#### 6.3.3.3 Recommendation

MPI recommends that interim deemed value rates for LDO1 be adjusted as outlined in Table 10. The recommended increased interim deemed value rate from 50% to 90% of the annual deemed value rate will lead to more regular balancing throughout the year with ACE. Regular balancing should support greater awareness of the availability of ACE and promote catch to stay within the TACC.

#### 6.3.4 Ribaldo (RIB8)

RIB8 are primarily taken as a bycatch species of the ling bottom longline fishery. RIB8 landings have exceeded the TACC for the past four fishing years.

The key triggers for the review of RIB8 deemed value rates are over-catch and high deemed value payments compared to quota value (see Table 11). There is currently no ramping of differential rates for RIB8.

Table 11: Information to support review of deemed value rates

Stock	TACC (tonnes)	%Caught	Quota Value (QV) \$/kg	ACE \$/kg	Interim Deemed Value (DV)\$/Kg	Annual DV \$/kg	Port Price \$/kg	Ratio of total DV paid to total QV
RIB8	1	197	\$6.00	\$0.12	0.15	0.30	\$0.76	0.06

Table 12: Current and recommended deemed value rates \$/kg for RIB8

Stock	Option	Interim	Annual 100-120%	Annual 120-140%	Annual 140-160%	Annual 160-180%	Annual 180-200%	Annual 200%+
RIB8	Current	0.1500	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
RIB8	Recommended	0.2700	0.3000	0.3600	0.4200	0.4800	0.5400	0.6000

#### 6.3.4.1 Submissions

No submissions were received on the proposal to increase deemed value rates for RIB8.

#### 6.3.4.2 Recommendation

MPI recommends that the interim and differential deemed value rates for RIB8 be adjusted as outlined in Table 12. The recommended increased interim deemed value rate from 50% to 90% of the annual deemed value rate will lead to more regular balancing throughout the year with ACE. The recommended differential deemed value rates for RIB8 will support better balancing of catch with ACE and is consistent with all the other stocks of ribaldo.

MPI notes that the TACC for RIB8 was set based on average catch in the years prior to QMS introduction in 1998. Although outside the scope of your decisions, MPI considers that, as with frofish, there may be some scope to amalgamate the west coast QMA for this species.

## 6.4 STOCKS WITH OVER-CATCH IN 2013-14

Six stocks, GMU1, PIL8, RBT3, RIB4, RBY7 and RSN2 were identified for review given over-catch in 2013/14 and high deemed value payments compared to quota value. In the cases of GMU1, PIL8 and RBT3 the over-catch has followed a trend of increasing catches in recent years.

The fisheries that the six stocks are taken in vary greatly, and are described further below.

#### *Grey mullet (GMU1)*

Grey mullet in GMU1 is caught mainly as a target species by set net. Catch has been gradually increasing over the last five fishing years and exceeded the TACC in 2013-14. Whilst the level of over-catch is small (exceeded the TACC by approximately 6%), the current deemed value rates are set less than the ACE and port price and below that necessary to encourage fishers to balance catch with ACE.

#### *Pilchard (PIL8)*

Pilchard are primarily taken as a bycatch species of jack mackerel target fisheries by bottom and mid-water trawl. Landings have increased over the last four fishing years and exceeded the TACC in 2013-14.

### *Redbait (RBT3)*

Redbait are taken as both a target and bycatch species of mid-water trawl. RBT3 landings have fluctuated over time, increasing in the last four fishing years and exceeding the TACC in 2013/14.

### *Ribaldo (RIB4)*

RIB4 are primarily taken as a bycatch species of the ling bottom longline fishery. 2013/14 was the first year that landings of RIB4 have exceeded the TACC.

### *Rubyfish (RBY7)*

In the RBY7 quota management area, rubyfish are taken as a bycatch species of bottom and mid-water trawl. Landings exceeded the TACC in RBY7 in 2013/14 for the first time since the 2004/05 fishing year. MPI did not propose to apply differential rates given that RBY7 has low value and a less stringent rate schedule is appropriate.

### *Red snapper (RSN2)*

Red snapper are primarily taken as a bycatch species of bottom trawl. Landings were exceeded for RSN2 for the first time since QMS introduction.

