Ministry for Primary Industries
Manatū Ahu Matua

Review of Sustainability Controls for 1 October 2016

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 25 fishstocks, and amend the deemed value rates for 30 stocks.

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

- Part A provides advice relating to five deepwater stocks (BAR 5, JMA 3, RBY 3, SCI 2, and SQU 1J);
- Part B provides advice relating to twenty inshore stocks (BNS 1, 2, 3, 7 and 8, JDO 7, PAU 7, SNA 7, LFE 11-16 and SFE 11-16); 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 2016 fishing year.

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

2.1 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.

2.2 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.

Section 10 of the Settlement Act says that:

a) claims by Māori in respect of non-commercial fishing shall continue to give rise to Treaty obligations, in accordance with the Treaty of Waitangi;

b) acting in accordance with the principles of the Treaty, you shall consult with tangata whenua and develop policies to help recognise use and management practices of Māori in the exercise of non-commercial fishing rights; and

c) you shall recommend the making of regulations to recognise and provide for customary food gathering by Māori and the special relationship between tangata whenua and those places which are of customary food gathering importance.

The development of customary regulations, Iwi Fisheries Forums, and providing for the input and participation of iwi in fisheries decisions, discussed elsewhere in this paper, are some of the ways in which the obligations in the Settlement Act are given effect to.

2.3 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.

"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 has stated that the purpose statement incorporates "the two competing social policies reflected in the Act" and 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".[1]

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.

2.4 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. "Harvested species" is defined to mean

[1] Recreational Fishing Council Inc v Sanford Limited and Ors [2009] NZSC 54 at [39].

any fish, aquatic life or seaweed that may for the time being be taken with lawful authority. So this principle is focussed on species (such as protected species) for which a permission to target commercially cannot be given.

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, appropriate measures such as method restrictions, area closures, and potentially adjustments to the TAC of the target stock should be considered.

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

"Biological diversity" is defined in the Act as '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 defined in the Oxford Dictionary of English to mean the natural home or environment of an animal, plant or species. In MPI's view, in the fisheries context, this means those waters and substrate necessary for fish to spawn, breed, feed or grow to maturity. These should be protected and adverse effects on them avoided, remedied, or mitigated.

2.5 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."[2]

[2] *Greenpeace NZ Inc v Minister of Fisheries* (HC, Wellington CP 492/93, 27/11/95, Gallen J) p 32.

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.[3] 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.[4] Corroborated anecdotal information also has a useful role to play in the stock assessment process and in the management process.

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 regard to any 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 you consider 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

that apply to the coastal marine area and are considered to be relevant.

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.

2.6.1 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

[3] All stocks under TAC review in this document are covered by the Plenary Report. The current Plenary Report can be accessed here: Volume 1 (Introductory sections to Hoki): https://www.mpi.govt.nz/document-vault/12663; Volume 2 (Horse Mussel to Red Crab): https://www.mpi.govt.nz/document-vault/12666; and Volume 3 (Red Gurnard to Yellow-eyed Mullet): https://www.mpi.govt.nz/document-vault/12672.

[4] A non-binding MPI Policy Document.

was given Ministerial approval in 2010. Deepwater stocks (BAR 5, JMA 3, RBY 3, SCI 2, and SQU 1J) are managed using the National Deepwater Plan, which 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 National Deepwater Plan applies for five years, and is currently under review. A revised version is planned for implementation at the start of the 2016/17 fishing year.

The management options proposed here for deepwater stocks 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 here will contribute towards the achievement of these three Management Objectives.

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 25 fishstocks for the 1 October 2016 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 912 companies, organisations and individuals. The consultation period ran from 10 June to 11 July 2016.

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. Kaitiakitanga is interpreted in the Act to mean "the exercise of guardianship; and, in relation to any fisheries resources, includes the ethic of stewardship based on the nature of the resources, as exercised by the appropriate tangata whenua in accordance with tikanga Māori", where tikanga Māori refers to Māori customary values and practices. Iwi Fisheries Forums and 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 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.

2.8.1 Section 13 – Total Allowable Catch

The TAC is set under section 13 for most stocks with amendments proposed for October 2016. 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.

Section 13(2) of the Act requires a TAC to be set that maintains a stock at or above MSY or that moves or restores it to or above that level.

Section 13(2A) says that if you consider that the current level of a stock or the level of a stock that can produce the MSY is not able to be estimated reliably using the best available information, you must:

- not use this lack of information as a reason for postponing, or failing to set a TAC for the stock, and
- have regard to the interdependence of stocks, the biological characteristics of the stock and any environmental conditions affecting the stock, and
- set a TAC using the best available information that is 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. Examples include other non-target fish species (bycatch) or benthic species that are incidentally impacted by trawl gear. The role of the target stock in the food chain should also be considered.

In particular, interdependence 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) relationship between stocks.

2.8.2 Section 14 – Alternative total allowable catch for stock specified in Schedule 3

South Island longfin (LFE) and shortfin (SFE) eel stocks will be listed on Schedule 3 of the Act from October this year. As per section 14:

(1) Notwithstanding anything in section 13, if satisfied, in the case of any quota management area listed in Schedule 3, that the purpose of this Act would be better achieved by setting a TAC otherwise than in accordance with subsection (2) of that section, you may at any time, set a TAC for that stock that you consider appropriate to achieve the purpose of this Act.
(2) Every TAC set under subsection (1) for any stock shall continue to apply in each fishing year for the stock unless varied under subsection (3).
(3) You may from time to time, by notice in the *Gazette*, vary any TAC set under subsection (1) for any stock by increasing or reducing the TAC.

Without limiting subsection (1) or (3), you may set or vary any TAC at, or to, zero.

2.9 SECTIONS 20 & 21 – ALLOCATING THE TAC

After setting the TAC, a separate decision arises in respect of allocating the TAC, i.e., deciding what portion of the TAC is to be allocated for commercial and other purposes. 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) M□ori 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. [5]

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

a) Any m□taitai 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.

[5] Where the customary regulations don't apply customary fishing is regulated under regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013 and a similar authorisation system applies.

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 to date.

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.

The Act says a TACC 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).

There is also a requirement in section 13 of the Hauraki Gulf Marine Park Act to have particular regard to sections 7 and 8 of that 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.

2.9.1 Submission comments on allocation

A number of submissions from industry and iwi, with respect to the PAU7 and SNA7, consider that the Act contains a strong implicit preference for proportional allocation when you are making your decisions on how to allocate the TAC. They consider proportional allocation (compared to non-proportional approaches) is implicitly found in the underlying objectives of the Quota Management System. Their submissions strongly oppose allocation decisions that give preference to recreational fishing at the expense of the commercial sectors, as they:

- create uncertainty about the availability of future commercial harvest levels, and
- reduce incentives for investment in the fishery and makes co-operation among quota share and ACE owners more challenging because management efforts today may not deliver any future rewards.

Some of these submissions make reference to the "snapper case" of 1997 as support that proportional allocation (although not a requirement of the Act), is more consistent with the purpose and scheme of the Act than preferential reallocation.[6] In those proceedings Justice McGechan observed:

> *"It is clear Maori negotiators in 1992 were aware that ITQ held by the [Treaty of Waitangi Fisheries] Commission, and further ITQ to be received by the Commission and Maori, would be subject to reduction along with the TACC on biological grounds. Likewise, it might be increased. That risk and potential benefit, were known and accepted.* ***I accept Maori did not envisage, or accept, that TACC and quota might be reduced simply to enable a greater recreational allocation of the resource.*** *It is highly unlikely Maori would have agreed to surrender Treaty rights for the better gratification of Auckland boatmen. The thought did not cross the tangata whenua mind."*

[6] New Zealand Fishing Industry (Inc) v Minister of Fisheries (CA 82/97, 22 July 1997), McGechan J.

Some industry submissions also make reference to proposed policy positions of MPI (and formerly Ministry of Fisheries) that favoured proportional allocation in the review of sustainability measures and management controls in kahawai (2005) and SNA1 (2013).

MPI notes there is no clear statement in the Act to indicate that Parliament's preference or intention that the TAC be allocated in accordance with any particular approach. Similarly, MPI does not have a set policy, but relies on Ministerial discretion being appropriately exercised in each case where decisions on allocation are required, given the specifics of each stock. There are existing examples of the diversity of approach.

Case law on allocation is limited – SNA 1 was considered in the High Court and subject of appeal to the Court of Appeal. A second case of importance is Roach and the third Kahawai. In SNA 1 the Court of Appeal stated that there is no implicit preference in the Act in favour of proportionality. The imprecision of the recreational catch precludes strict proportionality (p 18). In SNA 1 (High Court) it was noted that a conscious transfer of catch between interests is a legitimate activity within the context of the Act (p 122). A decision that impacts adversely on holders of individual transferable quota (ITQ) which advantaged (deliberately or incidentally) non-commercial interests, does not in itself imply an improper purpose:

> *"It is not outside or against the purposes of the Act to allow a preference to non-commercials to the disadvantage in fact of commercials and their valued ITQ rights, even to the extent of the industry's worst case of a decision designed solely to give recreationalists greater satisfaction". (p 89)*

The Court of Appeal in SNA 1 found there was no implied duty for you to fix or vary the recreational allowance at any particular proportion of the TACC or the TAC. The appropriate allocation is a matter for your assessment bearing in mind all relevant considerations on each occasion you revisit the issue (pp 18-19). The Court discounted any requirement that once the ratio had been fixed there could be no change to the ratio except upon an increase in biomass (p 17).

> *"If over time a greater recreational demand arises it would be strange if the Minister was precluded by some proportional rule from giving some extra allowance to cover it, subject always to his obligation to carefully weigh all the competing demands on the TAC before deciding how much should be allocated to each interest group." (p 18)*

In Roach, the High Court considered that where there are competing demands exceeding an available resource it could perhaps be said the Minister can "allow for" use by dispensing a lesser allotment than complete satisfaction, creating not a full priority but some degree of shared pain. In SNA 1, the High Court concluded in the recreational interest is to be construed as meaning to "allow for in whole or part" (p 150). Proportionality is one means of allowing/providing for competing demands for use of the resource.

Further the share of the TAC allocated as the TACC, to the extent that it is able to be controlled by you, is determined by any constraints applied to amateur fishing through the regulations – chiefly by daily bag limits. These are applied at your discretion. There is no explicit element of the quota right or provision of the Act that obliges you to restrict amateur fishing. In the Supreme Court judgement on kahawai, in denying the claim of statutory priority for allocation by recreational fishers, the court went only as far as to say that:

"…the allowance for recreational interests is to be made keeping commercial interests in mind."

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.[7]

Before setting deemed value rates you must, if practicable, consult persons or organisations you consider represent classes of persons who have an interest in the stock, including Māori, recreational, commercial, and environmental interests.

When setting deemed value rates you must take into account the need to provide an incentive for commercial fishers to acquire or maintain sufficient ACE equal to their total catch. You may also have regard to:

i) The desirability of commercial fishers landing catch for which they do not have ACE;
ii) The market value of the annual catch entitlement for the stock;
iii) The market value of the stock;
iv) The economic benefits obtained by the most efficient fisher;
v) The extent to which catch of that stock has exceeded or is likely to exceed the TACC;
vi) Any other matters you consider relevant.

When setting an interim deemed value rate or an annual deemed value rate you must not:

a) Have regard to the personal circumstances of any individual or class of of person liable to the deemed value of any fish, aquatic life, or seaweed; or
b) Set separate deemed values in individual cases.

3 Other Matters

3.1 HARVEST STRATEGY STANDARD

The discussions on the stocks that are included in this document include reference to the Harvest Strategy Standard (HSS). This is a policy statement of best practice in relation to the setting of fishery and stock targets and limits for fishstocks in New Zealand's Quota Management System (QMS). It is intended to provide guidance as to how fisheries law will be applied in practice, by establishing a consistent and transparent framework for decision-making to achieve the objective of providing for utilisation of New Zealand's QMS species while ensuring sustainability. The Harvest Strategy Standard outlines the Ministry's approach to relevant sections of the Fisheries Act 1996 ("the Act"), and, as such, forms a core input to the Ministry's advice to you on the management of fisheries, particularly the setting of TACs under sections 13 and 14.

The HSS is not however legally binding and you is not obliged to choose options based upon it.

[7] Deemed value rates are charged per kilogram of QMS fishstock landed in excess of ACE. There are three types of deemed value rate: interim, which is charged monthly during the year and can be remitted if ACE is obtained; annual, which is charged at the end of the fishing year for catch in excess of ACE; and differential, which is an increased rate charged at the end of the year for higher levels (above 120%) of excess catch. For more details see Part 3 of this document (Deemed Value Rates).

PART A: DEEPWATER FISHERIES

Arrow Squid Jigging Fishery (SQU 1J)

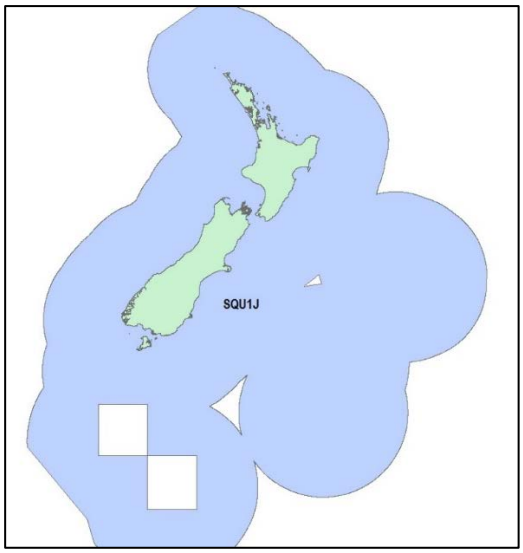


Figure 1: Quota management area (QMA) for the arrow squid jigging fishery (SQU 1J)

1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits for the arrow squid jigging fishstock SQU 1J (Figure 1). The current total allowable commercial catch (TACC) for the SQU 1J stock was based on historical catches achieved during the early 1980s when over 200 squid jigging vessels were active in the fishery. The total catch for the most recent complete fishing year (2014/15) was 515 tonnes.

Amendments to the Fisheries Act 1996 (the Act) came into force on 1 May 2016 requiring all fishing vessels to be flagged to New Zealand. The re-flagging requirement means that the level of effort that the TACC was based on is unlikely to be repeated. Maintaining the TACC at historical levels is not considered appropriate in this context.

MPI consulted on three options for management settings for SQU 1J for the upcoming fishing year – one that retains the *status quo* and two that decrease the TACC by 80% or 90%. A total allowable catch (TAC) would be set for the first time with customary Māori, recreational, and other sources of fishing-related mortality allowances set at 10 tonnes respectively.

Nine submissions were received on the proposals for SQU 1J, from commercial and customary Māori stakeholder organisations. Two stakeholders supported Option 1, two stakeholders supported Option 2 and four stakeholders supported Option 3.

MPI's initial proposals for catch limits for SQU 1J are set out in Table 1.

Table 1: Proposed TACs, TACCs and allowances for SQU 1J from 1 October 2016 (all values in tonnes)

			Allowances		
Option	Total Allowable Catch	Total Allowable Commercial Catch	Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 *(Status quo)*	50,242	50,212	10	10	10
Option 2	10,030	10,000	10	10	10
Option 3 (MPI Preferred)	5,030	5,000	10	10	10

After considering the submissions received, MPI recommends Option 3. This would reduce the current TAC for SQU 1J by 45,212 tonnes but the TACC would remain at a level (5,000 tonnes) that could provide for the development of a domestic squid jigging fishery in the future.

If you select Option 3, MPI has added two sub-options regarding the 2016/17 cost recovery levies. Some submitters conditioned their support for Option 3 on the basis that MPI complete a mid-year update to the 2016/17 levies to incorporate the TACC amendment. Such a review would be unusual and requires significant resourcing from the cost recovery team. In addition, the re-apportionment of levies would affect quota owners of nearly all fish stocks and therefore MPI should re-consult. This may re-open the levies to additional lobbying. MPI has provided you with an option to initiate a mid-year review but does not recommend it.

2 Context

2.1 BACKGROUND

2.1.1 Biology

The New Zealand arrow squid fishery is based on two related species *Nototodarus gouldi* and *Nototodarus sloanii*. *Nototodarus gouldi* is mainly found around mainland New Zealand in the warmer waters north of the Subtropical Convergence Zone (STC).[8] *Nototodarus sloanii* is mainly found in the colder waters south of the STC. Both species are found across the continental shelf in waters up to 500m in depth, though they are most commonly found in waters less than 300m in depth. Both species have distinct sexes and are able to be differentiated, despite being similar in biology and appearance. They can grow to a length of 34cm, with females being larger than males.

Arrow squid live for around one year, spawn once and then die. As a result, every squid fishing season is based on a new stock. For this reason it is not possible to calculate estimates of sustainable yield at this stage. Furthermore, because of the short life span and rapid growth of arrow squid, it is also difficult to estimate the squid biomass prior to the fishing season.

2.1.2 Fishery description

2.1.2.1 Commercial

The New Zealand squid jigging fishery began in the late 1970's. Jigging is a method of catching squid by continuously lowering and retrieving lines from a fishing vessel. The majority of squid jigging takes place in the summer/autumn months from January through to May. Fishing is

[8] The Subtropical Convergence (STC) is the frontal zone which separates the subantarctic waters of the West Wind Drift from the subtropical waters in the north. These two water masses differ in their biological as well as chemical and physical properties.

often done at night when squid are attracted by powerful lights on the vessel. The squid jig fishery has historically caught more *N. gouldi* at the beginning of the season, shifting to *N. sloanii* as the season progresses. This is different to the trawl fishery which generally focuses only in areas where *N. sloanii* is dominant.

The number of vessels that have reported landing SQU 1J, together with annual landings and the SQU 1J TACC since the 1990/91 fishing year, is shown in Figure 2.

The initial TACC set in 1987 was 57,705 tonnes. Over the next three years this was gradually increased as a result of Quota Appeal Authority (QAA) decisions, reaching a maximum of 76,136 tonnes in 1989/90. In 1990/91 the TACC was reduced by around 30,000 tonnes to 46,087 tonnes before another QAA decision increased the TACC to 50,212 tonnes, where it has remained since the 1996/97 fishing year (Figure 2). Since 1994/95, SQU 1J catch levels and effort have decreased and catch has never exceeded 35,000 tonnes. A maximum of five vessels have operated in the fishery since 2006/07. The lowest annual landing was 167 tonnes in 2013/14.

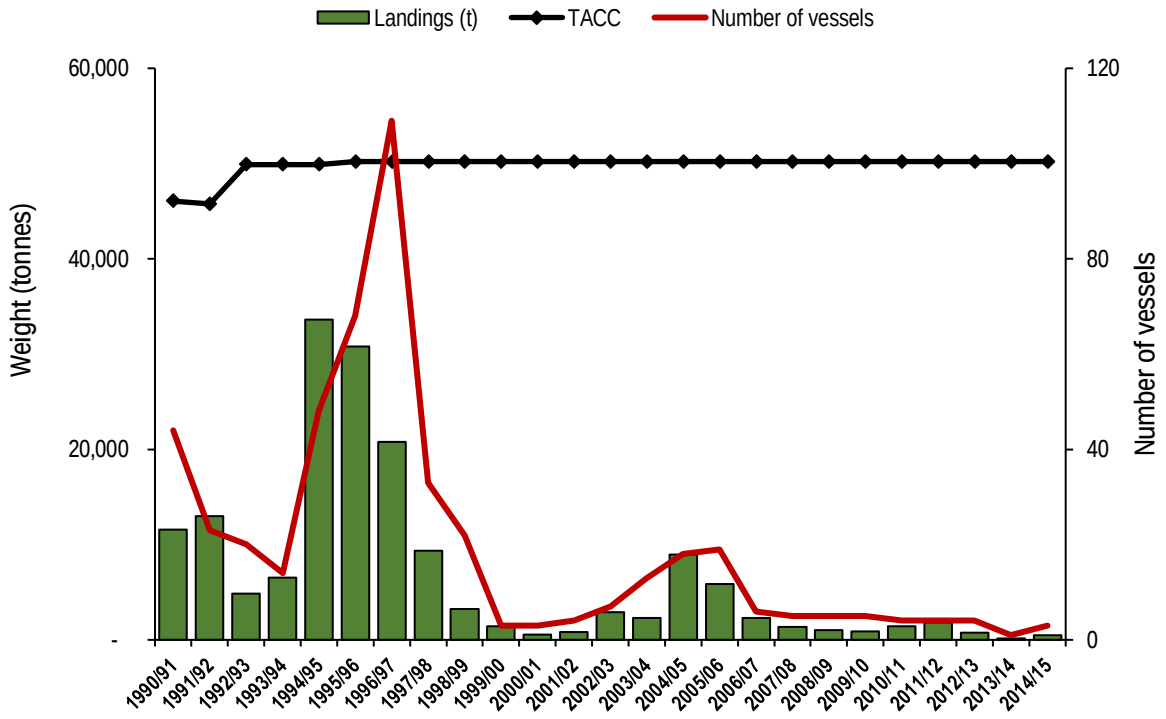


Figure 2: SQU 1J reported landings and TACC (left axis) and number of vessels operating in the fishery (right axis) between 1990/91 and 2014/15

2.1.2.2 Recreational

No quantitative information is available on the current level of arrow squid caught by recreational fishers but under the new TAC, an allowance of 10 tonnes is proposed for the first time to allow for any catch in future.

2.1.2.3 Māori customary interests

No quantitative information is available on the current level of customary non-commercial take but under the new TAC an allowance of 10 tonnes is proposed for the first time to allow for any catch in future.

2.1.2.4 Other sources of fishing-related mortality

MPI does not have any estimates of other sources of fishing-related mortality but under the new TAC, an allowance of 10 tonnes is proposed for the first time to allow for other sources of fishing-related mortality in future.

2.1.3 Management approach

Arrow squid is generally managed as a Tier 1 species under the National Fisheries Plan for Deepwater and Middle-depth Fisheries (National Deepwater Plan), which was approved by the Minister of Fisheries under section 11A of the Fisheries Act 1996. Tier 1 fisheries are high volume and/or high value fisheries and are traditionally targeted. Tier 2 fisheries are typically less valuable bycatch fisheries or are only target fisheries at certain times of the year. SQU 1J is treated as a Tier 2 fish stock because of the low volume of catches.

Squid are listed on Schedule 3 of the Fisheries Act 1996 (the Act) because of their one-year lifespan and the resulting inability to calculate reliable yield estimates. Therefore you may set a TAC under s 14 of the Act (that is on a basis other than Bmsy[9] as required by section 13). In addition, for species listed on Schedule 3, the TACC may be increased during the fishing season to take advantage of the natural variability of the species.

2.2 RATIONALE FOR MANAGEMENT INTERVENTION

2.2.1 Previous review

The TACC was last reviewed in 1996/97 when it was increased slightly from 49,891 tonnes to 50,212 tonnes as the result of a QAA decision.

2.2.2 Current status

No estimates of current and reference biomass are available. Because of the life span of arrow squid there is no proven method at this time to estimate yields from the arrow squid fishery nor to predict future stock size in advance of the fishing season. It is not known whether New Zealand arrow squid stocks have ever been stressed through fishing mortality. An attempt was made in 2015 to run an in-season stock assessment of arrow squid but unfortunately it was not considered useful as a management tool.

3 Consultation

MPI consulted on your behalf on the three options set out in Table 1 above. MPI followed its standard consultation process.

3.1 SUBMISSIONS RECEIVED

Submissions on the SQU 1J proposals were received from the following:

a) Independent Fisheries Ltd (IFL)
b) Waikawa Fishing Co Ltd (Waikawa)
c) Nga Hapu o Te Uru o Tainui Customary Fisheries Forum
d) Solander Maritime Ltd (Solander)

[9] B_{MSY} is defined as the biomass that can provide the maximum sustainable yield.

e) Deepwater Group Ltd (DWG)
f) Iwi Collective Partnership (ICP)
g) Sanford Ltd (Sanford)
h) Sealord Group Ltd (Sealord)
i) Te Ohu Kaimoana Maori Fisheries Trust (TOKM)

3.2 SUMMARY OF SUBMISSIONS

A brief summary of the submissions is outlined below.[10] Further details of the submissions are discussed in the relevant sections of this paper.

3.2.1 Option 1

IFL submits that the only reason the SQU 1J fishstock is not caught is because there are no jigging vessels available. They consider that there is no sustainability issue if the TACC remains at its current level (Option 1) which they support. They submit that to reduce a quota because it is not being caught is not good fisheries management. Their preference in the future is for the SQU 1J and SQU 1T quotas to be amalgamated into a SQU 1 quota and the method restriction abolished.

Waikawa support Option 1 because they consider that the domestic fleet could now develop the jigging fishery. They submit that if current quota holders do not want to catch the ACE or pay the levies, they have the options of selling to those that do or shelving the ACE with the Government. They consider the issue in SQU 1J is high levies, rather than a sustainability issue. They note that if the quota is cut by 80-90% (options 2 and 3), they will have trouble trying to lease or buy SQU 1J quota to develop the fishery.

3.2.2 Option 2

Nga Hapu o Te Uru o Tainui Customary Fisheries Forum support either options 2 or 3. They submit that the proposed catch limits should not impact on customary fishing rights under the Kaimoana Customary Fishing Regulations. They support the proposal in all three options that the allowance for customary Māori take be 10 tonnes.

Solander represents the Solander Group of Companies which has a long history in the squid jig (SQU 1J) fishery. They support Option 2 and note that SQU 1J is the only method specific quota in the QMS, but the requirement of reflagging foreign vessels has precluded jiggers returning to New Zealand. They also note that jigging vessels were more likely to catch the second arrow squid species *N. gouldi* which is now unlikely to be caught by the trawl method. Option 2 provides for a developmental fishery at a viable level for interest from the domestic fishery. Solander also ask that if quota is reduced then the reduction in levies should occur sooner than 2017/18.

3.2.3 Option 3

DWG represents its shareholders who collectively own 84% of SQU 1J quota. They acknowledge that there is no stock assessment for squid and therefore the TACC is set at an arbitrary level - informed more by consideration of allocation of economic access rather than

[10] Copies of the submissions are available in Appendix II

sustainability considerations. DWG supports Option 3 for a reduction in the TACC to 5,000 tonnes provided that:

- the TACC reduction will result in a reduction in cost recovery levies from SQU 1J quota owners for 2016/17 and future years;
- these cost reductions will not be reassigned by MPI to other deepwater fish stocks; and
- during 2016/17, DWG and MPI will instigate discussions with quota owners on options for amalgamating SQU 1J and SQU 1T into a single QMA and TACC (i.e., 'SQU 1'), that would not be method-specific and would be separate from SQU 6T.

Without an amalgamation or assurances on cost recovery reductions, DWG submit that SQU 1J quota owners will seek discussions with MPI on an appropriate future TACC level for SQU 1J, which will likely be greater than 5,000 tonnes. Additional analysis of the cost recovery aspects is included in Section 6 of this paper.

A number of DWG members submitted separately including Sanford, Sealord, ICP, and TOKM.

ICP supports Option 3 and submit that reducing the TACC better reflects actual catch and will provide economic savings to quota owners. They support the additional comments of DWG.

Sanford owns 36% of the quota for SQU 1J and submit in support of Option 3. They note that there are no sustainability issues, and also support the DWG proposal to open a dialogue regarding the potential amalgamation of SQU 1J and SQU 1T.

Sealord supports Option 3. They note that SQU 1J has been extensively traded as a property right with method restriction which has resulted in a very low value for this asset. Sealord also support the proposal to combine SQU 1J quota with SQU 1T quota in the future.

TOKM support Option 3 because of the current negligible catch in the fishery. They note that a reduction of the TACC to 5,000 tonnes aligns with the practical reality of the fishery and that quota owners are currently paying levies based on a TACC of 50,000 tonnes for which they are receiving no benefit. They submit that should it be possible to increase harvesting effort in the future, then MPI should be prepared to respond quickly to proposals for any increase that might be needed to match a growth in harvesting capacity.

4 Legal Considerations

The following section provides information in addition to the considerations outlined in the Statutory Considerations section of this paper.

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 SQU 1J fishery while ensuring sustainability. Available information suggests all management options will ensure the long term sustainability of the stock.

Under Option 1, the existing TACC would be retained (*status quo*). Option 2 proposes an 80% decrease in the TACC to 10,000 tonnes. It has been 11 years since this level of catch occurred in SQU 1J. Effort was much higher in 2004/05 when 20 jigging vessels were in the fishery.

Option 3 proposes a 90% decrease in the TACC to 5,000 tonnes. It has been 10 years since this level of catch occurred in SQU 1J.

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 SQU 1J 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 Maintaining associated or dependent species (section 9(a))

4.2.1.1 Seabirds, mammals, and protected fish

There are no known marine mammal or protected fish interactions in SQU 1J, however seabirds are caught. 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 reflects New Zealand's obligations under international law to take into account the effects of fishing on associated species such as seabirds.

Observer coverage in SQU 1J has historically been low, but in the last two fishing years (2013/14 and 2014/15), there was 100% observer coverage on two Foreign Chartered squid jiggers. These data record incidental captures of 32 seabirds, the majority of which were sooty shearwaters[11]. The risk from commercial fisheries to the New Zealand population of sooty shearwater was assessed in 2011 as negligible.[12]

4.2.2 Biological diversity of the aquatic environment - (section 9(b))

The discussion above relating to section 9(a) is also relevant to the maintenance of the biological diversity of the aquatic environment.

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

4.2.3.1 Benthic impacts

There are no known benthic impacts from the squid jigging method.

4.3 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations for the SQU 1J stock.

4.4 SECTION 11 – SUSTAINABILITY MEASURES

See the Statutory Considerations section of this paper for consideration of Section 11 measures.

[11] Thompson F. Berkenbusch K. (2016) Preparation of data of observed protected species captures, 2002–03 to 2014–15 Draft report prepared for the Ministry for Primary Industries.

[12] Abraham E. R., Thompson F. N. (2012). Captures of sooty shearwater in trawl fisheries, in the New Zealand Exclusive Economic Zone, from 2002–03 to 2010–11.

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. Previous consultation with iwi led to the establishment of iwi fisheries forums and MPI subsequently assisted those forums to develop plans.

Te Waka a Māui me Ōna Toka iwi forum was approached on 15 June 2016 for their collective view on SQU 1J. No collective views were provided by Te Waka a Māui me Ōna Toka.

4.6 SECTION 14 – SETTING THE TAC

For species listed on Schedule 3 of the Act, section 14 allows for the setting of a TAC for reasons other than to produce the maximum sustainable yield so long as the TAC is considered appropriate to achieve the purpose of the Act. Section 14 also provides the ability to vary a total allowable catch within a fishing year. When varied, the in-season amendment lasts for the remainder of that fishing year and defaults back to the original TACC.

The proposed large reductions in TACC combined with the ability to do in-season increases, are considered to be a better way of achieving the purpose of the Act in relation to this short-lived species and is more consistent with the objectives of the National Fisheries Plan for Deepwater and Middle-depth species.

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 allow for Māori 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

No quantitative information is available on the current level of arrow squid caught by recreational fishers but under the new TAC an allowance of 10 tonnes is proposed for the first time to allow for any catch in future.

4.7.2 Customary **Māori** allowance

No quantitative information is available on the current level of customary Māori non-commercial take but under the new TAC an allowance of 10 tonnes is proposed for the first time to allow for any catch in future.

4.7.3 Other sources of fishing-related mortality

No quantitative information is available on the other sources of fishing-related mortality. However, under the new TAC an allowance of 10 tonnes is proposed for the first time to allow for other sources of fishing-related mortality in the future.

4.8 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. The current Interim Deemed Value is $0.44 and the current Annual Deemed Value is $0.88. It is proposed that these deemed values remain the same.

5 Management Options

5.1 ANALYSIS OF OPTIONS

The final options for setting the TAC, TACC, and allowances for SQU 1J (Table 2) do not differ from those consulted on. Option 1 retains the *status quo*, while Options 2 and 3 decrease the TACC. For all three options under a new TAC, a 10 tonne customary Māori allowance, 10 tonne recreational allowance, and 10 tonne allowance for other sources of fishing-related mortality is set for the first time. MPI notes that ongoing monitoring of the SQU 1J fishery is planned to enable annual catch levels to be adjusted in-season if necessary. Jig fishing is a specialised fishing method and MPI anticipates advanced warning of the development of domestic capacity in this fishery.

Table 2: TAC, TACC and allowance options consulted on for SQU 1J (all values in tonnes)

			Allowances		
Option	Total Allowable Catch	Total Allowable Commercial Catch	Customary **Māori**	Recreational	Other Sources of Fishing-Related Mortality
Option 1 (*Status quo*)	50,242	50,212	10	10	10
Option 2	10,030	10,000	10	10	10
Option 3 (MPI preferred)	5,030	5,000	10	10	10

5.1.1 Option 1

Two stakeholders support Option 1 which is the *status quo* and proposes no changes to the TACC, but introduces a TAC with a 10 tonne allowance for each of the three sectors: customary Māori, recreational or other sources of fishing-related mortality. Cost recovery levies would remain high and the TACC is unlikely to be caught.

5.1.2 Option 2

Two stakeholders support Option 2 which reduces the TACC by 40,212 tonnes. A TAC of 10,030 tonnes would be introduced for the first time which includes a 10 tonne allowance for each of the three sectors: customary Māori, recreational or other sources of fishing-related mortality. It is 11 years since this level of harvest was attained. At this time there were 20 foreign owned jigging vessels fishing (Figure 2). It is unlikely, under the amendments to the

Act (1 May 2016) requiring all fishing vessels to be flagged to New Zealand, that this level of effort will occur using domestically flagged jigging vessels in the foreseeable future.

5.1.3 Option 3 (MPI Preferred)

Four stakeholders support Option 3. Under Option 3 the TACC would decrease by 45,212 tonnes and a TAC would be introduced for the first time at 5,030 tonnes which includes a 10 tonne allowance for each of the three sectors: customary Māori, recreational or other sources of fishing-related mortality. It has been 10 years since this level of harvest was attained (2004/05). There were 6 jigging vessels in the fishery at that time (Figure 2).

It is considered that under Option 3, the domestic fleet could develop the jigging fishery, as a TACC of 5,000 tonnes provides for a developmental fishery at an economically viable level. Should information become available during the course of a fishing year that suggests a greater level of harvest was possible, the TAC could be increased during that fishing year.

If this is the selected option, a further decision will be required for the incorporation of this change into the cost recovery levies as per section 6.1 of this paper.

6 Other Matters

6.1 COST RECOVERY

The cost of MPI services, such as compliance and registry services, are spread across all fish stocks in proportion to each stock's TACC and port price. Cost recovery levies for SQU 1J quota holders over the last five years have averaged $867,000 per annum. The majority of this cost is associated with the commercial compliance levy ($593,000) and registry services levy ($240,000). The levies for these services are apportioned based on TACCs. Therefore SQU1J, with a high TACC, attracts a high annual levy amount.

DWG has conditioned its support for a TACC reduction based on MPI applying a commensurate reduction in the 2016/17 levies for SQU1J, but that these costs are not reallocated amongst other deepwater quota owners.

Because the 2016/17 levies have already been agreed, an extraordinary process would be required to update the 2016/17 levies mid-year to incorporate these TACC changes. This mid-year update is feasible, however, the application of the current cost recovery rules results in a redistribution of costs across all stocks, some of which are deepwater stocks. Due to changes to levies for nearly all stocks, this process would likely involve re-consultation with the fishing industry on the revised levies.

The timing issue raised here (levies for the 2016/17 fishing year being agreed before the 2016/17 TACCs are set) is something the First Principles Review of Cost Recovery will be exploring.

6.1.1 Option 3A (MPI Preferred)

Under Option 3A, the 1 October 2016 TACC changes would not affect levy setting until the 2017/18 levy order. Note that a number of industry submitters did not support decreasing the TACC to 5,000 tonnes under Option 3 unless a mid-year levy update is completed.

A mid-year review of the 2016/17 levies would require significant administrative resourcing, potentially impacting on the First Principles Review, and may result in re-litigation or additional lobbying for further amendments to the levies. Mid-year reviews of the levy order were done in the past, but were abandoned in all but extraordinary circumstances because they were not considered to provide sufficient value given the resourcing required.

6.1.2 Option 3B

This option would result in MPI running a mid-year update to the 2016/17 cost recovery levies to account for TACC changes made from 1 October 2016. This update requires significant resourcing from MPI and while it is feasible, may impact on other processes or the delivery of other work.

The impacts of adjusting the 2016/17 cost recovery levies to account for the proposed TACC reduction would impact quota owners in other major stocks. The top ten stocks affected (by value change) and the estimated change in the levy amount if a mid-year review were to be completed are summarised in Table 4.

Table 4: Top ten fishstocks and levy amount change following a mid-year review

Fishstock	Estimated levy change	% change
HOK 1	$86,400	2
CRA 8	$62,200	4
SQU 1T	$49,000	4
SQU 6T	$33,200	4
CRA 4	$30,200	4
SNA 1	$27,300	1
CRA 6	$23,300	4
CRA 5	$22,600	4
SBW 6I	$22,300	1
LIN 6	$18,600	4

The changes to these levies are generally small with regards to the percentage of the total levy for each stock. There are some stocks where the percentage change is more significant, however the values involved are generally small.

6.2 QUOTA MANAGEMENT AREA AMALGAMATION

During 2016/17, MPI is receptive to DWG instigating discussions with quota owners on options for amalgamating SQU 1J and SQU 1T under section 25 of the Act. This would result in a single QMA which would not be method specific and would be separate from SQU 6T.

7 Conclusion

MPI considers all three options are consistent with your statutory obligations in relation to ensuring sustainability however it considers that a reduction in TAC to better reflect the current level of use in the fishery would better provide for utilisation of the fishery.

MPI's preferred option is Option 3 – decreasing the TAC of SQU 1J to 5,030 tonnes, and introducing 10 tonne allowances for customary Māori, recreational interests and other sources of fishing-related mortality. It is considered that a TACC of 5,000 tonnes would be sufficient to allow for the development of a domestic squid jig fishery in the future because the last time this level of catch was taken there were 6 vessels operating in the SQU 1J fishery. Since squid

is listed on Schedule 3 of the Act, in-season increases to the TAC are an option if the TACC is found to be restrictive of development.

MPI is providing you with two options under the stated Option 3, one to initiate a mid-year update of the 2016/17 levies to incorporate the significant TACC change, the other to maintain the 2016/17 cost recovery levies as currently drafted and delay the impact of the TACC change to the 2017/18 levies.

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.