Table 13: Information to support review of deemed value rates GMU1, PIL8, RBT3, RIB4 and RBY7

Stock	TACC (tonnes)	%Caught	Quota Value (QV) \$/kg	ACE \$/kg	Interim Deemed Value (DV)\$/Kg	Annual DV \$/kg	Port Price \$/kg	Ratio of total DV paid to total QV
GMU1	925.5	106	\$4.21	\$0.45	0.61	1.21	\$3.80	0.01
PIL8	65	149	\$1.34	\$0.12	0.30	0.60	\$0.83	0.39
RBT3	2190	127	\$1.56	\$0.14	0.25	0.50	\$0.10	0.06
RIB4	357	138	\$1.04	\$0.09	0.15	0.30	\$0.63	0.12
RBY7	33	146	\$1.30	\$0.12	0.25	0.42	\$0.73	0.21
RSN2	21	109	\$8.40	\$1.20	2.05	4.09	\$5.28	0.08

#### 6.4.1 Submissions

No submissions were received on the proposal to increase interim deemed value rates for GMU1, PIL8 or RSN2.

FINZ & DWG submit that RBT3, RBY7 and RIB4 have had an over-catch for the first time in 2013/14 and, given only nominal TACC have been set for these stocks, any deemed value rate changes are premature tinkering. It is submitted that an appropriate review of the circumstances for the over-catch for RBY7 was not undertaken.

#### 6.4.2 MPI Response

##### *Redbait (RBT3)*

Redbait was introduced into the QMS in 2009/10. At QMS introduction the TACC for RBT3 was set 10% higher than the highest catch reported during the previous five fishing years. MPI does not view the existing TACC as nominal. Around half the RBT catch taken during 2013/14 was targeted, meaning there is scope for vessel operators to control catches to remain within the current TACC.

### *Rubyfish (RBY7)*

MPI acknowledges that most RBY7 taken during the 2013/14 year was taken in a single fishing event. However, overcatch of the stock was significant (146%) and there were high deemed value payments compared to quota value.

### *Ribaldo (RIB4)*

Catch of RIB4 during 2013/14 was mostly taken while targeting ling by bottom longline. MPI considers that as some targeting of ribaldo takes place on the Chatham Rise, there is likely to be some scope for fishers to control catches.

## 6.4.3 Recommendations

Table 14: Current and recommended deemed value rates/kg for GMU1, PIL8, RIB4, RBT3, RBY7 and RSN2

Stock	Option	Interim	Annual 100-120%	Annual 120-140%	Annual 140-160%	Annual 160-180%	Annual 180-200%	Annual 200%+
GMU1	Current	0.6100	1.2100	1.4520	1.6940	1.9360	2.1780	2.4200
GMU1	Recommended	1.3500	1.5000	1.8000	2.1000	2.4000	2.7000	3.0000
PIL8	Current	0.3000	0.6000	0.7200	0.8400	0.9600	1.0800	1.2000
PIL8	Recommended	0.5400	0.6000	0.7200	0.8400	0.9600	1.0800	1.2000
RBT3	Current	0.2500	0.5000	0.6000	0.7000	0.8000	0.9000	1.0000
RBT3	Recommended	0.4500	0.5000	0.6000	0.7000	0.8000	0.9000	1.0000
RIB4	Current	0.1500	0.3000	0.3600	0.4200	0.4800	0.5400	0.6000
RIB4	Recommended	0.2700	0.3000	0.3600	0.4200	0.4800	0.5400	0.6000
RBY7	Current	0.2100	0.4200	0.4200	0.4200	0.4200	0.4200	0.4200
RBY7	Recommended	0.378	0.4200	0.4200	0.4200	0.4200	0.4200	0.4200
RSN2	Current	2.0500	4.0900	4.9080	5.7260	6.5440	7.3620	8.1800
RSN2	Recommended	3.681	4.0900	4.9080	5.7260	6.5440	7.3620	8.1800

### 6.4.3.1 Changes to Interim Deemed Values

MPI recommends increasing the interim deemed value rate for all six stocks; GMU1, PIL8, RBT3, RIB4, RBY7 and RSN2, from 50% to 90% of the annual deemed value rate. MPI acknowledges that the 2013/14 fishing year was the first event of over-catch. However, MPI considers that the adjustment to the interim deemed value is a small change that can help to support the TACC for these fisheries. The increase of the interim deemed value rates addresses the risk that if the interim deemed value rate is below the ACE price, then fishers have an incentive to delay the balancing of catch until the end of the fishing year. The recommended increase is intended to encourage more regular balancing throughout the year with ACE, a greater awareness of the availability of ACE and promote catch to stay within the TACC.