Barracouta (BAR 5)

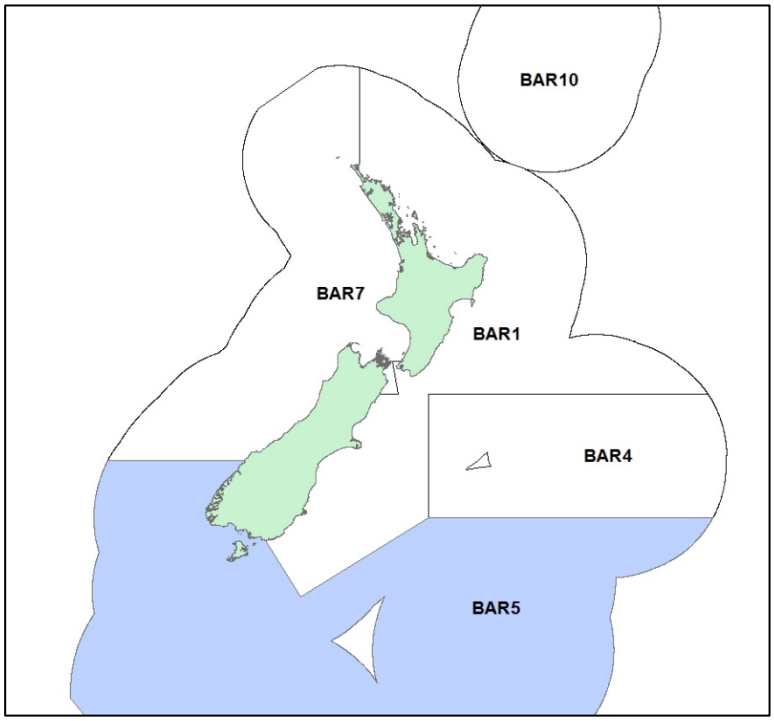


Figure 1: Map of the BAR 5 quota management area (QMA)

1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits and other management controls for the barracouta (*Thyrsites atun*, manga, or maka) stock in quota management area 5 (BAR 5; Figure 1).

The status of all barracouta stocks relative to the biomass that can support the maximum sustainable yield (B_{MSY}) is unknown, however a 2016 catch per unit effort (CPUE) analysis indicates that BAR 5 CPUE remains high after a significant increase in 2007-2009. This new information suggests that the BAR 5 stock is likely to have increased in abundance, and will likely support increased utilisation.

MPI consulted on three options for management settings for BAR 5 for the upcoming fishing year. The first option maintains the current commercial, recreational and customary catch limits but adds an allowance for other sources of fishing-related mortality. Option 2 and 3 increase the total allowable commercial catch (TACC), add an allowance for other sources of fishing-related mortality, and maintain the current allowances for customary and recreational fishing. The allowance for other mortality that is added to the total allowable catch (TAC) for each option is a proportional allowance and represents 2% of the TACC. The three proposed options are shown in Table 1.

Five submissions were received on the proposals for BAR 5. All were from commercial stakeholder organisations in support of Option 3.

After considering the submissions received, MPI recommends Option 2, that the TACC for BAR 5 is increased to 8,200 tonnes, an allocation for other sources of fishing-related mortality

of 165 tonnes is added for the first time, and the recreational and customary Māori allowances are maintained at 3 and 2 tonnes respectively.

Table 1: Proposed TACs, TACCs and allowances for BAR 5 from 1 October 2016 (all values in tonnes)

Option	TAC	TACC	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Status quo	7,475	7,470	2	3	0
Option 1	7,625	7,470	2	3	150
Option 2 (MPI Preferred)	8,370	8,200	2	3	165
Option 3	9,470	9,280	2	3	185

2 Purpose

2.1 BACKGROUND

2.1.1 Biological characteristics of barracouta

Barracouta are found around New Zealand in coastal waters as part of the shelf mixed fishery from 30 to 400 m depth. They are a prevalent species around the South Island. Juveniles are found in inshore waters less than 100 m throughout New Zealand (though they are less common on the west coast of the South Island (WCSI)), while adults are found down to approximately 400 m throughout New Zealand (including the WCSI).

Barracouta are thought to reach a maximum length of 100 cm, and are thought to rarely live over 10 years. Barracouta reach sexual maturity at 50–60 cm and around 2–3 years of age. They spawn mainly in late-winter/spring (August–September) on the east and west coasts of both of the main islands, and in late spring (November–December) in Southland and around the Chatham Islands.

Stock boundaries for barracouta are not well understood. There may be overlap of Southland fish with other areas, especially the east and west coast of the South Island. However, there is not enough data at this stage to alter the existing stock boundaries.

2.1.2 Fishery description

New Zealand's barracouta stocks were introduced into the quota management system (QMS) on 1 October 1986. Three of the five barracouta stocks are managed as deepwater stocks within three quota management areas (QMAs): BAR 4, BAR 5, and BAR 7. BAR 5 covers fishery management areas (FMAs) 5 and 6 (Figure 1). One of the remaining two stocks is managed as an inshore stock (BAR 1), while the other is administrative and no fishing occurs there (BAR 10).

2.1.2.1 Commercial

Barracouta are caught in coastal waters around mainland New Zealand and the Snares, Auckland, and Chatham Islands, out to depths of about 400 m.

The BAR 5 fishery is both a target and a bycatch fishery. Catches increased significantly in the late 1960s with the addition of foreign vessels around New Zealand. Over 99% of the recorded catch is taken by trawlers. Major target fisheries have been developed on spring spawning

aggregations at Stewart Island, as well as on summer feeding aggregations, particularly around the Snares. BAR 5 is also taken as bycatch by other fisheries, such as squid (particularly the Snares squid trawl fishery), jack mackerel, and warehou. An inability to balance available BAR 5 annual catch entitlement (ACE) with large barracouta catches may have necessitated fishers moving away from the Snares squid trawl fishery in recent years once all BAR 5 ACE has been caught. In good squid years this could represent some forfeiture of available squid (a valuable species) to meet catch limits for barracouta (a less valuable species).

The BAR 5 TAC was initially set at 9,010 tonnes, and raised to 9,282 tonnes for the 1990/91 fishing year following decisions by the Quota Appeal Authority. In 1998/99 a TAC of 7,475 tonnes was set for BAR 5 and the TACC was reduced from 9,282 to 7,470 tonnes. Included within the TAC was a 3 tonne recreational fishing allowance, and a 2 tonne customary allowance. No allowance for other sources of fishing-related mortality was set at that time.

Annual catches and TACC for BAR 5 since 1997/8 are shown in Figure 2 below. BAR 5 catch has exceeded the TACC seven times in the seventeen years (40%) since it was reduced in 1998/99. However underfishing carry-forward provisions apply in this stock, and the available ACE in any given year was exceeded on only four occasions (Figure 2). As of 1 August 2016, reported BAR 5 catch for 2015/16 is 7,089 tonnes.

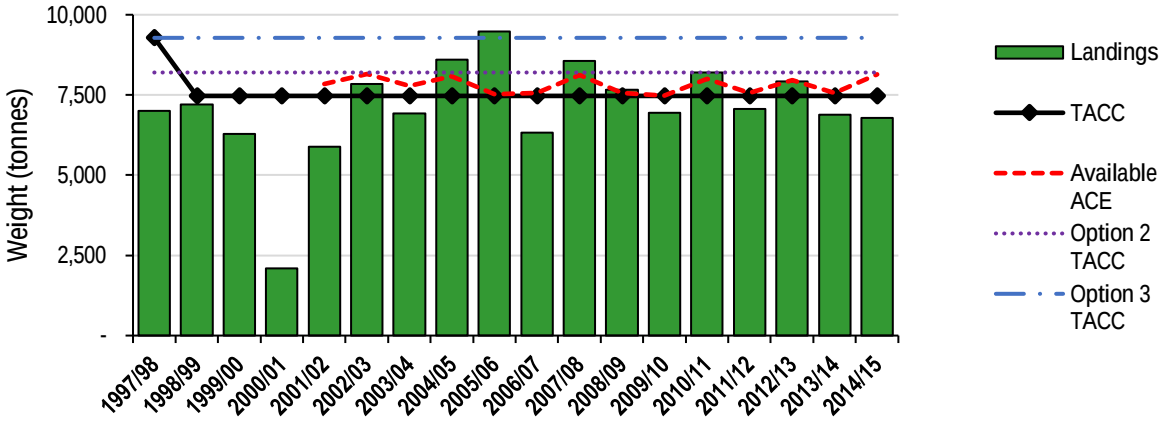


Figure 2: Annual catches vs TACC and available ACE for BAR 5 between 1997/8 and 2014/15, including TACC levels proposed for Options 2 and 3.

2.1.2.2 Recreational

Barracouta are occasionally caught recreationally but are typically used as bait for other fishing effort rather than for consumption. They are predominantly taken on boats, with a small proportion taken from land. They are primarily taken by rod and reel, with a small proportion taken by net methods. It is likely that a small amount of barracouta are accidentally caught by recreational fishers while targeting other species.

The main method used to manage recreational harvests of barracouta is daily bag limits. Fishers can take up to 30 barracouta as part of their combined daily bag limit in BAR 5.

From a panel survey in 2012 it was estimated that a recreational harvest of 1.4 tonnes was taken for BAR 5.[13] An allowance of 3 tonnes for recreational fishers is provided for within the current BAR 5 TAC. MPI considers that this allowance should be retained under all proposed options.

[13] Wynne-Jones, D; Gray, A; Hill, L; Heinemann, A (2014). National panel survey of marine recreational fishers 2011-12: Harvest estimates. *New Zealand Fisheries Assessment Report 2014/67*. 139 p.

2.1.2.3 Māori customary interests

Customary fishers do not generally target barracouta, as it is mainly found offshore in deep water and it is not a highly valued species. Recent data on the level of customary barracouta catch is negligible, and while references to customary catches in the past do exist, there has been zero reported customary barracouta catch in BAR 5 in the past 16 years. It is likely that any barracouta catch is instead taken by Māori under their recreational allowance. Barracouta is not identified as a tāonga species for the Te Tau Ihu iwi in the Te Waipounamu Iwi Forum Fisheries Plan, which incorporates all 9 iwi of the South Island, though Te Waipounamu iwi regard all species including barracouta as tāonga.

A nominal allowance of 2 tonnes for customary fishing is provided for within the current BAR 5 TAC. MPI considers that this allowance should be retained under all proposed options, as it provides for future customary use of the BAR 5 stock.

2.1.2.4 Other sources of fishing-related mortality

There is likely to be some mortality associated with fish escaping from trawl nets or dead fish lost from burst nets or misreporting. To account for this, MPI proposes to add an allowance for other sources of fishing-related mortality for the first time that represents 2% of the TACC under all proposed options.

2.2 RATIONALE FOR MANAGEMENT INTERVENTION

2.2.1 Previous review

The BAR 5 catch limit was last reviewed in 1998/99 in response to the TACC regularly being undercaught, including catches less than 50% of the TACC in the previous four years. The TACC was decreased from 9,282 tonnes to 7,470 tonnes on this occasion, and has remained unchanged since.

2.2.2 Current status

A CPUE analysis presented in 2016 showed that the BAR 5 CPUE index increased significantly from 2007 to 2009, and it has remained consistently high in subsequent years. There is agreement by the Deepwater Fisheries Assessment Working Group that this may reflect a genuine increase in the abundance of the stock. In addition, catches of BAR 5 have been consistent since 2007, exceeding available ACE in four of the last ten years (Figure 2). This suggests that the declines of the late 1990s have been reversed and there is an opportunity for increased utilisation in the fishery. MPI considers that the CPUE analysis indicates a likely increase in abundance in the stock with the potential to support an increase in TAC.

No stock assessments exist for any barracouta stock. The status of barracouta stocks relative to the reference biomass is unknown for all stocks. The sustainability of current catch levels for these stocks is not known, although no specific sustainability concerns have been identified by stakeholders for these stocks. It is considered that the BAR 5 stock could probably support higher catch levels, considering the BAR 5 TACC has been overcaught in four of the last ten years. None of the options proposed are considered likely to impact on the sustainability of any barracouta stock.

Increasing the catch limit for BAR 5 would allow for greater utilisation from larger catches of both barracouta (direct benefits) and other species that it is typically caught with as bycatch, particularly squid (indirect benefits). Currently, BAR 5 ACE availability may be limiting effort

in the barracouta and Snares squid trawl fisheries. The catch may have been lower than available ACE for the last two years (Figure 2) due to fishers pre-emptively halting squid and barracouta fishing to avoid overfishing BAR 5 ACE and incurring deemed value costs on excess catch. This forfeiture of potential squid profits could be reduced if the BAR 5 TACC is raised, while allowing target barracouta catches to increase as well.

A stock assessment for BAR 5 is tentatively planned in late 2016. This information may then be available to inform a TAC decision in 2017. CPUE analyses will continue to be assessed where available to monitor the stock.

3 Consultation

MPI consulted on your behalf on the three Options set out in Table 1 above. 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 780 iwi representatives, companies, organisations and individuals. The consultation period ran from 10 June to 11 July 2016. Opportunities were provided for both input and participation and consultation at the Tier 1 Iwi Fisheries Forums.

3.1 SUBMISSIONS RECEIVED

Submissions were received from the following:

a) Deepwater Group Ltd (DWG)
b) Independent Fisheries Ltd (IFL)
c) Sealord Group Ltd (Sealord)
d) Te Ohu Kaimoana Trustee Ltd (TOKM)
e) Sanford Ltd (Sanford)

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

3.2 SUMMARY OF SUBMISSIONS

There were no submissions in support of either Option 1 or 2.

3.2.1 Option 3

All five submissions received were in support of Option 3.

Sealord Group Ltd (Sealord) is a major commercial fishing company that operates vessels in BAR 5 and as of July 2016 owns 26% of BAR 5 quota. Sealord submits that considering steady recruitment to the fishery over the past decade, returning the TACC to the 1997/98 level would pose little short-term risk to the BAR 5 stock. Sealord notes that large barracouta aggregations have been observed by skippers in BAR 5 in recent years, and considers that raising the TACC would assist them when squid are abundant, and when squid are less abundant and barracouta bycatch is higher, and would increase the economic viability of the sub-Antarctic trawl fishery. Sealord notes that they would be able to optimise their operations by not having to avoid barracouta, and therefore would not expect a significant increase in effort in the fishery, nor an

increase in interactions with seabirds and marine mammals. Sealord considers that data should continue to be collected for CPUE monitoring, so that any increase or decrease in the stock can be reflected in rapid TACC changes.

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 own barracouta quota. Independent Fisheries Ltd (IFL) is a commercial fishing company that operates vessels in BAR 5 and owns 13% of BAR 5 quota as of July 2016. Te Ohu Kaimoana Trustee Ltd (TOKM) is an organisation that works to further Māori marine environmental interests, and submits in their capacity as trustee for the Fisheries Settlement. DWG, IFL and TOKM also support Option 3, based on annual catches exceeding the TACC after its reduction, and the results of the CPUE analysis indicating that catch rates remain high. DWG and TOKM both consider that there would be minimal short-term risk to the stock considering the "steady recruitment into the fishery over the past decade", and submit that age composition data should continue to be collected and the commercial CPUE index should continue to be monitored.

Sanford Ltd (Sanford) is a major commercial fishing company that currently owns 39% of BAR 5 quota and operates vessels in BAR 5. Sanford supports Option 3, on the basis of the CPUE index remaining high and the TACC generally being nearly fully caught. Sanford pose that there is "no evidence to suggest a sustainability concern".

4 Legal Considerations

The following section provides information in addition to the considerations outlined in the Statutory Considerations section of this paper.

4.1 SECTION 8 – PURPOSE OF THE ACT

MPI considers that all options presented in this paper meet the purpose of the legislation. Two of the three management options proposed will provide for increased utilisation while ensuring the long term sustainability of the stock. Option 3 maximises utilisation of the stock, but may carry more risk to the sustainability of the stock. If catch from BAR 5 is maintained at current levels (Option 1) there would be a lower risk to the sustainability of the stock, but this limits immediate utilisation opportunities.

4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

4.2.1 Maintaining associated or dependent species (section 9(a))

As discussed in the Statutory Considerations section of this paper, s 9(a) is focused on species (including protected species) that cannot be targeted commercially and are affected by the taking of a harvested species. This principle requires you to take into account that these non-harvested species should be maintained above a level that ensures their long-term sustainability. The effect of targeted and non-targeted barracouta fishing on protected species, specifically seabirds and marine mammals, is discussed below.

Options 2 and 3 could result in an overall increase in barracouta target fishing effort, and would enable an extended period of activity in the Snares squid fishery. This may result in increases to the known interactions with protected species in these 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.

4.2.1.1 Seabirds

Seabird interactions with New Zealand's commercial fisheries is managed by the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA Seabirds). The NPOA Seabirds reflects New Zealand's obligations under international law to take into account the effects of fishing on associated species such as 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.

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 from the target fisheries that take BAR 5 as bycatch generally occur at low rates, although interactions are known to occur. The Snares squid trawl fishery and the barracouta target fishery mainly catch NZ white-capped albatross, Southern Buller's albatross, white-chinned petrel and sooty shearwater.

A range of regulatory and non-regulatory management measures are currently in place to mitigate and manage interactions with seabirds. Mandatory seabird mitigation measures include the requirement that all trawl vessels over 28 m in length deploy bird mitigation devices (such as bird bafflers or tori lines) during fishing.[14] Non-regulatory management measures include vessel-specific vessel management plans (VMPs). The VMPs describe on-board practices vessels must follow to reduce the risk of seabird interactions, including offal management and good factory cleanliness. MPI monitors each vessel's performance against its VMP and works with the Deepwater Group Ltd to rectify any issues that arise during the fishing season. This practice will continue during the 2016/17 fishing year.

Under the proposed TAC increases in Options 2 and 3, both targeted and non-targeted barracouta fishing effort have the potential to increase to a minor degree relative to recent years. With the range of regulatory and non-regulatory measures in place, the management proposals are expected to have limited additional effects on seabirds. However the effectiveness of these mitigation measures will be monitored throughout the year.

4.2.1.2 Marine mammals

Fisheries that take barracouta as bycatch are responsible for New Zealand sea lion and fur seal mortalities, particularly from the squid fisheries on the Snares shelf. MPI works closely with industry to increase awareness amongst the fleet of the risk of interactions, and emphasises the importance of adherence to the current marine mammal operational procedures (MMOPs). The MMOPs aim to reduce the risk of interactions with marine mammals by requiring that vessels minimise the length of time the fishing gear is on the surface, remove all dead fish from the net before shooting the gear, steam away from any congregations of marine mammals before shooting the gear, and appoint a crew member to watch for marine mammal interactions every time the gear is shot or hauled. In addition, the use of sea lion exclusion devices (SLEDs) is a MMOP employed by all vessels when fishing for squid in SQU 6T. Performance in relation to these procedures is audited by MPI observers, and this will continue in the 2016/17 fishing year.

Under Options 2 and 3, fishing effort in the fisheries that take barracouta as bycatch may marginally increase, and there may be some associated additional risk to marine mammals.

[14] Seabird mitigation on trawl vessels is regulated by the Fisheries (Commercial Fishing) Regulations 2001, Seabird Scaring Devices Circular 2010 (No. F517).

Increasing the BAR 5 TAC is expected to increase fishing effort in the Snares squid fishery (SQU 1T), but it is not expected to affect squid fishing around the Auckland Islands (SQU 6T). In the last five fishing years, estimated annual New Zealand sea lion captures have ranged between 0-2 sea lions per year in the Stewart-Snares shelf squid fishery.[15] Consequently, the potential effect on New Zealand sea lions of raising the TAC for BAR 5 is expected to be minimal. Continued adherence to MMOPs should minimise any adverse impact of increased fishing effort in BAR 5 on New Zealand sea lions and other marine mammals. MPI will monitor the effectiveness of these mitigation measures throughout the year and respond to any marine mammal captures as required.

4.2.2 Biological diversity of the aquatic environment (section 9(b))

The discussion above relating to section 9(a) is also relevant to the maintenance of the biological diversity of the aquatic environment.