### 6.4.3.2 Interim, Annual and Differential Deemed Value Rates- Grey Mullet (GMU1)

MPI has received a report of intentional fishing on deemed values in GMU1. An annual deemed value rate above the ACE price and below landed price generally provides the correct incentives to balance catch against ACE. However, because ACE for some stocks is traded infrequently, the available information on ACE price may be inadequate. MPI supports an increase in the deemed value rate in this circumstance. MPI also recommends increasing the interim deemed value rate from 50% to 90% of the annual deemed value rate to encourage balancing of ACE within the fishing year thereby reducing risk of overcatch of the TACC.

Differential deemed value rates provide greater penalties on increasing levels of over-catch to reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and



utilisation objectives. MPI considers that differential deemed value rates should continue to apply to GMU1 at the standard rate of change for each additional 20% of over-catch.

MPI recommends that the annual deemed value rate for GMU1 be increased from \$1.21 per kg to \$1.50 per kg with interim and differential rates adjusted accordingly, as outlined in Table 14. The recommended deemed value rates remain between the ACE price (\$0.48) and port price for GMU1 (\$3.80), but are increased to provide a stronger incentive for fishers to balance their catch with ACE.

# Appendix I: Deemed Value Guidelines

## SUMMARY

### Goal

*To set deemed value rates that create an effective incentive for individual commercial fishers to balance catch with Annual Catch Entitlement and for the overall catch to remain at or below the total available Annual Catch Entitlement in any one year.*

### Performance Measures

- The number of stocks over-caught and the level of over-catch per stock per fishing year.
- The percentage of catch for each stock for which catch is not balanced with Annual Catch Entitlement (ACE).
- The ratio of the total deemed value payments to the value of quota (at a general and stock level) – the target in relation to this indicator is less than 0.1% of the value of quota in any fishing year.

### Principle 1

Deemed value rates must generally be set between the ACE price and the landed price:

- when deemed value rates are below the ACE price: increase deemed value rates to a level above the ACE price and below landed price to provide an incentive to balance catch with ACE; and
- when deemed value rates are above the landed price: decrease deemed value rates to a level between ACE price and landed price to provide an incentive not to discard illegally.

### Principle 2

Deemed value rates must generally exceed the ACE price by transactions costs. Deemed value rates must be generally set at least at the greater of:

- 20% above the 90th percentile ACE price; or
- \$0.10 per kg above the 90th percentile ACE price.

### Principle 3

Deemed value rates must avoid creating incentives to misreport.

### Principle 4

Deemed value rates for constraining bycatch species may be higher.

### Principle 5

Deemed value rates must generally be set at twice the landed price for high value single species fisheries and species subject to international catch limits.

### Principle 6

Deemed value rates for Chatham Island landings may be lower.

### Principle 7

Interim deemed value rates must generally be set at 90% of the annual deemed value rate.

## Principle 8

Differential deemed value rates must generally be set:

- Standard differential deemed value rate schedule for most stocks

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Catch in excess of ACE holdings	Differential deemed value rate as a percentage of the annual deemed value rate
0–20%	100%
> 20%	120%
> 40%	140%
> 60%	160%
> 80%	180%
> 100%	200%

- Differential deemed value rate schedule for low value, low TACC stocks

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Catch in excess of ACE holdings	Differential deemed value rate as a percentage of the annual deemed value rate
0–100%	100%
>100%	150%
>200%	200%