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

4.2.3.1 Benthic impacts

Since QMS introduction in 1986, more than 99% of barracouta taken in BAR 5 has been taken using bottom trawl or midwater trawl gear that is fished on or close to the bottom. There are impacts on benthic habitat associated with bottom trawl fishing in particular.

Management measures to address the effects of trawl activity in deepwater fisheries have focused on 'avoiding' these effects in specific areas. 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 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 options to increase the BAR 5 TAC and TACC may result in an overall increase in fishing effort. These increases are likely to be minor in the context of current fishing effort. Most of the additional effort from any increase in the catch limit for BAR 5 will likely be in areas that have previously been fished, somewhat limiting further benthic impacts.

MPI will continue to monitor the trawl footprint of all deepwater fisheries, including those that take barracouta as bycatch, on an annual basis.

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. All science information upon which the management options are based has been peer reviewed by the Deepwater Fisheries Assessment Working Group. The feedback of consultation with Iwi Fisheries Forums, tangata whenua and stakeholders was considered when evaluating these options.

4.4 SECTION 11 – SUSTAINABILITY MEASURES

See the Statutory Considerations section of this paper for consideration of Section 11 measures.

[15] Abraham E. R., Thompson F. N. (2015). Captures of all birds in trawl fisheries, in the New Zealand Exclusive Economic Zone, during the 2014–15 fishing year. Retrieved from https://data.dragonfly.co.nz/psc/2016v1/preview/birds/trawl/all-vessels/eez/2014-15/, Jul 12, 2016.

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 on 15 June 2016 for their collective view on BAR 5. 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 the BAR 5 area and does not specifically identify barracouta as a tāonga species for Te Tau Ihu iwi, though all species are considered tāonga by Te Waipounamu iwi. MPI considers that the management options presented in this advice paper are consistent with the Plan's six management objectives in ensuring that the fishery remains sustainable and that environmental impacts are minimised. Specifically, both management options ensure adequate allowances for customary harvest, the sustainability of the fishery, and the appropriate management of environmental impacts.

4.6 SECTION 13(2A) – SETTING THE TAC

As current biomass ($B_{current}$) and B_{MSY} are not known, the TAC must be set under section 13(2A). The options presented in this paper take into account the requirements listed in s 13(2A) and 13(3) of the Act, as discussed in the Statutory Considerations section of this paper.

Section 13(2A) requires you 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 MSY. MPI considers that the CPUE analysis is the best available information to determine the status of the stock. This analysis suggests a sustained increase in stock abundance and the potential for increased utilisation in the fishery. The options within this paper provide you with a choice on how you fulfil your obligations under this section.

Under section 13(3) of the Act, you must consider relevant social, cultural and economic considerations in determining an appropriate way and rate to move the stock towards or above a level that can produce the MSY.

The s 13(2A)(b) requirement 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. Barracouta is caught as bycatch in squid, jack mackerel, and warehou fisheries in BAR 5. Both Options 2 and 3 in this paper would result in an increase in BAR 5 TAC, with the potential to increase the amount of fishing effort in the squid, jack mackerel, and warehou fisheries. However this increase would likely be minor in the context of existing fishing effort. MPI does not consider that increasing BAR 5 ACE poses a sustainability risk to the key species that are caught in conjunction with barracouta which are managed in the QMS (noting the proposal to reduce the TAC for JMA 3). Fish bycatch levels in the fishery will continue to be monitored.

4.7 SECTIONS 20 & 21 – ALLOCATING THE TACC

The TAC must be apportioned between the relevant sectors and interests set out under the provisions of section 21 of the Act. Section 21 requires you to allow for Māori customary

interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

4.7.1 Recreational and customary allowances

Recreational and customary fishers do not target barracouta as it is predominantly an offshore fishery and is not highly valued. The data on customary and recreational catches of barracouta in recent years is either nil (for BAR 5) or negligible. However, there are references to customary catches of barracouta occurring in the past. MPI also considers it likely that a small amount of barracouta is caught by recreational fishers while fishing for other middle-depth species.

Recreational and customary allowances are currently set at 3 tonnes and 2 tonnes respectively, and MPI proposes to retain these allowances for all options.

4.7.2 Other sources of fishing-related mortality

MPI proposes an allowance for other sources of fishing-related mortality of 2% of the TACC. This allowance is required to take account of barracouta mortality that is not reported, such as barracouta lost due to burst nets or misreporting of damaged barracouta.

4.7.3 TACC

Catches from the commercial sector have been above the TACC for four of the last ten fishing years (Figure 2). The levels of overcatch in the past 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 7,470 to either 8,200 tonnes or 9,280 tonnes respectively. These options more closely reflect the level of maximum levels of commercial catch observed once in the last five (Option 2) and ten (Option 3) completed fishing years. By increasing the TACC, fishers are more likely to be able to cover BAR 5 catch with ACE and, therefore, will be less likely to incur deemed value payments or move away from the fishery. They will also be able to more fully utilise the recent stock increase as indicated by the CPUE analysis.

4.8 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.

The current deemed value rates for BAR 5 were revised in 2015 and are set as follows:

- Annual deemed value rates set at $0.25 per kg
- Interim deemed value rates set at $0.12 per kg
- Differential deemed value rates apply at: $0.25 per kg for catches of 100-110% of available ACE; $0.50 per kg for catches of 110-120% of available ACE; and $1.00 per kg for catches in excess of 120% of available ACE

MPI considers these deemed value rates have been effective in constraining fishing effort to the TACC. No comments were received during the consultation to suggest that the current deemed value rates are not appropriate.

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. MPI is not proposing to make any changes to the deemed value rates for barracouta at this time.

Fishing activity will be monitored during the 2016/17 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 2017/18 fishing year.

5 Management Options

5.1 ANALYSIS OF OPTIONS

MPI consulted on the options set out in Table 2 below. All options increase the BAR 5 TAC, though only Options 2 and 3 would see an increase in TACC. Catch and effort for barracouta reported in BAR 5 in recent years is used as the basis for the proposed options. Given recent catch and indications of increased abundance, MPI considers that there is potential for increased utilisation of BAR 5.

In all cases MPI proposed to retain the existing small allowances for customary Māori fishing (2 tonnes) and recreational fishing (3 tonnes). A new allowance for other sources of fishing-related mortality that is 2% of the TACC is included in all options.

Table 2: Proposed TACs, TACCs and allowances for BAR 5 from 1 October 2016 (all values in tonnes)

Option	TAC	TACC	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Status quo	7,475	7,470	2	3	0
Option 1	7,625	7,470	2	3	150
Option 2 (MPI Preferred)	8,370	8,200	2	3	165
Option 3	9,470	9,280	2	3	185

5.1.1 Option 1

Under this Option the TACC for BAR 5 would remain unchanged at 7,470 tonnes, and the TAC would increase to 7,625 tonnes, including the current 2 tonne Māori customary allowance and 3 tonne recreational allowance, and the addition of a new 150 tonne allowance for other sources of fishing-related mortality.

Option 1 would not change the amount of effort in the barracouta target fishery and would not provide fishers with the opportunity for increased utilisation in barracouta and potentially associated fisheries.

There were no submissions in support of this Option.

5.1.2 Option 2 (MPI Preferred)

This Option sets the BAR 5 TAC at 8,370 tonnes with a TACC of 8,200 tonnes. The TACC increase is based on maximum catches for BAR 5 over the last five years, and represents a 9.8% increase of the TACC relative to the *status quo*. This TACC supports catches in keeping with

the history of the stock. A TACC of 8,200 tonnes would allow fishers greater ability to cover catch with ACE if catch increases to the level of catch in 2010/11 (Figure 2).

Based on 2015 export prices, a 9.8% increase in barracouta exports represents a potential $1.2 million increase in value per annum. An increase in barracouta TAC would also enable a potential increase in squid catch, with associated increased revenue, as fishers would be less restricted in BAR 5 ACE and would potentially be able to remain in the fishery longer.

Fishing effort may increase as a result of this increase in the BAR 5 TAC. This is likely to be concentrated in areas that have previously been fished, limiting further benthic impacts.

A range of regulatory and non-regulatory management measures designed to reduce the capture of seabirds, marine mammals, and protected fish species will continue to be employed on all fishing vessels as a requirement of operation. As there may be an increase in effort in fisheries that catch barracouta as bycatch and are known to have some interactions with seabirds and marine mammals, capture rates will be monitored by MPI throughout the year, to ensure increased effort in BAR 5 is not having an undue negative impact on these species.

MPI recommends the implementation of Option 2. While the CPUE index suggests an increase in barracouta abundance that has remained high in recent years, the previous level of catch led to a decrease in stock abundance, and ultimately the decrease of the TACC to its current level. Instead of reverting the TACC immediately to its 1997/98 value, MPI proposes Option 2, where the TAC and TACC are increased to an intermediate level, allowing increased utilisation with less risk to the sustainability of the stock than Option 3. Future CPUE analyses and the proposed stock assessment will be used to monitor the stock, and if appropriate the TACC could be increased at a later date. There were no submissions in support of this Option.

5.1.3 Option 3

Under this Option, the BAR 5 TAC would be increased to 9,470 tonnes, including a TACC of 9,280 tonnes. The TACC increase of this option is based on the maximum catch for BAR 5 in 2005/06, and represents a 24% increase in the TACC relative to the *status quo*. This TACC level represents a return to the 1997/98 TACC level. A TACC of 9,280 tonnes would allow fishers greater ability to cover catch with ACE if catch approaches the level of 2005/06 (Figure 2), and would support increased catches in the future which are possible considering the recent CPUE levels. There is an increased risk associated with this option. If adopted, MPI will continue to periodically monitor the CPUE abundance index and respond if there are indications of a decline. This increase would allow increased utilisation of the stock, but more risk is associated with this higher catch limit.

Option 3 would allow for a much larger increase in barracouta catch. A 24% increase in barracouta exports could represent up to $3 million in additional revenue per annum, based on 2015 export prices. In addition, the BAR 5 TAC increase could enable increased squid catch, which in good squid years could represent considerable additional revenue. Considerations of the impact this may have on key environmental interactions are the same as in Option 2.

This Option was supported by DWG, IFL, Sealord, Sanford, and TOKM.

6 Other Matters

6.1 RECREATIONAL CONTROLS

There is no information to suggest a change to recreational controls would be needed and no changes to the recreational daily bag limit are proposed.

7 Conclusion

Available information (CPUE analysis) suggests the biomass of BAR 5 increased from 2007-2009 and has remained constant since then. Catch has exceeded available ACE in four of the last ten years. Options 2 and 3 allow for increased utilisation of the stock, considering this signal of potentially increased abundance. Programmed updates to the abundance indicators will support ongoing monitoring to ensure that the catch remains sustainable over the longer term.

Option 1 proposes the addition of a proportional allowance for other sources of fishing-related mortality and an associated increase in TAC, while retaining the other management settings. The other options propose an increase to both the TAC and TACC, and the addition of a proportional allowance for other sources of fishing-related mortality. The recreational and Māori customary fishing allowances are both retained at their current nominal levels for all options. Options 2 and 3 both propose an increase to the TAC and TACC, representing a 9.8% and 24% increase in TACC respectively relative to the *status quo*. Option 2 provides for maximum levels of harvest seen on three occasions in the seventeen years since the TACC was lowered, and once in the last five completed fishing years. Option 3 provides for a level of commercial harvest seen on one occasion in the seventeen years since the TACC was lowered, and once in the last ten complete fishing years.

MPI's preferred option is Option 2 – increasing the BAR 5 TAC to 8,370 tonnes with a TACC of 8,200 tonnes, maintaining the current recreational allowance of 3 tonnes and the customary Māori allowance of 2 tonnes, and adding an allowance for other sources of fishing-related mortality for the first time of 165 tonnes. Increasing the TAC and TACC to this level would allow increased utilisation with less risk to the sustainability of the stock than Option 3. Ongoing monitoring and analysis of abundance (both CPUE analyses and the proposed stock assessment) will be used where available to monitor the stock and the appropriateness of the increased TAC and TACC.

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.

Jack mackerel 3 (JMA 3)

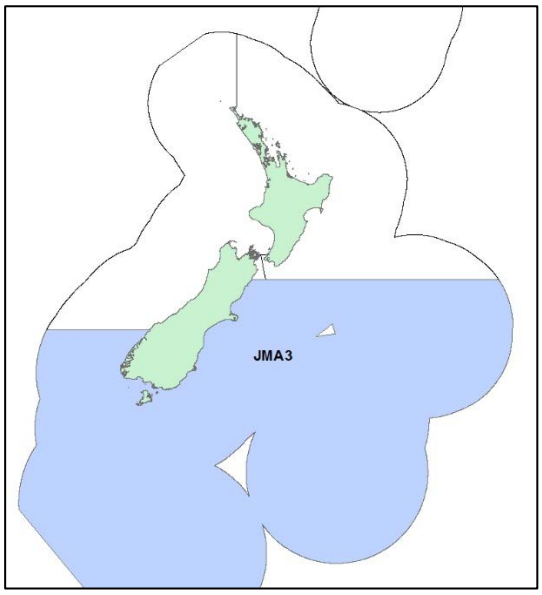


Figure 1: Map of the JMA 3 quota management area

1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits and other management controls for the jack mackerel stock in quota management area (QMA) 3 (JMA 3; Figure 1). The area encompassed by the stock is indicated in Figure 1 while the proposed catch limit options are set out in Table 1.

New Zealand's jack mackerel fisheries comprise three separate species that are managed as a species complex. Until the mid-1980s only two jack mackerel species had been reported in New Zealand waters. The third species (*Trachurus murphyi*, also called "Chilean" or "redtail" jack mackerel) was first positively identified in 1986 but may have been present since 1984.

After being initially reported, the abundance of *T. murphyi* increased dramatically. The catch limit for the JMA 3 stock was increased from 2,700 tonnes in 1992/93 to 18,000 tonnes in 1994/95 in response to the increase in abundance. Catch of *T. murphyi* in JMA 3 remained high throughout the 1990s but has remained at or just above pre-1990s levels since 2000/01.

Since 2000, the extensive distribution of *T. murphyi* has decreased and although still the dominant species in JMA 3, it is far less abundant than it was during the 1990s. The primary rationale for reducing the catch limit for JMA 3 is that the current catch limit is no longer appropriate due to the sustained period of decreased abundance of *T. murphyi.*

Current catch limits for JMA 3 consist solely of a total allowable commercial catch (TACC); a total allowable catch (TAC) or allowances have never been set. For all options MPI proposes setting a TAC with 20 tonne allowances for both customary Māori and recreational fisheries, together with an allowance for other sources of fishing related mortality equivalent to 2% of the TACC.

MPI received seven submissions on the proposal to reduce the JMA 3 catch limits. Three were from commercial stakeholder organisations, two were from fishing companies and one was

from a recreational stakeholder organisation. Four submissions supported the *status quo* while three were in favour of Option 2, a 50% reduction.

MPI's preferred approach is Option 2, setting a TAC of 9,000 tonnes with a TACC of 8,780 tonnes and the allowances as outlined above. MPI considers this option takes into account the low stock status of *T. murphyi* across the South Pacific as well as reflecting the preference of those submitters who supported a catch limit reduction.

Table 1. Proposed TACs, TACCs and allowances for JMA 3 in 2016/17 (all values in tonnes)

			Allowances		
Option	TAC	TACC	**Customary Māori**	Recreational	Other sources of fishing-related mortality
Current Settings	-	18,000	-	-	-
Option 1	18,000	17,610	20	20	350
Option 2 (MPI preferred)	9,000	8,780	20	20	180
Option 3	7,500	7,310	20	20	150
Option 4	6,000	5,840	20	20	120

2 Purpose

2.1 BACKGROUND

2.1.1 Biological characteristics of jack mackerel species

New Zealand's jack mackerel fisheries comprise three species that are managed as a species complex. Fishers are not required to report each species separately. Until the mid-1980s only two species had been reported in New Zealand waters: *Trachurus novaezelandiae* ("yellowtail horse mackerel") and *Trachurus declivis* ("greenback" or "greentail horse mackerel"). Both of these species are native to New Zealand and Australian waters.

Within New Zealand waters, *T. novaezelandiae* is uncommon south of Kaikoura and is not found at all on the Chatham Rise. *T. declivis* is uncommon south of about Otago. The JMA 3 QMA therefore represents the southern limit of these species' distributions in New Zealand waters.

In 1986, a third species was described, *Trachurus murphyi*, the "Chilean" or "redtail" jack mackerel. This species has a much wider distribution than the other two and is found across much of the South Pacific between South America and Australia. It can be found between the surface and 500m water depth.

There was a major proliferation of this species in South American waters in the 1970s, thought to be a response to the decline in Peruvian anchoveta abundance due to overfishing. *T. murphyi*, together with a species of sardine, filled the niche previously occupied by the anchoveta. *T. murphyi* then adopted an open ocean habitat (i.e. it moved into the open ocean, away from the coast) and extended its distribution westwards.

T. murphyi was first noted near the Chatham Islands in the mid-1980s. Over a period of 5-6 years there was a rapid "invasion" and the species became distributed all around New Zealand. Abundance is thought to have peaked in 1993-1994. From about 1998, abundance declined to a much lower level than the preceding 8-10 years.

It remains unclear whether the persistence of *T. murphyi* in New Zealand is due to a resident spawning population or continued arrival of fish from the South Pacific. The absence of juveniles means the latter hypothesis is currently favoured by researchers.

As noted above, fishers are not required to report each species separately. Information on species composition for this stock is instead derived from data collected by observers. The most recent information on the species composition of jack mackerels within JMA 3 is for the 2012/13 fishing year.

Researchers split catch into two areas; north and south of the Otago Peninsula. In the northern area, where 72% of estimated catch was taken, *T. declivis* was the dominant species (52% of catch). In the southern area, where 28% of estimated catch was taken, *T. murphyi* was the dominant species (78% of catch). Overall, *T. murphyi* was the dominant species and made up 57% of JMA 3 catch. Catch of the third species, *T. novaezelandiae,* was negligible during 2012/13.

While managing the three species separately rather than as a species complex may be viewed as desirable, the difficulties associated with this may make it impractical. For example, fishers would be required to make an assessment of catch composition, which would be difficult as the three species look very similar. An additional difficulty is that in areas where no one species is dominant, fishers have no way of knowing which species they are going to catch when they target jack mackerel. This could lead to difficulties in species-specific catch limits being adhered to.

2.1.2 Fishery description

The JMA 3 stock was introduced into the quota management system QMS in 1987 with a 2,200 tonne commercial catch limit. This was increased to 2,700 tonnes in 1988/89. In 1993/94 and 1994/95 the TACC was increased by 6,300 and 9,000 tonnes respectively, bringing it up to the current 18,000 tonne level. It has remained at this level ever since.

JMA 3 catch started increasing from 1989/90 onwards and peaked at just under 20,000 tonnes in 1995/96. Landings of between 10 and 20,000 tonnes were reported between 1992/93 and 1999/00. However, since 2000/01 catch has not exceeded 5,000 tonnes. Annual landings from 1983/84 to 2014/15 are shown in Figure 2 below.

Trawling has always been the dominant fishing method in JMA 3. Since 2000/01, JMA 3 landings have been dominated by the midwater trawl fleet, which comprises 6-8 large vessels. These vessels between them have taken over 80% of JMA 3 in the last 15 years.

During the 1990s some JMA 3 was taken by the purse seine fleet. Purse seine catch peaked at 23% of landed catch in 1992/93 but has been intermittent since 2000/01. No JMA 3 catch was reported by this method during eight of the last 11 years.

Most catch is taken in Southland (on the Stewart/Snares Shelf) or off the east coast of the South Island (Mernoo Bank or off Banks Peninsula). A smaller proportion of catch is taken around the Chatham Islands. In the most recent fishing year (2014/15), the proportion of catch taken from the east coast South Island and Stewart/Snares Shelf areas was almost equal (just under 40% of total estimated catch from both areas), while 23% of estimated catch was taken around the Chatham Islands.

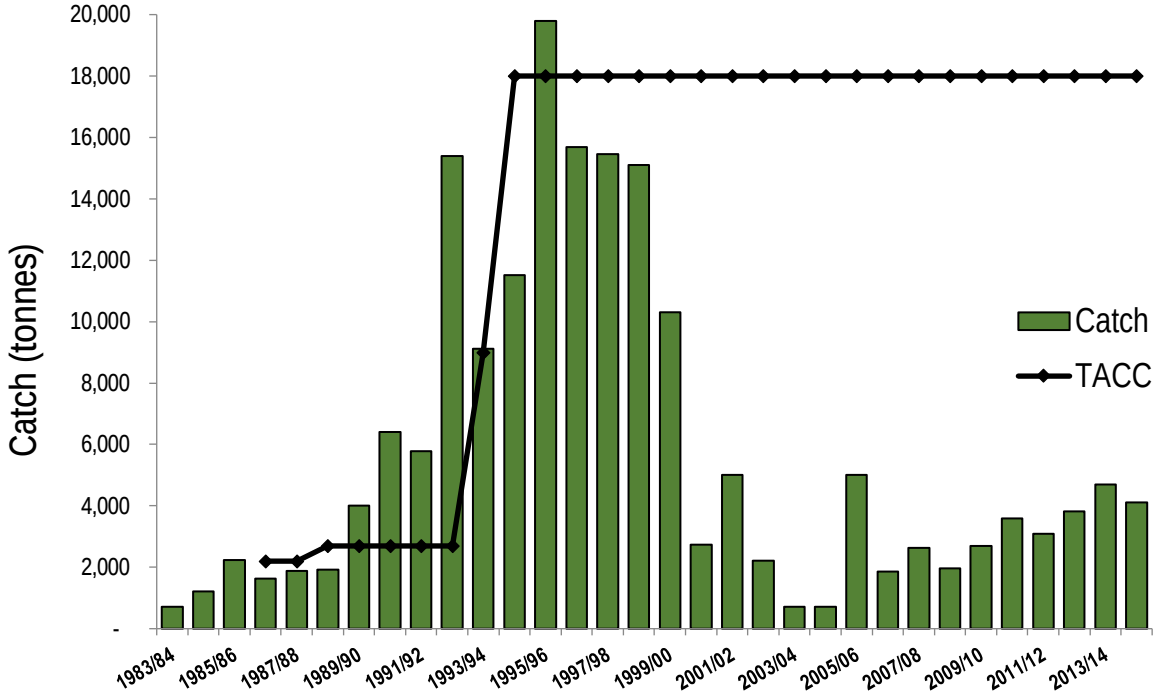


Figure 2. Graph showing catch vs TACC for JMA 3 between 1983/84 and 2014/15

2.1.2.1 Recreational and Māori customary interests

Recreational and Customary Māori catch are not well known, though are thought to be small in JMA 3. For all options, MPI proposes 20 tonne allowances for these interests.

2.1.2.2 Other sources of fishing-related mortality

In similar trawl fisheries an allowance of 2% of the TACC exists to account for other sources of fishing related mortality. MPI proposes that this allowance is incorporated into all options.

2.2 RATIONALE FOR MANAGEMENT INTERVENTION

The rapid influx of *T. murphyi* in New Zealand waters, the decade of increased catches in JMA 3 during the 1990s, and the subsequent persistence of the species, albeit at a much reduced level, is well documented.

There is no stock assessment information for the two native species of jack mackerel in JMA 3 or any other jack mackerel stock. The wider South Pacific *T. murphyi* stock is managed by the South Pacific Regional Fisheries Management Organisation (SPFRMO). A stock assessment for *T. murphyi* of the South Eastern Pacific Ocean was carried out on behalf of SPRFMO using data up to 2013. The assessment indicated that biomass of *T. murphyi* in 2013 was 14% of the unfished biomass (B_0), after reaching a low of 5% B_0 in 2010. This stock status is below the soft limit set out in the Harvest Strategy Standard.

While the *T. murphyi* stock in JMA 3 is not solely New Zealand's management responsibility considering its wide distribution across the southern Pacific, it is nevertheless caught by the New Zealand fleet and JMA 3 catches are likely contributing to mortality in this stock, which is now much declined throughout its range. Considering the principles of the Harvest Strategy Standard, JMA 3 catch limits should be lowered to reduce fishing mortality of *T. murphyi* to facilitate rebuilding of the stock.

The New Zealand influx of *T. murphyi* and the decade of increased landings of JMA 3 during the 1990s occurred during a period of sustained high abundance of this species in the South Pacific (see Figure 3 below). With current biomass in the South Pacific at low levels, maintaining a catch limit that was set at the peak of *T. murphyi* abundance is not considered appropriate.

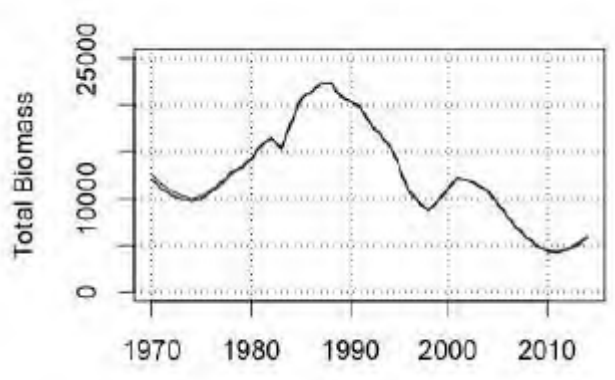


Figure 3. Diagram showing population estimate of jack mackerel in the South Eastern Pacific between 1970 and 2014 (total biomass in thousands of tonnes) [16]

3 Consultation

MPI consulted on your behalf on the four options set out in Table 1 above. MPI followed its standard consultation process.

3.1 SUBMISSIONS RECEIVED

Submissions were received from the following:

a) Deepwater Group Ltd. (DWG)
b) Iwi Collective Partnership (ICP)
c) Independent Fisheries Ltd. (IFL)
d) Sanford Ltd. (Sanford)
e) Sealord Group Ltd. (Sealord)
f) Te Ohu Kaimoana Trustee Ltd. (TOKM)
g) New Zealand Sport Fishing Council (NZSFC)

Full copies of all submissions are available for your reference.

3.2 SUMMARY OF SUBMISSIONS

3.2.1 Option 1 (modified *status quo*)

DWG is the industry organisation that represents holders of quota in New Zealand's major deepwater fisheries, including JMA 3. DWG's view is that the TACC for JMA 3 should remain

[16] Diagram taken from paper presented at 3rd meeting of the SPRFMO Scientific Committee, October 2015. Paper available here.

unchanged for the upcoming fishing year. DWG's rationale is that they are planning to contract stock assessments for both the JMA 3 and JMA 7 stocks and that the outcome of the stock assessments should form the basis of catch limit reviews for both stocks prior to the 2017/18 fishing year.

ICP represents 14 iwi quota owners from throughout the North Island. ICP also supports Option 1 based on DWG's proposal to undertake stock assessments for the JMA 3 and JMA 7 stocks prior to the October 2017 sustainability round.

IFL, one of New Zealand's larger fishing companies, operates three vessels that actively participate in the JMA 3 fishery. IFL also supports the JMA 3 TACC remaining unchanged. IFL's view is that there is no sustainability issue with retaining the current TACC and that reducing the TACC would stop future development of this fishery.

Sanford, a major commercial fishing company that owns 23% of JMA 3 quota, also supports Option 1 on the basis that it is "traditionally a low caught stock with no sustainability concerns".

3.2.2 Option 2 – 50% reduction in TAC

Sealord, one of New Zealand's largest fishing companies, currently operates two vessels that actively participate in the JMA 3 fishery. They acknowledge that if MPI considers it critical to deliver a message to SPRFMO members about taking management action to assist the rebuild of *T. murphyi* stocks in the South Pacific, they would support the option for a 50% reduction to the TAC.

TOKM works to advance Maori interests in the marine environment. TOKM considers that a reduction in the JMA 3 TACC can be justified in the short term and has stated a preference for a 50% reduction. TOKM also notes their awareness of DWG's proposal to undertake a stock assessment for the JMA 3 and JMA 7 stocks.

NZSFC is a national organisation with over 32,000 affiliated members from 57 clubs nationwide. NZSCF also supports the option for a 50% reduction in the TAC. They note that managing the three species together as a species complex is difficult and that a better solution would be to manage *T. murphyi* separately from the two native species.

3.2.3 Option 3 and Option 4

None of the seven submissions received expressed a preference for Options 3 or 4.

4 Legal Considerations

4.1 SECTION 5(a) – INTERNATIONAL OBLIGATIONS

As noted above, the wider South Pacific *T. murphyi* stock is managed by SPFRMO, to which New Zealand is a signatory. MPI considers the proposal to reduce the TAC for JMA 3 is consistent with the most recent (2016) SPRMO conservation and management measure for *T. murphyi*, which notes that the stock remains at very low levels and recognises the need to maintain low fishing mortality.

4.2 SECTION 5(b) – TREATY OF WAITANGI (FISHERIES CLAIMS) SETTLEMENT ACT 1992

MPI considers that all options are consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. MPI previously initiated a policy that led to the establishment of iwi fisheries forums and MPI subsequently assisted those forums to develop plans.

MPI also developed regulations to give effect to non-commercial fishing rights of tangata whenua. The proposals to set an allowance for Maori customary non-commercial fishing interests for JMA 3 for the first time under section 21 will facilitate the setting aside of catch for customary permits.

4.3 SECTION 8 – PURPOSE OF THE ACT

MPI considers that, with the exception of Option 1, all options presented in this paper meet the purpose of the Fisheries Act 1996 (the Act). Each of Options 2-4 will contribute towards the sustainability of the stock by reducing the amount of jack mackerel that can be taken. Option 1 provides for utilisation of the stock to continue at levels last achieved 15-20 years ago. This option does not, however, take into account the low stock status of *T. murphyi* across its range.

4.4 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.

4.4.1 Maintaining associated or dependent species (section 9(a))

As discussed in the Statutory Considerations section of this paper, s 9(a) is focused on species (including protected species) that cannot be targeted commercially and are affected by the taking of a harvested species. This principle requires you to take into account that these non-harvested species should be maintained above a level that ensures their long-term sustainability. The effect of targeted and non-targeted jack mackerel fishing on protected species, specifically seabirds and marine mammals, is discussed below.

Although Options 2-4 propose decreases to the JMA 3 TAC, fishing effort is not expected to change.

4.4.1.1 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 reflects New Zealand's obligations under customary international law to take into account the effects of fishing on associated species such as 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 are known to occur in the JMA 3 fishery, however the rate is low. The jack

mackerel fisheries overall were assessed to contribute very low levels of risk to a small number of seabird species.

Regulatory and non-regulatory management measures are in place to mitigate and manage interactions with seabirds. Mandatory measures require all trawl vessels over 28m in length deploy seabird mitigation devices during fishing. Non-regulatory management measures include vessel-specific vessel management plans (VMPs). The VMPs describe on-board practices vessels must follow to reduce the risk of seabird interactions, including offal management and good factory cleanliness. MPI monitors each vessel's performance against its VMP and works with the Deepwater Group Ltd to rectify any issues that arise during the fishing season. This practice will continue during the 2016/17 fishing year.

If the abundance of *T. murphyi* in JMA 3 remains at a level similar to that of the last 15 years, fishing effort in JMA 3 is likely to follow the same pattern regardless of the TAC options. With the range of regulatory and non-regulatory measures in place, the management proposals should have no additional effects on seabirds as effort is unlikely to increase.

4.4.1.2 Marine mammals

The capture rate of marine mammals (fur seals and dolphins) in the JMA 3 fishery is very low. It is not thought that the rate of captures is having an adverse effect of the populations of these species.

MPI works closely with industry to increase awareness amongst the fleet of the risk of interactions, and emphasises the importance of adherence to the current marine mammal operational procedures (MMOP). The MMOP aims to reduce the risk of interactions with marine mammals by requiring that vessels minimise the length of time the fishing gear is on the surface, remove all dead fish from the net before shooting the gear, steam away from any congregations of marine mammals before shooting the gear and appoint a crew member to watch for marine mammal interactions every time the gear is shot or hauled. Performance in relation to these procedures is audited by MPI, which will continue into the 2016/17 fishing year.

Under all options, fishing effort for jack mackerel in JMA 3 is not expected to increase and there should be no additional risk to marine mammals.

4.4.2 Biological diversity of the aquatic environment - (section 9(b))

The discussion above relating to section 9(a) is also relevant to the maintenance of the biological diversity of the aquatic environment.

4.4.3 Habitat of significance to fisheries management (section 9(c))

4.4.3.1 Benthic impacts

Jack mackerel is generally fished using mid-water trawl gear that is fished on the bottom. When fishing at night however, the gear is often fished off the bottom as jack mackerel tends to move up the water column at night.

MPI acknowledges that the proposals to reduce the JMA 3 TACC are unlikely to affect the recent level of fishing effort and hence limit benthic impacts. However, as current effort is considerably less than that during the 1990s, the current level of benthic impact is considerably less than that of the 1990s.

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

4.5 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations for the JMA 3 stock. MPI considers the science information regarding the stock status of *T. murphyi* in the South Pacific to be robust. Although the status of this species in New Zealand is less certain, MPI considers that the absence of information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.

4.6 SECTION 11 – SUSTAINABILITY MEASURES

See the Statutory Considerations section of this paper for consideration of Section 11 measures.

4.7 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. Previous consultation with iwi led to the establishment of iwi fisheries forums and MPI subsequently assisted those forums to develop plans.

In June 2016, representatives of South Island and Chatham Islands iwi forums were approached for their collective views on the JMA 3 proposal. No comments were received from any iwi forum representatives.

There are two Forum Fisheries Plans relevant to the JMA 3 fishery area. Te Waka a Maui me ona Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan, and the Rekohu/Wharekauri iwi have produced the Chatham Islands Fisheries Forum Plan. Both these plans cover JMA 3 although the latter does not identify jack mackerel as a taonga species. Te Waipounamu Iwi Forum Fisheries Plan contains six Management Objectives, two of which are relevant to the management of JMA 3:

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 Decision Document will contribute towards the achievement of these two Management Objectives in ensuring that the fishery remains sustainable and that environmental impacts are minimised.

4.8 SECTION 13 – SETTING THE TAC

There is currently no stock assessment information for the two native species of jack mackerel and no information for the component of the *T. murphyi* stock present in JMA 3. For this reason, MPI considers the TAC for JMA 3 should be set under section 13(2A) of the Act. This section

is relevant for stocks for which the maximum sustainable yield (MSY) is not able to be reliably estimated using the best available information.

Section 13(2A) requires you 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 MSY. MPI considers the sustained period of decreased abundance of *T. murphyi*, together with stock assessment information for this species in the wider South Pacific, is well documented and is the best available information on the status of this stock. Maintaining the *status quo* is not consistent with this objective and the options within this paper provide you with a choice on how you fulfil your obligations under this section.

When targeting species other than southern blue whiting, squid or hoki in the area encompassed by the JMA 3 QMA, the midwater trawl fleet may target jack mackerel or other species that have similar distributions such as barracouta or redbait. When targeting these species, catch tends to comprise around 90% jack mackerel/barracouta/redbait combined and 10% other species.

Fishing effort for jack mackerel in JMA 3, together with barracouta and redbait, is not expected to increase significantly from current levels regardless of the JMA 3 TAC options. Fish bycatch is therefore not expected to change significantly. For that reason MPI considers there is no information to suggest that the interdependence of stocks should affect the level of the TAC for JMA 3.

Under section 13(3) of the Act, you must consider relevant social, cultural and economic considerations in determining an appropriate way and rate to move the stock towards or above a level that can produce the MSY. The three options proposing a TAC reduction still provide for catches to increase from current levels.[17]

4.9 SECTIONS 20 & 21 – ALLOCATING THE TACC

4.9.1 Recreational and customary Māori allowances

Recreational and customary Māori catch are not well known, though are thought to be small in JMA 3. For all options MPI proposes 20 tonne allowances for these groups. This is the first time such allowances have been made and it will provide the opportunity for iwi to operate regulations and provide for customary food gathering by Maori as required by the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

4.9.2 All other mortality to that stock caused by fishing

In similar trawl fisheries an allowance of 2% of the TACC exists to account for other sources of fishing related mortality. MPI proposes to incorporate this allowance into all options.

4.10 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.

Catch of JMA 3 has not exceeded the TACC since 1995/96. The port price for JMA 3 for the 2016/17 financial year is $0.23 per kg, which represents a reduction from the $0.44 per kg for

[17] Average annual catch over the last five years was just under 4,000 tonnes.

the four-year period between 2011/12 to 2014/15. Despite the reduction in port price, the export value of jack mackerel appears to have gradually increased in recent years. MPI is satisfied that the current deemed value rates for jack mackerel do not require review. MPI will monitor JMA 3 catch and review deemed value rates if there is evidence that a review is required.

5 Management Options

MPI consulted on the options set out in Table 2. Option 1 essentially represents the *status quo* while Options 2-4 involve reducing the catch limit to varying degrees. All options also involve 20 tonne allowances for customary Māori and recreational fisheries and an allowance for other sources of fishing-related mortality equivalent to 2% of the TACC.

The proposed TACs for Options 2-4 are higher than the highest catch reported in the fishery between 2000/01 and 2014/15. These options are, therefore, unlikely to constrain catch of JMA 3 based on recent catch levels and would not have any economic consequences other than a reduction in the cost recovery levies charged to quota owners.

Options 2-4 represent of reductions of between 50% and 66%. The rationale for not reducing the TAC to the pre 1993/94 level (2,700 tonnes) is due to the continued persistence, albeit at a reduced level, of *T. murphyi* in New Zealand waters and the fact that it is the dominant species in JMA 3. There is no information indicating sustainability concerns with the two native jack mackerel species in JMA 3 at current catch levels. However, this could change if the current 18,000 tonne TACC were to be taken.

Table 2. Proposed TACs, TACCs and allowances for JMA 3 (all values in tonnes)

			Allowances		
Option	TAC	TACC	**Customary Māori**	Recreational	Other sources of fishing-related mortality
Current Settings	-	18,000	-	-	-
Option 1	18,000	17,610	20	20	350
Option 2 (MPI preferred)	9,000	8,780	20	20	180
Option 3	7,500	7,310	20	20	150
Option 4	6,000	5,840	20	20	120

5.1 ANALYSIS OF OPTIONS

5.1.1 Option 1

As there is currently no TAC set for JMA 3, this option would set the JMA 3 TAC at 18,000 tonnes with a TACC of 17,610 tonnes.

The option to maintain current settings was favoured by four of the seven submissions from stakeholders that addressed the proposals for the JMA 3 stock (IFL, DWG, Sanford and ICP). As noted earlier, DWG is planning to contract a stock assessment for the JMA 3 and JMA 7 stocks to inform a management review prior to the October 2017 sustainability round. ICP also favoured retaining current settings pending the outcome of the stock assessment. IFL simply states that there is no sustainability issue to retaining the current TACC as it will not be caught in most years.

MPI is aware of the process that DWG has initiated to contract a stock assessment for the JMA 3/7 stocks and supports that process. However, there are several potential issues regarding this. First, an accepted index of abundance has, to date, never been developed for any of New Zealand's jack mackerel stocks. This means that stock assessments have also never been successfully undertaken for any jack mackerel stock.