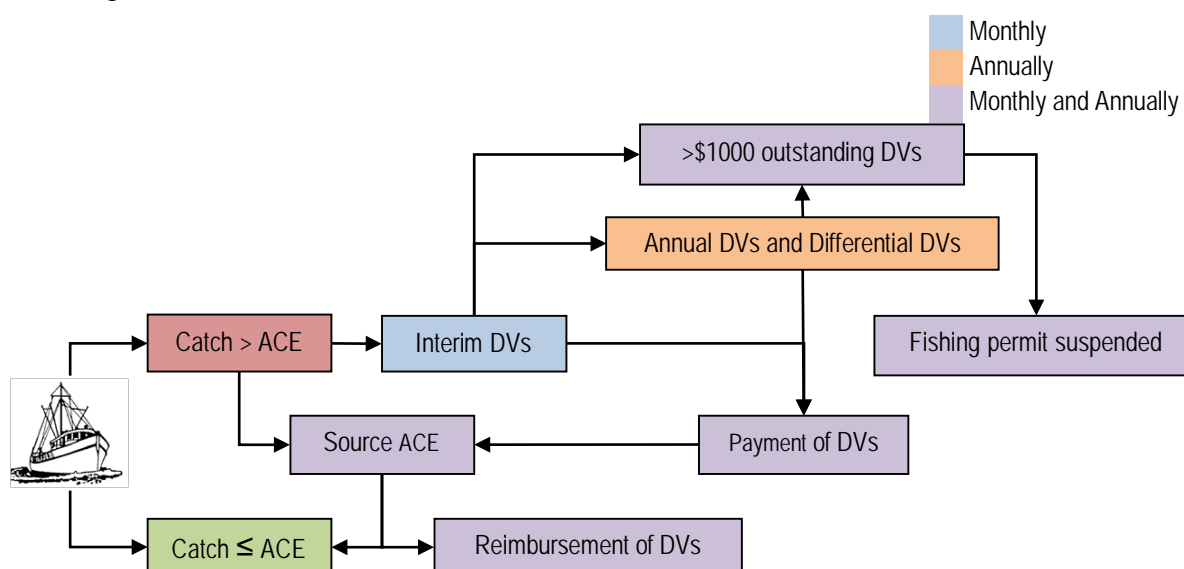
- Stringent differential deemed value rate schedules for highly vulnerable stocks or rebuilding stocks.

## INTRODUCTION

### THE DEEMED VALUE FRAMEWORK AND THE ROLE OF THESE *GUIDELINES*

The catch-balancing regime and deemed value framework are key fisheries management tools contributing to both sustainability and utilisation objectives, for stocks managed under the Quota Management System (QMS). The deemed value framework is a key mechanism to protect the integrity of the QMS, providing incentives for commercial catch to not exceed catch limits. Deemed values are supposed to encourage commercial fishers to balance their catch with Annual Catch Entitlement (ACE), while not discouraging them from landing and accurately reporting catch.

Sustainability objectives are achieved when deemed value rates encourage fishers to balance catch with available ACE and in doing so, seek to constrain harvesting to the Total Allowable Commercial Catch (TACC), or, where applicable, the total available ACE. Catches in excess of TACCs/total available ACE may affect the sustainability of stocks and may undermine the long-term value of the resource and kaitiakitanga. The deemed value framework is illustrated in the figure below.<sup>60</sup>



Utilisation objectives are achieved by providing flexibility for commercial operators to manage unexpected and small overruns in ACE holdings by allowing periodic catch-balancing. In the long-term, over-catching of a TACC could result in TACC reductions, if it leads to a reduction in stock size, and to impacts on resource use by others sectors. This undermines utilisation objectives.

<sup>60</sup> Interim deemed value rates are charged each month to fishers for every kilogram of fish landed in excess of their ACE holdings. If the fisher sources enough ACE to cover his or her catch by the end of the fishing year, the interim rates paid are reimbursed. If the fisher does not source enough ACE by the end of the fishing year, the difference between the interim and annual deemed value rates is charged for all catch in excess of ACE; the annual rate applies at the end of the fishing year. Differential deemed value rates, if applicable, are also charged at the end of the fishing year if the fisher harvested well in excess of his or her ACE holdings. For example, differential deemed value rates are charged for catch more than 20% in excess of ACE, when the standard differential deemed value rate schedule applies. Differential rates reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and utilisation objectives.

The *Deemed Value Guidelines* set out an operational policy to inform the advice that the Ministry for Primary Industries (MPI) provides to the Minister for Primary Industries (the Minister) on setting deemed value rates.

## THE LEGAL CONTEXT

Section 75 of the Fisheries Act 1996 (the Act), provides the statutory framework for setting deemed values. That section requires the Minister to set deemed value rates for QMS stocks and sets out the matters the Minister must consider when doing so.

Within the statutory framework, the Minister has considerable discretion when setting deemed value rates. The *Guidelines* are a statement of how MPI will use the criteria in the statute to develop its advice to the Minister on deemed value rates. The *Guidelines* do not bind the Minister. When making decisions on deemed value rates, the Minister uses the statutory criteria in making decisions and can act within the bounds of the statute, notwithstanding the *Guidelines*.

Under section 75(2)(a), the Minister must consider whether deemed value rates are set at levels that provide an incentive to balance catch with ACE. Once the Minister has considered the issues that arise as mandatory considerations, she/he may also consider the discretionary criteria under section 75(2)(b):

- a) the desirability of commercial fishers landing catch for which they do not have ACE;
- b) the market value of ACE for the stock;
- c) the market value of the stock;
- d) the economic benefits obtained by the most efficient commercial fisher, licensed fish receiver, retailer, or any other person from the taking, processing, or sale of fish, aquatic life or seaweed;
- e) the extent to which catch of that stock has exceeded or is likely to exceed the TACC for the stock in any year; and
- f) any other matters that the Minister considers relevant.

## GOAL AND MEASURES OF PERFORMANCE

### GOAL

The goal of the *Guidelines* is to outline principles to *set deemed value rates that create an effective incentive for individual fishers to balance catch with Annual Catch Entitlement and for the overall catch to remain at or below the total Annual Catch Entitlement available in any one year.*<sup>61</sup>

### MEASURING PERFORMANCE

In light of this goal, the performance of the deemed value framework will be measured using the following indicators:

- the number of stocks over-caught and the level of over-catch per stock per fishing year;
- the percentage of catch for each stock for which catch is not balanced with ACE; and

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<sup>61</sup> For the majority of stocks, the total available Annual Catch Entitlement (ACE) may exceed the Total Allowable Commercial Catch (TACC) in any one year due to under-fishing entitlements, where 10% of the un-fished ACE from one year is carried forward to the following year. Furthermore, for some stocks, in-season increases to the catch limit generate additional ACE in a particular year while the TACC remains unchanged. This is why the goal is for landed catch to remain within the total available ACE rather than within the TACC.

- the ratio of the total deemed value payments to the value of quota (at a general and stock level) – the target in relation to this indicator is less than 0.1% of the value of quota in any fishing year.

MPI will also use these performance indicators where applicable, in addition to other relevant information such as landed price changes, to identify stocks for which a deemed value rate review may be necessary. Which stocks to review deemed value rates for will be determined in discussion with tangata whenua, industry representatives and other stakeholders within the fisheries planning processes for inshore, deepwater and highly migratory species fisheries.

## PRINCIPLES FOR SETTING DEEMED VALUE RATES

Deemed values are economic tools; they provide economic incentives and disincentives which are directly related to other economic variables such as operating costs, ACE prices, transaction costs of acquiring ACE, and landed fish prices. When any of these factors change the incentives created by deemed values also change. Accordingly, deemed value rate changes will generally be small, relatively frequent adjustments consistent with economic changes rather than significant occasional changes. The effectiveness of deemed values is dependent on individual commercial fishers' compliance with landing and reporting requirements, their responses to the incentives provided and on the impact of other incentives such as those created by market conditions.

MPI will use the following principles to assess stocks for which to review deemed value rates and to guide the development of its advice to the Minister on deemed value rates. These principles recognise the various economic incentives that commercial fishers face and give effect to the Minister's obligations under section 75 of the Act.

### Principle 1: Deemed value rates must generally be set between the ACE price and the landed price

A deemed value rate above the ACE price and below landed price generally provides the correct incentives. The following actions will create the correct incentives for commercial fishers to acquire ACE to cover their catch:

- when deemed value rates are below the ACE price: increase deemed value rates to a level above the ACE price and below landed price to provide an incentive to balance catch with ACE; and
- when deemed value rates are above the landed price: decrease deemed value rates to a level between ACE price and landed price to provide an incentive not to discard illegally.

Because ACE for some stocks is traded infrequently, the available information on ACE price may be inadequate. When there is evidence of intentional fishing on deemed values, MPI will assume that the fisher could not acquire ACE at less than the deemed value rate and that the price of ACE should be assumed to be above the deemed value rate. MPI will generally recommend increases in the deemed value rate in this circumstance.

In certain circumstances (including some described below) it may be appropriate to depart from this principle. MPI will outline this to the Minister on a case-by-case basis.