Based on past history, MPI considers there is no certainty that DWG's proposed research will be successful and be accepted by the Deepwater Fisheries Stock Assessment Working Group. For this reason MPI considers it would be unwise to postpone taking any management action for this stock until the outcome of the stock assessment process has been completed.

The second issue of note is that DWG's proposal is expected to focus on *T. declivis*, which is not the dominant species in JMA 3. The outcome of the research may not result in any information for *T. murphyi* that could be used as the basis to inform a management review in 2017.

MPI's view is that Option 1 is not consistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the MSY given the well documented decline in abundance of the dominant mackerel species in JMA 3. It is also not consistent with the SPRFMO conservation and management measure that recognises the need to maintain low fishing mortality of *T. murphyi*.

5.1.2 Options 2-4

Options 2-4 all involve reducing the TAC for JMA 3 to between half and two-thirds of the current catch limit. MPI acknowledges that these three options are all somewhat arbitrary and would not constrain catch at current levels or have any impact on fishing effort. However, all three options are 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 MSY.

The three submissions from stakeholders that expressed a preference for a catch limit reduction rather than maintaining the *status quo* (Sealord, TOKM and NZSFC) all favoured Option 2, halving the current catch limit. This option would set the JMA 3 TAC at 9,000 tonnes with a TACC of 8,780 tonnes. A TACC at this level would still be more than double the average annual catch from the last ten fishing years.

Option 2 is MPI's preferred option. A 50% reduction reflects the low stock status of the *T. murphyi* stock across the wider South Pacific, as well as the ongoing 15 year period of reduced landings of JMA 3. It would not constrain current catches or result in fishers having to redeploy fishing effort. This option balances MPI's view that retaining the *status quo* is not appropriate with the favoured option of the stakeholders who supported a reduction in the TACC.

Option 2 also takes into consideration DWG's proposed research to be undertaken prior to the start of the next fishing year. If the stock assessment is accepted, the TAC for the JMA 3 stock will be reviewed again.

There were no preferences expressed for Option 3 (a TAC of 7,500 tonnes and a TACC of 7,310 tonnes) or Option 4 (a TAC of 6,000 tonnes with a TACC of 5,840).

6 Other Matters

6.1 MONITORING SPECIES COMPOSITION IN CATCH

As noted earlier, fishers are not required to report the three jack mackerel species separately. Most information on species proportions within JMA 3 comes from observers and MPI will ensure that observers continue to collect this information. Observer coverage has been in the order of 80-90% in recent years and this rate of coverage is expected to continue.

6.2 COMPLIANCE ISSUES

MPI considers that decreasing the TAC for JMA 3 will not create any specific compliance risks. Compliance issues will continue to be monitored and addressed through regular analysis of catch returns as well as monitoring of information collected by observers.

6.3 SEPARATE MANAGEMENT OF *T. MURPHYI*

As noted in section 3.2, NZSFC's submission suggested managing *T. murphyi* separately from the two native species. From a management perspective this suggestion has some merit. The continued presence of this species is thought to depend on fish arriving from outside New Zealand's EEZ rather than a resident breeding population. This means that *T. murphyi* has characteristics that could justify its inclusion on Schedule 3 of the Act, which would allow a TAC to be set under section 14.[18]

The approach taken under section 14 is to set a TAC in accordance with the purpose of the Act rather than the section 13 approach of setting a TAC based on MSY. However, as Schedule 3 of the Act is based on stocks rather than species, *T. murphyi* would need to be split from the other two jack mackerel species prior to being considered for listing on Schedule 3.

The Act contains provisions for dividing a multi-species stock into two or more stocks. As noted in section 2.1.1, however, the practical difficulties associated with species-specific management include expecting fishers to accurately separate three very similar looking species for reporting purposes.

Although there may be practical difficulties, MPI recognises there are potential benefits to separate management of *T. murphyi*. MPI will discuss possible options for how this could be implemented with DWG and quota owners.

6.4 JMA 1 STOCK

The catch limits for the JMA 1 stock, which covers the east coast of the North Island, were also increased in 1993/94 and 1994/95 in response to the increased abundance of *T. murphyi*. The initial 5,970 tonne TACC was increased to 8,000 tonnes for 1993/94 and to 10,000 tonnes for 1994/95. As with JMA3, the expectation at this time was that the increase in catch would be made up of *T. murphyi* and catches of the native species would not exceed the original catch limits.

Unlike JMA 3 however, catch in JMA 1 has remained at the level of the TACC since the decline in abundance of *T. murphyi*. The catch composition has changed however, and since

[18] Criteria for this Schedule include a stock being a highly migratory species or if MSY cannot be estimated because of the biological characteristics of a species.

approximately 1999/00 catch has been dominated by *T. novaezelandiae* (>90% of catch in recent years). The status of this species remains unknown.

MPI acknowledges the historical expectation regarding the increase in catch being made up of *T. murphyi*. However, MPI has no information upon which to base a review of the management controls for JMA 1 at this time. JMA 1 will be included in planned work on low information stocks. The catch limits for JMA 1 will be reviewed when information on the status of the two native species becomes available.

7 Conclusion

The dominant species in the JMA 3 fishery is *T. murphyi*, a species that has only been present in New Zealand for around 30 years.

The current 18,000 tonne TACC was set in response to the influx of *T. murphyi* that occurred during the species' range extension in the 1990s, which resulted in JMA 3 landings of between 10,000 and 20,000 tonnes throughout most of this decade. Since 2000/01 however, catches have not exceeded 5,000 tonnes, due almost entirely to the decreased abundance of *T. murphyi*.

MPI considers that retaining the current 18,000 tonne TACC is not appropriate given the demonstrated decrease in abundance of *T. murphyi* and estimated low stock status of the Pacific stock. Given that the continued presence of *T. murphyi* in New Zealand waters is likely dependant on fish arriving from the South Pacific, the current TACC is aspirational and does not reflect the current low level of abundance of this species. Additionally, if catch were to increase to the level of the current TACC, it is likely this would create concerns regarding the sustainability of the dominant native species found in JMA 3 (*T. declivis*).

MPI has proposed four options for the JMA 3 TAC. MPI considers Option 1, essentially the *status quo*, is not consistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the MSY.

The other three options all involve reducing the JMA 3 TAC, albeit to levels that would remain above recent landings and would not constrain current catches. MPI considers these three options are 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 MSY.

On balance MPI's preferred option is Option 2, which halves the current catch limit. This option reflects the low stock status of *T. murphyi* across the South Pacific and the sustained period of decreased abundance of this species in New Zealand waters. It is also the preferred option of the stakeholders who supported a catch limit reduction for this stock.

MPI supports DWG's proposal to contract a stock assessment for this stock to inform next year's management review. The stock assessment may not result in information that can be used for management purposes. However, if successful, the TAC for JMA 3 may be able to be reviewed again prior to the start of the next fishing year.

Currently, only a TACC is set for JMA 3. For that reason all options also involve setting a TAC and allowances for the first time. MPI proposes you set an allowance of 2% of the TACC to account for other sources of fishing related mortality and, for all options, 20 tonne allowances for recreational and customary Māori catch.

Rubyfish 3 (RBY3)

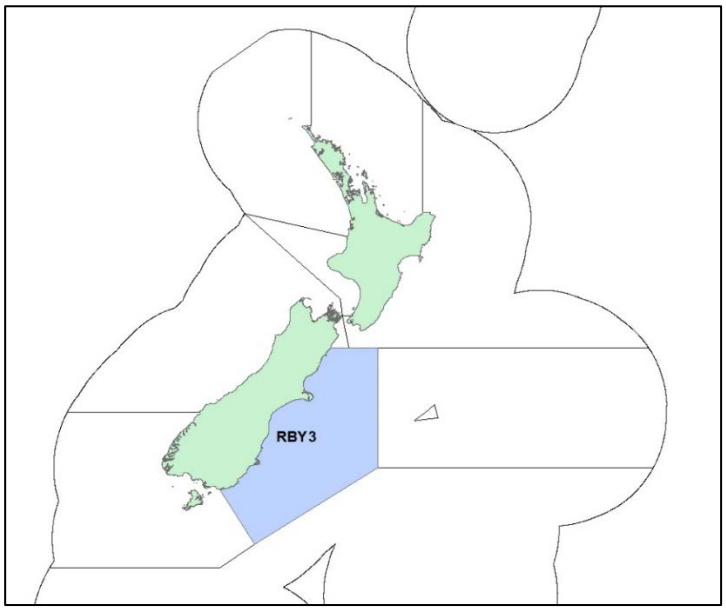


Figure 1: Map of the RBY 3 quota management area (QMA)

1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits and other management controls for the rubyfish (*Plagiogeneion rubiginosum*) stock in quota management area (QMA) 3 (RBY 3). The area encompassed by the stock is indicated in Figure 1 while the proposed catch limit options are set out in Table 1.

Rubyfish stocks were introduced into the quota management system (QMS) on 1 October 1998. Both the total allowable catch (TAC) and total allowable commercial catch (TACC) for the RBY 3 stock were set at three tonnes. The initial catch limits were determined by adding 10% to the average annual catch reported for the seven fishing years between 1990/91 and 1996/97.

RBY 3 is a low knowledge stock with little or no information with which to reliably estimate stock status. The TACC has remained unchanged since it was introduced into the QMS. Between 1998/99 and 2013/14 the average annual catch from this stock was 1.1 tonnes. In 2014/15 however, reported catch was 14.3 tonnes and as at May 2016, catch for the 2015/16 fishing year was 29.1 tonnes. This is likely due to increased fishing effort for related species such as redbait with a consequential increase in the amount of rubyfish taken as bycatch.

MPI considers that the increased catch limits that are proposed (Options 2 and 3), are unlikely to pose a sustainability risk as catch limits will remain at relatively low levels. For this reason, setting the TAC at the levels proposed is not inconsistent with the objective of maintaining the stocks at or above the levels that produce maximum sustainable yield (MSY).

Four submissions, from fishing companies and stakeholder organisations, were received in response to the proposals for RBY 3. Two supported Option 3 while two proposed an alternative option of a 60 tonne catch limit.

MPI's preferred approach is Option 3, increasing the TAC/TACC to 32 tonnes and 30 tonnes respectively. This increase is unlikely to cause a sustainability risk and will also retain incentives for correct reporting.

Table 1: Proposed TACs, TACCs and allowances for RBY 3 in 2016/17 (all values in tonnes)

Option	TAC	TACC	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 (*Status quo*)	3	3	0	0	0
Option 2	16	15	0	0	1
Option 3 (MPI Preferred)	32	30	0	0	2

2 Purpose

2.1 BACKGROUND

2.1.1 Biological characteristics of rubyfish

Rubyfish is found in New Zealand waters as well as parts of the Atlantic and Indian Oceans and other parts of the South Pacific Ocean. It belongs to the same family as redbait (*Emmelichthys nitidus),* and catch distribution suggests it aggregates around underwater features.

In New Zealand waters the species has, to date, been uncommon in commercial catch south of the Chatham Rise. It is much more common around the North Island, with target fisheries in the Bay of Plenty and off the east coast of the North Island taking between 300 and 600 tonnes per year between them.

Rubyfish is thought to be long-lived, growing to a maximum age of around 100 years. Growth appears to be rapid for the first 10 years or so, reaching lengths of 35-40cm. Growth rates then slow, reaching a maximum length of around 57cm.

It is not known whether different regional stocks of rubyfish occur in New Zealand waters.

2.1.2 Fishery description

As already noted, all rubyfish stocks were introduced into the QMS in 1998. A nominal three tonne TAC/TACC was set for RBY 3. Annual catch for this stock since 1998 is shown in Figure 2 below.

Figure 2 shows catches of only a few hundred kilograms in most years. Prior to 2014/15 catch had exceeded the TACC on only two occasions (1999/00 and 2006/07).

In all instances where more than a few hundred kilograms has been reported, most catch can be traced to a very small number of fishing events. Of the 48 tonnes of estimated catch of RBY 3 reported on catch and effort returns between 1998/99 and 2015/16, 95% was taken on just six tows around the Mernoo Bank. The reported target species for the six tows were redbait (four tows), jack mackerel (one tow) and hoki (one tow).

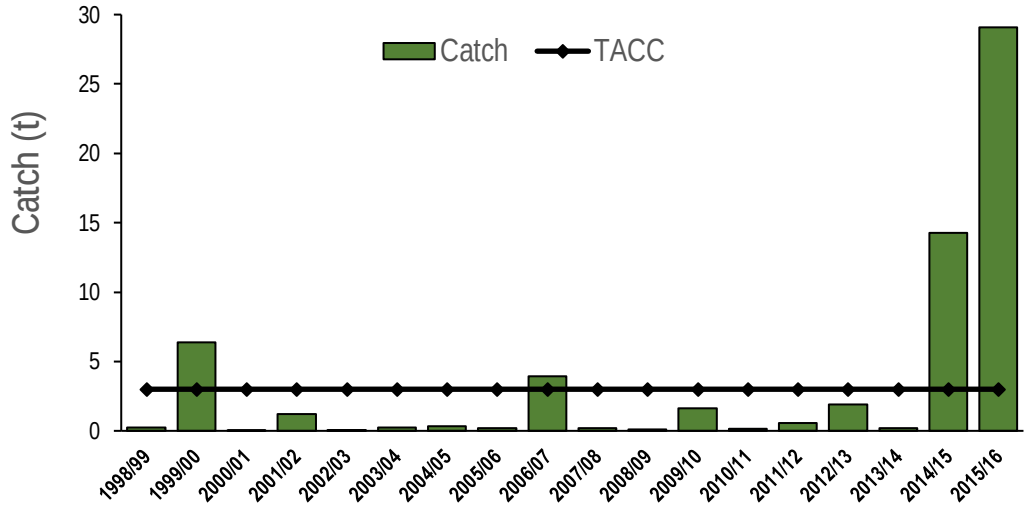


Figure 2. Catch vs TACC for RBY 3 between 1998/99 and 2015/16 (as at June 2016)

2.1.2.1 Recreational and Māori customary interests

Recreational and Māori customary fishers would not be expected to catch rubyfish, as it is predominantly available offshore in deep water. For this reason MPI considers that zero allowances are appropriate for these interests and no information to the contrary was received in submissions.

2.1.2.2 Other sources of fishing-related mortality

The allowance for other sources of fishing related mortality is currently set at zero for RBY 3. MPI proposes that this allowance be set at either one or two tonnes for all TAC options other than the *status quo* option. This nominal allowance accounts for unreported mortality such as loss due to burst nets.

2.2 RATIONALE FOR MANAGEMENT INTERVENTION

The primary rationale for reviewing the TAC for RBY 3 is the large (relative to the conservative nominal TACC) catch reported during the 2014/15 and 2015/16 fishing years. Increased redbait effort in the area that includes the RBY 3 QMA is considered to be driving the associated increase in the volume of rubyfish bycatch.

RBY 3 catch during 2014/15 was almost five times the current TACC while as at May 2016, catch for the 2015/16 year is almost ten times the TACC. Considering the current nominal TAC for RBY 3, a relatively moderate increase to the TAC is not considered a sustainability risk, and in combination with the proposed changes to rubyfish deemed value rates (see section 4.8), would retain the incentive for fishers to correctly report catches.

3 Consultation

MPI consulted on your behalf on the three options set out in Table 1 above, following its standard consultation process.

3.1 SUBMISSIONS RECEIVED

Submissions were received from the following:

a) Independent Fisheries Ltd. (IFL)

b) Deepwater Group Ltd. (DWG)

c) Te Ohu Kaimoana Trustee Ltd. (TOKM)

d) Southern Inshore Fisheries Management Company Ltd. (SIF)

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

3.2 SUMMARY OF SUBMISSIONS

Two submitters favoured Option 3 to increase the TACC to 30 tonnes, while the other two put forward an additional proposal to increase the TACC to 60 tonnes.

IFL is one of New Zealand's larger fishing companies and operates three fishing vessels. IFL acknowledges that their vessels have been responsible for the majority of RBY 3 catch and consider that the TACC could be increased significantly higher than the options consulted on. They propose a TACC of 60 tonnes.

DWG is the industry organisation that represents holders of quota in New Zealand's major deepwater fisheries. DWG notes that setting the TACC in the absence of robust science is a nominal exercise.

DWG advises that RBY 3 quota owners support a TACC increase from three to 60 tonnes. DWG also seeks MPI's agreement to engage with quota owners in a discussion on options to better assess the stock abundance of RBY 3, within the planning cycle for the 2016-17 fisheries science work programme.

TOKM works to advance Maori interests in the marine environment and supports Option 3 to increase the TACC to 30 tonnes.

SIF represents quota owners for 104 fishstocks throughout the South Island and Taranaki regions. SIF supports Option 3 to increase the TACC to 30 tonnes noting that other low knowledge stocks for which current catch exceeds the initial TAC settings should also be adjusted accordingly.

4 Legal Considerations

4.1 SECTION 8 – PURPOSE OF THE ACT

MPI considers that all options presented in this paper are consistent with the purpose of the legislation. Options 2 and 3 provide for greater utilisation than the *status quo* and the modest increases would not be inconsistent with ensuring the long term sustainability of the stock.

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 Maintaining associated or dependent species (section 9(a))

As discussed in the Statutory Considerations section of this paper, s 9(a) is focused on species (including protected species) that cannot be targeted commercially and are affected by the taking of a harvested species. This principle requires you to take into account that these non-harvested species should be maintained above a level that ensures their long-term sustainability. The effect of rubyfish fishing on protected species, specifically seabirds and marine mammals, is discussed below.

Although Options 2 and 3 propose increases to the RBY 3 TAC, fishing effort is not expected to change as to date, all RBY 3 catch has been non-targeted.

4.2.1.1 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 reflects New Zealand's obligations under customary international law to take into account the effects of fishing on associated species such as 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 from the target fisheries that take RBY 3 as bycatch generally occur at low rates, although interactions are known to occur. These fisheries were assessed to contribute very low levels of risk to a small number of seabird species.

With the range of regulatory and non-regulatory measures in place, the management proposals should have no additional effects on seabirds as effort is unlikely to change.

4.2.1.2 Marine mammals

The capture rate of marine mammals (New Zealand fur seals and dolphins) in the RBY 3 QMA is low and it is not thought that the rate of captures is having an adverse effect on the populations of these species.

The management proposals should have no additional effects on marine mammals as fishing effort is not expected to change.

4.2.2 Biological diversity of the aquatic environment - (section 9(b))

The discussion above relating to section 9(a) is also relevant to the maintenance of the biological diversity of the aquatic environment.

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

4.2.3.1 Benthic impacts

Since QMS introduction in 1998, over 70% of rubyfish taken in RBY 3 has been taken using mid-water trawl gear that is fished on or close to the bottom.

The proposed increases to the TAC for the RBY 3 stock are unlikely to have any impact on the fisheries that currently take rubyfish as bycatch. MPI will continue to monitor the trawl footprint of all deepwater fisheries, including those that take rubyfish as bycatch, on an annual basis.

4.3 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations for the RBY 3 stock. The primary source of information is fisher-reported landings. Feedback from submitters has also been incorporated and MPI believes that together, this is sufficient under the Information Principles to propose increasing the TAC for this stock.

4.4 SECTION 11 – SUSTAINABILITY MEASURES

See the Statutory Considerations section of this paper for consideration of Section 11 measures.

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. Previous consultation with iwi led to the establishment of iwi fisheries forums and MPI subsequently assisted those forums to develop plans.

In June 2016, representatives of South Island iwi forums were approached for their collective views on the RBY 3 proposal. No comments were received from any iwi forum representatives.

There is one Forum Fisheries Plan relevant to the RBY 3 fishery area; Te Waka a Maui me ona Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan. This plan covers RBY 3. Te Waipounamu Iwi Forum Fisheries Plan contains six Management Objectives, two of which are relevant to the management of RBY 3:

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 Decision Document will contribute towards the achievement of these two Management Objectives in ensuring that the fishery can provide additional commercial benefits and that environmental impacts are minimised.

4.6 SECTION 13 – SETTING THE TAC

As there is no biomass information for any rubyfish stock, MPI considers that you should set the TAC for RBY 3 under section 13(2A) of the Act. This section is relevant for stocks for which the maximum sustainable yield (MSY) is not able to be reliably estimated using the best available information.

To date, all RBY 3 has been taken as bycatch while targeting other species such as redbait. MPI considers there is no information to suggest that the interdependence of stocks should affect how the TAC for RBY 3 is set.

Section 13(2A) requires you 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 MSY. MPI considers that based on the information presented in this Decision Document, increasing the TAC for RBY 3 is not inconsistent with that objective.

4.7 SECTIONS 20 & 21 – ALLOCATING THE TACC

The TAC must be apportioned between the relevant sectors and interests set out under the provisions of section 21 of the Act. Section 21 requires you to allow for Māori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

4.7.1 Recreational and customary allowances

Recreational and customary fishers do not target rubyfish as it is predominantly an offshore species. MPI considers that zero allowances for both recreational and customary fishers is appropriate for all options.

4.7.2 All other mortality to that stock caused by fishing

Under options 2 and 3 MPI proposes a small allowance for other sources of fishing-related mortality of one or two tonnes respectively. This allowance is required to take account of rubyfish mortality that is not reported such as fish lost due to burst nets.

4.8 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.

In the discussion document, MPI proposed to standardise deemed rates for all rubyfish stocks using the existing RBY 1 deemed value rates as the basis. MPI recommends that you agree to this proposal. All details relating to amending deemed value rates for RBY 3 (and all other RBY stocks) are set out in the corresponding Deemed Values Discussion Document.

5 Management Options

MPI consulted on the options set out in Table 3. Aside from the *status quo*, the options involved comparatively modest increases to catch limits for this stock. MPI also proposed retaining the existing zero allowance for customary Māori and recreational fisheries. A small allowance for

other sources of fishing-related mortality was proposed to account for unreported mortality of fish that, for example, are lost from the net during hauling.

In the absence of abundance information, catch of rubyfish reported in recent years is used as the basis for the proposed options. A similar approach was used to set catch limits when rubyfish stocks entered the QMS and has been used to review catch limits for other rubyfish stocks such as the adjacent RBY 4 stock.

MPI has little information on the value of rubyfish. There is no species-specific information available from export statistics and the 2016/17 port price survey indicated considerable variation between stocks; from a low of $0.25/kg for RBY 4 to a high of $2.29/kg for RBY 1 and a weighted average for the species of $1.88/kg.

MPI understands that rubyfish is not a particularly valuable species and is worth considerably less than alfonsino, which in the adjacent RBY 4 stock is one of the target fisheries that takes rubyfish as bycatch. For this reason, together with the relatively small quantities that are caught in RBY 3, the proposed TAC increases probably only equate to a few tens of thousands of dollars in additional revenue for the fishing industry. None of the submissions provided any additional information on the value of rubyfish.

Table 3. Proposed TACs, TACCs and allowances for RBY 3 (all values in tonnes)

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	Other sources of fishing-related mortality
Option 1 (*Status quo*)	3	3	0	0	0
Option 2	16	15	0	0	1
Option 3 (MPI Preferred)	32	30	0	0	2

5.1 ANALYSIS OF OPTIONS

5.1.1 Option 1 (*status quo*)

Under this option the TAC/TACC for RBY 3 would remain at three tonnes. The fact that catches of more than three tonnes of rubyfish in a single tow have been achieved several times in recent years indicates it is probably not appropriate to retain the TAC at this level.

Option 1 does not provide incentives for fishers to correctly report catches. Total deemed values of over $2,000 were incurred during the 2014/15 fishing year and this is likely to at least double in 2015/16.

This option was not favoured by any submitters.

5.1.2 Option 2

This option involves setting the RBY 3 TAC at 16 tonnes with a TACC of 15 tonnes. This option is based on catch reported during the 2014/15 fishing year and is well above the average catch for the 17 fishing years between 1998/99 and 2014/15.

A TAC at this level remains relatively low in comparison to the TACs for the main rubyfish stocks of RBY 1 (TAC of 318 tonnes) and RBY 2 (435 tonnes) and is considered unlikely to lead to sustainability concerns for this stock.

This option was not favoured by any submitters.

5.1.3 Option 3 (MPI Preferred)

Option 3 involves setting the RBY 3 TAC at 32 tonnes with a TACC of 30 tonnes and is based on catch reported during the first half of the 2015/16 fishing year. This option would provide fishers with an increased ability to cover catch with ACE in the event of encountering a large aggregation of rubyfish while targeting a different species.

Again, a TAC at this level is considered unlikely to lead to sustainability concerns for this stock. This option was favoured by two submitters.

Two other submissions relating to the RBY 3 proposal suggested an additional option of a 60 tonne TACC although no rationale was provided for this proposal. MPI notes that this additional proposal, for a catch limit higher than catches achieved to date, would be inconsistent with the approach of basing catch limits for RBY 3 on reported catch. The risk of sustainability concerns would also be higher with this option that MPI's preferred option.

6 Other Matters

6.1 COMPLIANCE ISSUES

MPI considers that increasing the TAC for RBY 3 will not pose any compliance risks. The fishery will continue to be monitored through regular analysis of catch returns as well as monitoring of information collected by observers.

6.2 BIOLOGICAL INFORMATION

In their submission, IFL notes that very little information is available for this fishstock and is unlikely to be obtained given the rare frequency of catches. MPI agrees that RBY 3 is rarely taken and that there is currently little information for this stock apart from reported landings.

MPI notes that it currently has a project looking at new approaches to managing low knowledge stocks (those without stock status information) although it is uncertain whether anything applicable to RBY 3 will eventuate. Nevertheless, MPI will closely monitor catch of this stock and will also determine whether any future research on the larger RBY 1 and RBY 2 stocks can be extrapolated to RBY 3.

7 Conclusion

All rubyfish stocks were introduced into the QMS in 1998 with catch limits based on average catch reported in the years prior to QMS introduction. The TAC for RBY 3 has not been reviewed since 1998.

Rubyfish is a species that is more commonly found around the North Island. The east coast of the South Island (the RBY 3 QMA) represents the southern edge of its distribution and rubyfish is uncommon south of this area.

Rubyfish in the RBY 3 QMA is taken as bycatch while targeting species such as redbait. Infrequent, large catches of up to 30 tonnes per tow are responsible for most rubyfish catch in this area.

MPI recommends under Option 3 that you increase the RBY 3 TAC to 32 tonnes with a TACC of 30 tonnes and a two tonne allowance for other sources of fishing related mortality. This approach continues the approach taken to date of setting the TAC for this stock based on reported catch. MPI considers this recommendation 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 MSY.

Scampi 2 (SCI 2)

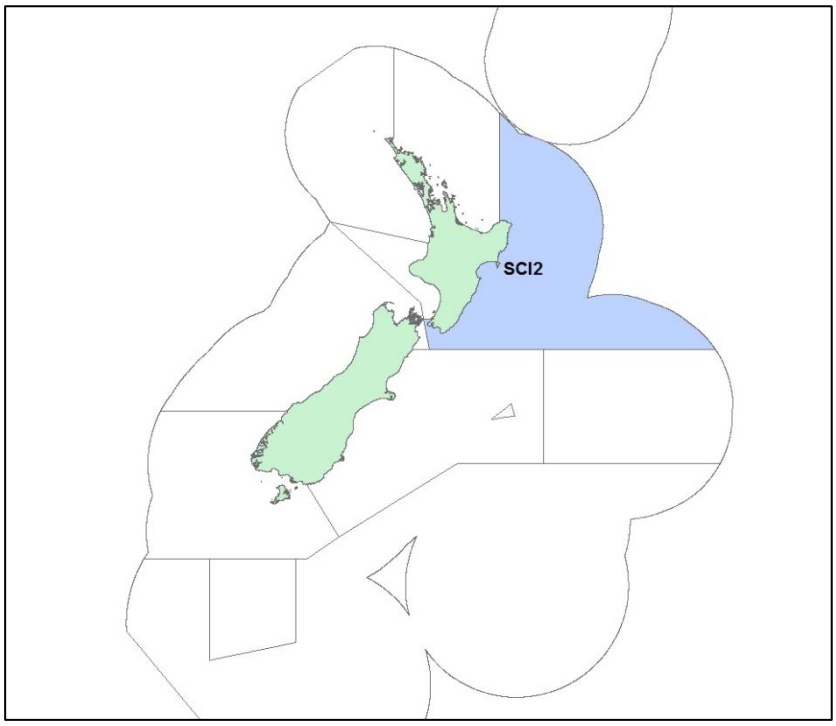


Figure 1: Quota management area (QMA) for the SCI 2 fishery

1 Executive Summary

The Ministry for Primary Industries (MPI) recently consulted on your behalf on a review of catch limits and other management controls for the scampi (*Metanephrops challengeri*) stock in quota management area (QMA) 2 (SCI 2; Figure 1). Results from the 2016 stock assessment indicate SCI 2 biomass is approximately 101% of un-fished biomass (B_0), which is well above both the biomass that will produce the maximum sustainable yield (B_{MSY})[19] and the default management target of 40% B_0. Consequently, MPI consulted on two options to increase the Total Allowable Catch (TAC) as well as the option to maintain the *status quo*. These options are presented in Table 1.

Table 1: Proposed TACs, TACCs and allowances for SCI 2 from 1 October 2016 (all values in tonnes)

Option	TAC	TACC	Increase on current TACC	Allowances		
				Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 *(Status quo)*	140	133	0	0	0	7
Option *2* (MPI Preferred)	161	153	15%	0	0	8
Option 3	182	173	30%	0	0	9

Six submissions were received on the proposals for SCI 2. The five submissions received from commercial and iwi stakeholder organisation were in support of an increase in the TAC, preferring Option 2. The submission received from a recreational stakeholder organisation did not support an increase from current catch levels.

[19] Deterministic B_{MSY} for SCI 2 is estimated to be 27% of the unfished biomass (B_0)

After considering the submissions received, MPI recommends Option 2, that the TAC for SCI 2 is increased to 161 tonnes. There is no known customary Māori or recreational take of scampi and it is recommended that you retain zero allowances for these sectors. In addition, MPI recommends that you maintain the allocation for other sources of fishing related-mortality at 5% of the TACC which for Option 2 is 8 tonnes.

2 Purpose

2.1 BACKGROUND

2.1.1 Biological characteristics of scampi

Scampi (*Metanephrops challengeri*) are burrowing crustaceans that are widely distributed around the continental slope of New Zealand, usually between 200-500 m depth. Studies estimate that scampi are approximately 3-4 years old at 30 mm orbital carapace length and may live for 15-20 years. However, the size and growth of scampi within New Zealand has been shown to differ among the regional stocks. Scampi from SCI 2 achieve sexual maturity around 30-36 mm. Larval development is very short, estimated to be less than three days, which suggests low rates of gene mixing between populations. Larval development characteristics and differences in size and growth between populations of scampi support the treatment of SCI 2 as a separate stock.

2.1.2 Fishery description

2.1.2.1 Commercial

The SCI 2 fishery developed through the late 1980s and early 1990s. The number of fishing vessels in SCI 2 has fluctuated, with five to nine vessels fishing in the area over the past five years. The entire New Zealand scampi fleet currently comprises nine vessels of 20-28 m in length. Vessels catch scampi using either a double or triple net configuration.

A competitive catch limit (i.e., no individual allocations) was set for SCI 2 in 1991/92 of 246 tonnes. This was decreased to 200 tonnes when scampi was introduced into the Quota Management System (QMS) in 2004. The TACC was further decreased in 2011-12 to 100 tonnes due to sustainability concerns based on the outputs of the 2011 stock assessment.

During the early 1990s, landings were stable and catch per unit of effort (CPUE) trended upward. CPUE then declined steadily after 1995/96 until 2001-02 (Figures 2 and 3) and remained at quite a low level until 2007/08. CPUE has increased steadily since then, with 2013/14 comparable to records from the mid-1990s. A slight decline in CPUE has been observed in 2014/15. Landings exceeded the TACC in 2014/15, however this is permitted under section 67A of the Fisheries Act 1996 (the Act) which allows for the carry forward of under caught ACE from the previous year.

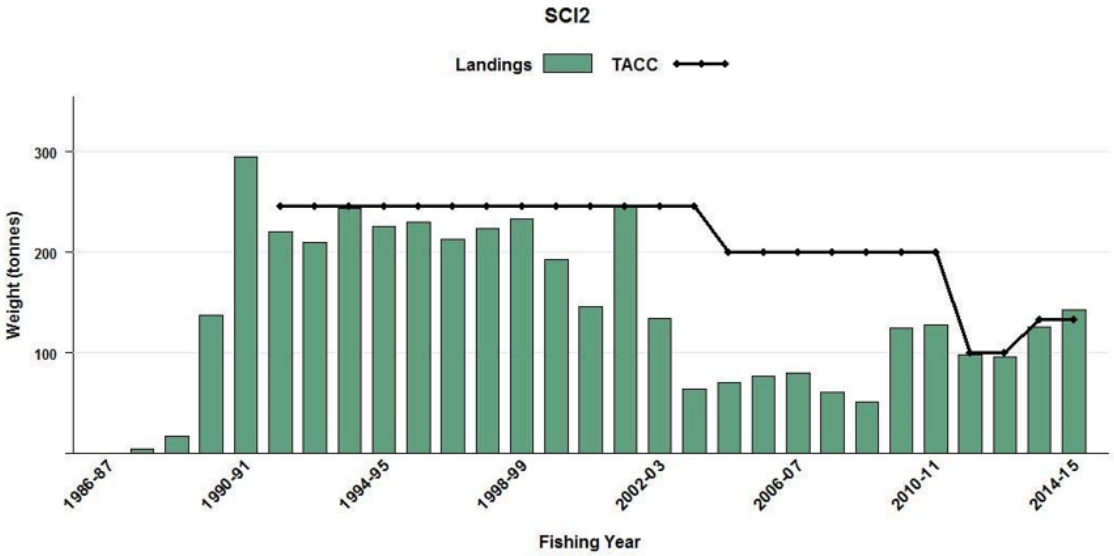


Figure 2: Annual landings and TACC for SCI 2 between 1986/87 and 2014/15

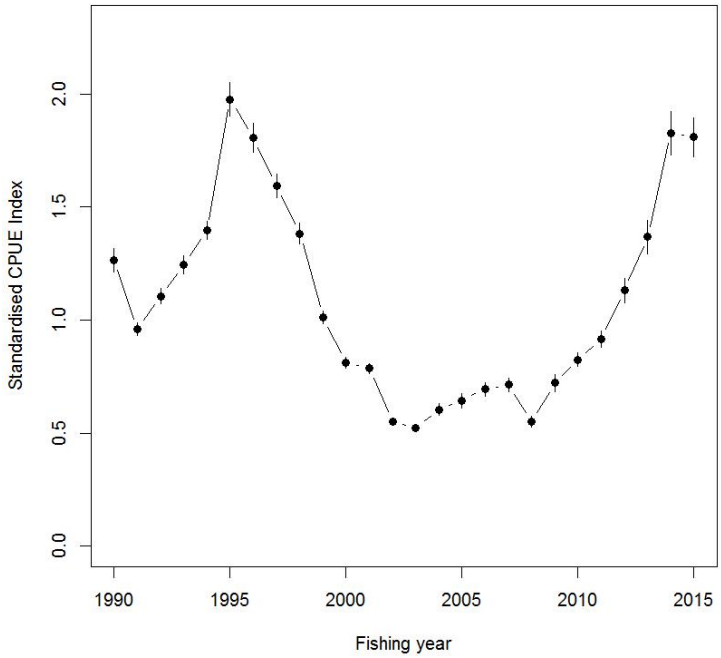


Figure 3: Standardised catch per unit effort (CPUE) for SCI 2 from fishing year 1990/91 to 2014/15. Bars represent 95% confidence intervals and the middle dot indicates the median CPUE.

2.1.2.2 Recreational and Māori customary interests

Recreational and customary fishers do not target scampi, as it is available only offshore in deep water. No allowance has traditionally been provided for recreational and Māori customary fishing interests for SCI 2 (or for any scampi fishery). Because of the depth distribution of scampi, it is considered that there are no significant recreational or Māori customary fisheries. The options presented therefore do not contain any allowance for recreational or customary interests.

2.1.2.3 Other sources of fishing-related mortality

MPI recommends that an allowance for other sources of fishing-related mortality, remain at 5% of the TACC. This nominal allowance accounts for unreported scampi mortality, such as loss due to ripped nets.

2.2 RATIONALE FOR MANAGEMENT INTERVENTION

2.2.1 Management targets

The scampi fishery is managed under the National Fisheries Plan for Deepwater and Middle-depth Fisheries (National Deepwater Plan), which was approved by the Minister of Fisheries under section 11(A) of the Act. Within the National Deepwater Plan, scampi is classed as a Tier 1 species, and is considered a high value, low volume fishery. Tier 1 fisheries are high volume and/or high value fisheries and are traditionally targeted.

As part of the National Deepwater Plan, a specific chapter for the scampi fishery is being developed and a species-specific harvest strategy will be investigated. In the absence of species specific measures, the fishery is being managed in accordance with the default reference points set out in the Harvest Strategy Standard. The Harvest Strategy Standard is a policy statement of best practice in relation to the setting of targets and limits for New Zealand fishstocks managed under the quota management system (QMS).

Table 2: Scampi default reference points, and the associated management response

Reference point	Management response
Management target of 40% B_0	Stock permitted to fluctuate around this management target. TAC changes will be employed to move stock toward or above target.
Soft limit of 20% B_0	A formal time constrained rebuilding plan will be implemented if this limit is reached.
Hard limit of 10% B_0	The limit below which fisheries will be considered for closure.
Harvest control rule	Management actions determined by the results of a series of forward projections under a range of catch assumptions, guided by the biological reference points

The status of SCI 2 is assessed every three years using a fully quantitative stock assessment. Each stock assessment is preceded by a dedicated trawl and photographic research survey. The stock assessment methods and results are then evaluated and reviewed by the Shellfish Working Group (SFWG). Management is then further informed using projections based on the stock assessment model developed for the SCI 2 fishery.

2.2.2 Previous review

An update of the SCI 2 stock assessment was finalised and accepted in 2013. The stock assessment estimated biomass to be 74% B_0 and very likely (>90% probability) to be at or above the default target of 40% B_0. The TAC was increased from 100 tonnes to 140 tonnes with a TACC of 133 tonnes.

2.2.3 Current status

An update of the SCI 2 stock assessment was presented to the SFWG and Plenary in 2016. The model structure was the same as 2013, however the assessment incorporated new estimates of catchability as well as updated trawl and photo abundance indices from the 2015 research survey. The updated trawl and photo indices suggested a continued increase in abundance since 2006 and follows a similar trend to that observed in the CPUE. Several different models were

presented to the SFWG, investigating different assumptions on natural mortality (M), as well as a combined area model incorporating data from SCI 1.