### Principle 2: Deemed value rates must generally exceed the ACE price by transaction costs

If ACE price is close to the deemed value rate there may be an incentive for fishers to pay the deemed value instead of acquiring ACE to balance their catch to avoid the transaction costs

involved in making an ACE trade (for example, transfer registration fee, time, brokerage fees).

ACE prices vary as other economic factors, such as the price of fish, exchange rates, and fuel prices, vary. Deemed value rates should generally be set at least 20 percent above the 90th percentile ACE price. This is to ensure that the ACE price used is representative of the majority of market trades and that the difference between the deemed value rate and the ACE price is sufficient to create an effective incentive. This reference point should be used for setting deemed value rates for most stocks.

However, for relatively low value species (for example, where the ACE price is less than \$0.15 per kilogram) 20 percent above the ACE price will not cover transaction costs for most trades. A second reference point that is a minimum amount per kilogram above the ACE price should be used. It is assumed that total transaction costs are approximately \$100.00 per ACE transaction and that fishers would source ACE instead of paying deemed values for landings greater than 1 tonne. Therefore, the transaction cost would be \$0.10 per kg, if the \$100.00 transaction costs are spread over 1 tonne.

Therefore, deemed value rates should be generally set at least at the greater of:

- 20 percent above the 90th percentile ACE price; or
- \$0.10 per kg above the 90th percentile ACE price.

In certain circumstances it may be appropriate to depart from this principle. MPI will outline this to the Minister on a case-by-case basis.

### **Principle 3: Deemed value rates must avoid creating incentives to misreport**

When two adjacent Quota Management Areas (QMAs) for the same species have substantially different deemed value rates, there may be an incentive to misreport the QMA in which the fish was taken in order to benefit from a lower deemed value rate. The impact of differences in deemed value rates across QMAs are important considerations. For most species, prices across adjacent QMAs are likely to be similar, because arbitrage in markets will result in movements of fish to equalise prices. Because the upper bound on deemed value rates in most circumstances is landed price, the upper bound for adjacent QMAs will often be similar. Thus, setting the same or very similar deemed value rates across different QMAs is often likely to be feasible.

There are reasons to consider more uniform deemed value rates across QMAs, but these reasons must be weighed against other considerations on a case-by-case basis. There are regional differences in the prices of some species and these differences must also be considered when setting deemed value rates.

For the avoidance of doubt, in the case of the Kermadec Fishery Management Area (FMA10), deemed value rates should be set at the highest annual deemed value rate applicable in the Auckland and Central Fishery Management Areas (FMA1 or FMA2) for the relevant species.

Likewise, for very similar yet different species, it may be appropriate to consider setting the same or very similar deemed value rates to avoid creating any incentives for species misreporting.

#### **Principle 4: Deemed value rates for constraining bycatch species may be higher**

An important exception to Principle 1 occurs in some cases when a relatively low value species is taken as bycatch in a multi-species fishery. In such cases, the catch of that bycatch species may constrain the ability to catch the target species.

In this case, the bycatch species is said to have a “shadow value” greater than landed price, reflecting its value in allowing greater catches of target species in the overall fisheries complex. When the shadow value is high, the deemed value rate that will encourage catch to remain within the total available ACE/TACC may exceed the landed price.

When the ACE price and the deemed value rate are above the landed price, incentives to illegally discard are created. This may be an inevitable result of providing appropriate incentives under section 75(2)(a) for fishers to acquire ACE to cover their catches. It may be necessary to rely on compliance and enforcement tools to prevent illegal discarding when this occurs. The application of this principle will be considered on a case-by-case basis.

#### **Principle 5: Deemed value rates must generally be set at twice the landed price for high value single species fisheries and for species subject to international catch limits**

The appropriate incentive for high value single species fisheries (that is, with no or minimal bycatch) is to provide a very strong incentive to catch only the amount for which fishers have ACE. This has been accomplished by setting the annual deemed value rate at approximately twice the landed price. This principle has also been applied to southern bluefin tuna, which is subject to an international catch allocation.

Under such a deemed value rate, a fisher would suffer a large loss on any catches in excess of ACE. By setting the deemed value rate at twice the landed price, it is very unlikely that any incentive would arise to land catch in excess of ACE, even if landed prices increase significantly during a fishing year. This is consistent with section 75(2)(a) as it provides a strong disincentive against catches in excess of ACE. In addition to southern bluefin tuna, this setting has been applied to all rock lobster stocks, to all paua stocks and to all deepwater clam stocks. The application of this principle to other stocks needs to be considered on a case-by-case basis.

#### **Principle 6: Deemed value rates for Chatham Island landings may be lower**

Under section 75(5), the Minister may set deemed value rates for Chatham Islands-based commercial fishers for fish landed to a licensed fish receiver in the Chatham Islands that are different from deemed value rates applicable to fish from the same stock landed elsewhere. The price for fish landed in the Chatham Islands is generally lower than the price for the same species landed elsewhere because of the higher cost of transporting fish to markets. Therefore, there may be reasons to set different deemed value rates for the Chatham Islands.

For many stocks, the deemed value rates for the Chatham Islands has been set at about 50 percent of the deemed value rate applicable elsewhere in the same QMA. No strict procedures are appropriate. Instead deemed value rates applicable to Chatham Islands-based fishers need to be considered on a case by case basis, in light of the relevant economic conditions of each fishery.



**Principle 7: Interim deemed value rates must generally be set at 90% of the annual deemed value rate**

Interim deemed value rates should usually be set at 90 percent of the annual rate. If the interim deemed value is below the ACE price, fishers have an incentive to delay acquiring ACE. The result can be to delay the balancing of catch until the end of the fishing year. This may lead to a race for ACE and insufficient ACE to cover all catch and thereby potentially contribute to the TACC/total available ACE being exceeded.

There may be stock-specific reasons to set interim deemed value rates at some percentage other than 90 percent of the annual rate in some cases. These will be considered when appropriate.

**Principle 8: Differential deemed value rates must generally be set**

Differential deemed value rates reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and utilisation objectives. Therefore, differential deemed value rates should generally apply to all stocks, although exceptions to this principle will be considered on a case by case basis. In developing its advice, MPI will propose to use differential deemed value rates flexibly to achieve the management goals for different fisheries.

Different differential deemed value rate settings are appropriate for different fisheries. This will be considered on a case by case basis, but for most stocks MPI will advise the Minister to set differential deemed value rates according to the following schedules:

*Standard differential deemed value rate schedule for most stocks*

For most stocks, MPI will recommend the use of a standard differential deemed value rate schedule (standard schedule), as set out in Table 1.

Table 1: Standard differential deemed value rate schedule

Catch in excess of ACE holdings	Differential deemed value rate as a percentage of the annual deemed value rate
0 - 20 %	100 %
> 20 %	120 %
> 40 %	140 %
> 60 %	160 %
> 80 %	180 %
> 100 %	200 %

*Differential deemed value rates for low value, low TACC stocks*

The QMS provides for a number of stocks for which targeted fishing does not occur and low TACCs are set to account for occasional, small unintended bycatch. The standard differential deemed value schedule is not appropriate for these stocks. However, deliberate over-catching of these stocks on deemed values is not appropriate either.

The general principle for these stocks is unchanged: differential deemed values should reflect a qualitative assessment of the sustainability risk of over-catching. Higher levels of over-

catch may be less of a concern for these stocks than similar levels of over-catch for larger and more valuable stocks. The low TACC and relatively high variability mean that high levels of over-catch will frequently occur as a matter of chance. As a starting point, MPI will consider recommending the following differential deemed value structure for these stocks:

Table 2: Differential deemed value rate schedule for low value, low TACC stocks

Catch in excess of ACE holdings	Differential deemed value rate as a percentage of the annual deemed value rate
0-100%	100%
>100%	150%
>200%	200%

MPI may recommend alternative schedules for low value, low TACC stocks in some circumstances.

*Stringent differential deemed value rate schedules for highly vulnerable or rebuilding stocks*

Stringent differential deemed value rate schedules are applied to some stocks where utilisation and sustainability objectives are best met by providing very strong incentives for catch to not exceed ACE. This may be the case when the TACC is set very close to the sustainable limit or for highly vulnerable or rebuilding stocks. The exact structure of the schedule will be tailored to the stock in question. For example, the first differential step may reflect an assessment of how much a fisher acting with ordinary care might exceed his or her ACE holdings in their last tow of the season.