The model estimated that the current (2016) SCI 2 biomass is at 101% B_0, indicating that current biomass has returned to a level that is very close to the unfished biomass. However, stock trajectory outputs have shown that biomass increased up until 2014, and has declined slightly in 2015. The base case model accepted by both the SFWG and the Plenary was a single area model with M fixed at 0.3. Two additional model runs were presented as sensitivities investigating M fixed at 0.25 and 0.35. Model outputs from the sensitivity runs were consistent with the improvement in stock status outputs of the base case. A recent increase in recruitment is likely to be driving the increase in biomass. Calculations of fishing mortality (F) indicate that overfishing within SCI 2 is exceptionally unlikely to be occurring (Figure 4).

The major sources of uncertainty with the 2016 assessment (similar to those of previous assessments) are the lack of information on the growth rate of scampi, the catchability of scampi, natural mortality, and how many scampi occupy one burrow. Research undertaken since the previous assessment in 2013 has addressed some uncertainties concerning emergence patterns and catchability. This research has been incorporated into the latest assessment.

Projections based on the stock assessment were used to inform estimates of future stock status at the catch levels in the proposed options. Details of these projections are summarised in section 5.1.

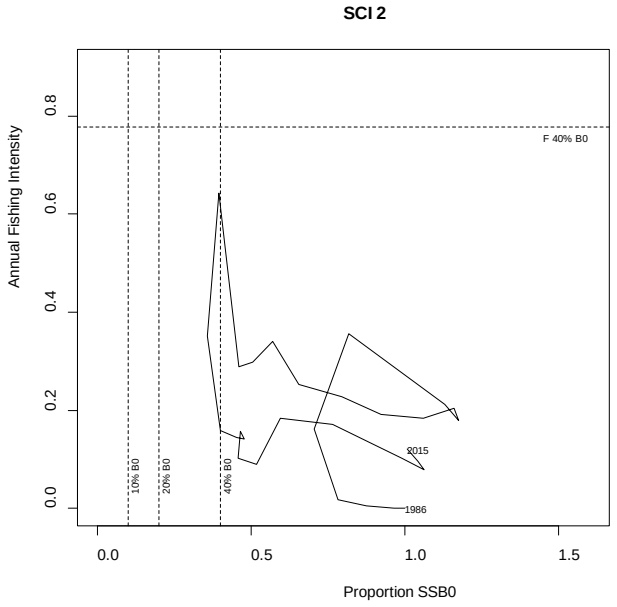


Figure 4: The proportion of initial scampi biomass (B_0) in SCI 2 in relation to mortality caused by annual fishing intensity. The management target (40% B_0), soft limit (20% B_0), and hard limit (10% B_0) are indicated by dotted vertical lines. The horizontal line indicates the level of fishing mortality that would result in the stock biomass fluctuating at the management target.

3 Consultation

MPI consulted on your behalf on the three options set out in Table 1 above. MPI followed its standard consultation process.

3.1 SUBMISSIONS RECEIVED

Submissions were received from the following:

e) Te Ohu Kaimoana Trustee Ltd (TOKM)

a) The Deepwater Group Ltd (DWG)

b) Ngāti Kahungunu Iwi Inc

c) Iwi Collective Partnership (ICP)

d) LegaSea Hawkes Bay

e) Sanford Ltd

Full copies of all submissions are attached to this document for your reference.

3.2 SUMMARY OF SUBMISSIONS

In total, six submissions were received. All five submissions from industry and iwi sectors supported Option 2 to increase the TAC from 140 tonnes to 161 tonnes. The submission from LegaSea Hawkes Bay opposed any increase to the TAC or TACC (Option 1). There was no support received from any stakeholders for Option 3.

3.2.1 Option 1

The submission received from LegaSea Hawkes Bay was also supported by the Hawkes Bay Sport Fishing Club, Pania Surfcasting Club, New Zealand Angling and Casting Association, and the Gisborne – Tatapouri Sports Fishing Club. Their submission supports Option 1. They oppose any increase in the TAC or TACC, and are surprised at the results of the recent stock assessment. They submitted concerns regarding the increase in bycatch and discards that would be associated with an increase in the TAC and TACC and urged the development of alternative methods to catch scampi. They also questioned whether the cautious approach that forms part of the principles of the Act has been applied for the proposed options.

3.2.2 Option 2

Te Ohu Kaimoana is the Trustee for the Fisheries Settlement and support Option 2. They support an increase in the TAC and TACC, and are aware that some iwi consider increases in this fishery should be staged to provide for more stability in the longer term.

DWG is the industry organisation that represents holders of quota in New Zealand's major deepwater fisheries, including scampi. They provided a submission on behalf of shareholders who collectively own 86% of SCI 2 quota. DWG noted the current status of the stock and advised that the SCI 2 quota owners that they represent support Option 2.

Ngāti Kahungunu Iwi Incorporated is a mandated iwi organisation with the authority to represent the people of Ngāti Kahungunu, and is the Governing body for all aspects of Iwi development. They note the strong recruitment in the recent stock assessment and support Option 2. They would also like to see the implementation of a suitable management plan for the SCI 2 fishery.

ICP was established in 2010 to improve, amongst other things, iwi participation in the sustainable management of New Zealand's fisheries. They represent 14 Iwi quota owners from throughout the North Island and support Option 2, and note and support the comments of DWG.

Sanford, a major commercial fishing company with 55% of quota shares in SCI 2, also supports Option 2.

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.

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))

As discussed in the Statutory Considerations section of this paper, this principle is focused on species (including protected species) that cannot be targeted commercially and are affected by the taking of a harvested species, and maintaining those species above a level that ensures their long-term sustainability. The effect of targeted and non-targeted scampi fishing on protected species, specifically seabirds and marine mammals, is discussed below.

4.2.1.1 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 reflects New Zealand's obligations under customary international law to take into account the effects of fishing on associated species such as seabirds. MPI has recently undertaken an update to the risk assessment that underpins the NPOA that identifies seabird species considered to be most at risk from New Zealand fisheries[20]. This research has identified that scampi fisheries contribute 9% of the total risk score for Salvin's albatross and 15% for flesh-footed shearwater. Both species have been identified as being at very high risk from fishing.

However, the proportion of the total risk to both species attributed to scampi fisheries is small as scampi fishing is not the most significant fisheries risk to these birds. In addition, the majority of the scampi fishery risk is thought to be generated from the other scampi fisheries, rather than from SCI 2. In the last five years, there has been three observed seabird captures from SCI 2, based on 10% observed effort over the period.

MPI acknowledges that the observer coverage for scampi fisheries has been low compared to that of other deepwater fisheries. MPI has therefore planned for an increase of observer coverage across all scampi fisheries from 150 days in recent years to 450 days for the 2016-17 financial year. This proposed coverage is based on achieving 25% coverage of the fishery.

20 Richard, Y.; Abraham, E.R. (2015). Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006–07 to 2012–13.

Furthermore, this increase in observer coverage will allow for the collection of additional data to support the monitoring of protected species interactions and bycatch.

MPI acknowledges that with increased fishing effort, more seabirds may be incidentally captured by the scampi fleet within SCI 2. Non-regulatory management measures are used to reduce the risk of seabird interactions by the scampi fleet. Every vessel targeting scampi has developed a specific vessel management plan (VMP) that sets out the on-board practices vessels must follow to reduce the risk to seabirds. These include offal management procedures and deployment of bird scaring devices for vessels under 28 m for which bird scaring devices are not mandatory. MPI monitors each vessel's performance against its VMP and works with Deepwater Group Ltd (DWG) to rectify any non-adherence with non-regulatory measures, and to assist the fleet to improve their offal management practices. These practices will continue in 2016/17.

4.2.1.2 Marine mammals

The capture rate of marine mammals in SCI 2 is very low, and there have been no observed captures in the past five years. This is likely because the fishery operates outside the range of New Zealand sea lions and fur seals.

Given the distribution and low capture rate in the past, MPI considers marine mammal captures to be a low risk in this fishery.

4.2.2 Biological diversity of the aquatic environment (section 9(b))

The discussion above relating to section 9(a) is also relevant to the maintenance of the biological diversity of the aquatic environment.

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

4.2.3.1 Benthic impacts

Bottom trawling for scampi is known to have an impact on the benthic habitat. However, the scampi fishery has evolved over time to use lighter bottom gear with multiple rigs which mitigates some of this impact. Furthermore, fragile benthic invertebrate communities are found primarily on hard substrates that do not occur within the core fishing area of SCI 2, where soft sediment and mud substrate predominates which is characteristic of scampi habitat.

The scampi fishery is constrained to a specific depth band and substrate. As a result, an increase in scampi abundance is unlikely to result in a widening of the scampi fishing area, or spreading of scampi fishing effort into other benthic habitats, but rather an increase in the density of scampi fishing effort within the already exploited area.

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

MPI acknowledges that the options proposed that will increase the TACC will likely result in increased fishing effort and therefore increased contact with the benthos. However, MPI is satisfied that the additional risk this increase in fishing will have on the benthos habitat is low.

4.3 SECTION 10 – INFORMATION PRINCIPLES

MPI considers that the best available information has been used as the basis for the recommendations for the SCI 2 stock. All science information upon which the management options are based have been peer reviewed by the MPI's Shellfish Fisheries Assessment Working Group and meets the Research and Science Information Standard for New Zealand Fisheries.

4.4 SECTION 11 – SUSTAINABILITY MEASURES

See the Statutory Considerations section of this paper for consideration of Section 11 measures. A fisheries specific chapter of the National Deepwater Plan for scampi is yet to be finalised.

4.5 SECTION 12 – CONSULTATION

In addition to the consultation considerations discussed elsewhere, section 12(1)(b) of the Act requires that you provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga before setting or varying a TAC. Previous consultation with iwi led to the establishment of iwi fisheries forums and MPI subsequently assisted those forums to develop plans.

There is one Forum Fisheries Plan relevant to the SCI 2 fishery area; the Rangitāne (North Island) Iwi Fisheries Plan. The Rangitāne Iwi Fisheries Plan contains use, environmental and management outcomes that are supported by a further five management objectives.

MPI considers that the management options presented in this Decision Document will contribute towards the achievement of the Rangitāne Iwi Fisheries Plan management objectives in ensuring that the fishery can provide additional commercial benefits and that environmental impacts are minimised.

4.6 SECTION 13 – SETTING THE TAC

The 2016 stock assessment for SCI 2 has estimated stock status at approximately 101% B_0. The current status of the stock is above B_{MSY} and MPI therefore recommends that you set the SCI 2 TAC under section 13(2)(a) of the Act.

Under section 13(2)(a), a TAC must be set that maintains the stock at or above a level that can produce the MSY, having regard to the interdependence of stocks. 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 which are given below.

The scampi fishery has a high level of bycatch, with scampi making up around 19% of the total catch by weight in all observed scampi target tows in SCI 2 since 1 October 2005. The main bycatch species or species groups were javelinfish (20%), other rattails (7%), and sea perch (10%). Compared to other scampi stocks, SCI 2 has an intermediate level of bycatch. Bycatch of species managed under the QMS comprise about half of total scampi bycatch. All QMS species must be retained and either balanced against Annual Catch Entitlements (ACE) or the appropriate deemed value paid.

A detailed analysis of bycatch composition and amounts for the scampi fishery was last undertaken in 2012[21]. This analysis will be repeated in 2016, to extend the time series so that trends in bycatch rates and composition can continue to be monitored in detail. In the intervening time since the 2012 scampi bycatch analysis, another bycatch analysis was undertaken in 2015 for all the major deepwater stocks, including scampi.

If any non-QMS bycatch species are identified through monitoring and consequent analyses as requiring additional management, then the species may be considered for QMS introduction or managed through alternative sustainability measures under section 11 of the Act. To date, since the last increase of SCI 2 in 2013-14, the monitoring and bycatch analysis undertaken has not identified any species considered to be at risk as a result of scampi fishing that warrant further management under the QMS.

MPI considers it unlikely that the changes proposed by the options would result in an unacceptable impact on the sustainability of other species caught in this fishery. MPI will closely review the outcomes of the upcoming analysis of bycatch in the scampi fishery and continue to monitor and manage any risks associated with bycatch.

MPI considers there is no information to suggest that the interdependence of stocks should affect where the TAC is set for scampi and that all options will ensure the stock remains at or above a level that can produce the maximum sustainable yield.

4.7 SECTIONS 20 & 21 – ALLOCATING THE TACC

The TAC must be apportioned between the relevant sectors and interests set out under the provisions of sections 20 and 21 of the Act. Section 21 requires that allowances be made for Māori customary non-commercial interests, recreational fishing interests and for any other sources of fishing related mortality, before a TACC is set.

4.7.1 Recreational and customary allowances

There are no known Māori customary or recreational fisheries for scampi and the Ministry proposes to retain nil allowances for these sectors.

4.7.2 All other mortality to that stock caused by fishing

An existing allowance for other sources of fishing related mortality is set at 5% of the TACC, to account for lost scampi. There is no additional information at this time that would warrant changing the allowance for other sources of fishing related mortality therefore MPI recommends you retain the allowance at 5% of the TACC.

4.8 SECTION 75 – DEEMED VALUE RATES

The Ministry is not proposing any changes to the SCI 2 deemed value rates. Current economic factors indicate that the current deemed value rates are likely to provide the appropriate financial incentives to encourage fishers to remain within their ACE. Current deemed value rates for all scampi stocks including SCI 2 are given in Table 2 below.

[21] Anderson, O.F. (2012). Fish and invertebrate bycatch and discards in New Zealand scampi fisheries from 1990–91 until 2009–10.

Table 2: Current deemed value rates ($/kg) for all SCI stocks including SCI 2.

Stock	Interim	Annual					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
SCI - All	25.65	51.30	61.56	71.82	82.08	92.34	102.60

MPI considers these deemed value rates have been effective at constraining fishing effort to the TACC. No comments were received during the consultation to suggest that the current deemed value rates are not appropriate.

Fishing activity will be monitored during the 2016/17 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 2017/18 fishing year.

5 Management Options

MPI consulted on the options set out in Table 2. These do not differ from what was consulted on. Option 1 represents the *status quo*, while options 2 and 3 propose increases of 15% and 30% respectively. Given the recent results of the 2016 SCI 2 stock assessment (detailed in section 2.2.3), MPI considers there is an opportunity to increase utilisation of the stock. These options are consistent with the objective of maintaining SCI 2 at or above the level that can produce maximum sustainable yield. All options retain the current allocation for other sources of fishing related mortality at 5% of the TACC and zero allowances for both recreational and Māori customary harvest.

Table 2: Proposed TACs, TACCs and allowances for SCI 2 from 1 October 2016 (all values in tonnes)

Option	TAC	TACC	Increase on current TACC	Allowances		
				Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 *(Status quo)*	140	133	0	0	0	7
Option 2 (MPI preferred)	161	153	15%	0	0	8
Option 3	182	173	30%	0	0	9

5.1 ANALYSIS OF OPTIONS

The 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. Five year projections out to 2021 were produced using catch scenarios for all three proposed options.

All three proposed options are projected to maintain biomass at or above the management target of 40% B_0 until 2021 with 99% probability. If current catches are maintained at the current TACC, projections indicate that the biomass in 2021 would be 97% B_0. Increasing catch to the maximum TACC option proposed of 173 tonnes (Option 3), would reduce biomass in 2021 to 88% B_0 (Table 3).

Table 3: Probabilities of spawning stock biomass being above respective management limits or target; also shown in the bottom row is estimated percentage of B_0 the stock is projected to be in 2021

	Proposed TACC options (tonnes)		
	Option 1	Option 2	Option 3
	133	153	173
Prob B_{2021} > Hard Limit (10% B_0)	1.00	1.00	1.00
Prob B_{2021} > Soft Limit (20% B_0)	1.00	1.00	1.00
Prob B_{2021} > Target (40% B_0)	0.99	0.99	0.99
Percentage of B_0 in 2021	92%	90%	88%

5.1.1 Option 1 (*Status quo*)

Option 1 proposes the TAC remains at the current level of 140 tonnes, with a 133 tonne TACC, and a 7 tonne allowance for other sources of fishing-related mortality.

Last year, 142 tonnes of scampi were landed from SCI 2. Given an estimated export value of $32.88/kg, this resulted in approximately $4.67 million in export revenue[22].

One submission received, from LegaSea Hawkes Bay, supported Option 1. As noted earlier, their submission pointed to concerns over the high bycatch associated with scampi fishing and the potential increase in bycatch as a result of any increase to the TACC. MPI acknowledges that scampi fishing has a high rate of bycatch. Bycatch and associated or dependent species associated with scampi fishing are discussed further in section 4.5. MPI considers it unlikely that any of the options proposed would result in an unacceptable impact on the sustainability of other species caught in this fishery.

LegaSea Hawkes Bay also urged the development of alternative methods to catch scampi. A project initiated in 2014 and funded by the Ministry of Business, Innovation and Employment (MBIE), is investigating and developing more efficient harvesting methods, and establishing land-based aquaculture systems for domestication of scampi[23]. MPI supports the development of alternative harvesting methods and is monitoring the outcomes of the programme.

LegaSea also questioned whether the cautious approach that forms part of the principles of the Act, has been applied for the proposed options to increase the TAC. MPI is confident that the options proposed comply with the Information Principles set in section 10.

MPI's view is that a TAC increase is supported by the 2016 stock assessment and associated projections that indicate the stock is well above the management target and at the level of an unfished biomass. Option 1 does not allow for the utilisation of the increase in available biomass.

5.1.2 Option 2 (MPI Preferred)

Under this option, the TAC would be increased to 161 tonnes and the TACC would be increased to 153 tonnes (a 15% increase), with an 8 tonne allowance for other sources of fishing-related mortality.

[22] Based on export figures for 2015 calendar year of $32.88 / kg. Scampi does not have its own Harmonised System (HS) code and therefore is captured under shrimps & prawns. No precise product form is assigned therefore a greenweight export price cannot be calculated. The $32.88 / kg figure was calculated for Other Crustacea Frozen (Shrimps and prawns). Precise revenue is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

[23] http://www.cawthron.org.nz/aquaculture/news/2014/new-research-advance-lucrative-scampi-fishery/

Based on an estimated export price of $32.88/kg, an increased harvest of 20 tonnes would result in an additional $657,700 in export revenue.

Option 2 and 3 would likely result in increased scampi fishing effort in SCI 2. Any potential increase in fishing effort is likely to be concentrated in areas that have been previously fished, and any further benthic impacts are likely to be limited.

Increased fishing effort under the proposed options may also increase interactions with protected species. Mitigation measures to reduce seabird captures as part of each vessels' VMP will continue to be monitored by MPI and any non-adherence will be addressed in collaboration with DWG. Seabird capture rates will continue to be monitored by MPI throughout the year, to ensure increased effort is not having an undue negative impact on these species.

Option 2 was supported by all industry and iwi submissions. It is a conservative and balanced approach to being able to utilise that increase in available biomass while also taking into account the uncertainties in the model estimates. Projections indicate that with a TAC of 161 tonnes, the biomass of the stock will remain above the target until 2021 with 99% probability.

Ngāti Kahungunu Iwi Inc would also like to see the implementation of a suitable management plan for the SCI 2 fishery. MPI acknowledges the absence of a fisheries specific chapter of the National Deepwater Plan for scampi. MPI is confident that the generic management objectives of the National Deepwater Plan applied to the scampi fishery are sufficient, however MPI will continue to work with stakeholders to develop a scampi specific chapter.

5.1.3 Option 3

Under this option, the TAC would be increased to 182 tonnes and the TACC would be increased to 173 tonnes (a 30% increase), with a 9 tonne allowance for other sources of fishing-related mortality.

Based on an estimated export price of $32.88/kg, an increase of 40 tonnes would result in an additional $1.3 million in export revenue.

There were no submissions received in support of Option 3. While the projections for this option indicate that stock status will still exceed the target of 40% B_0 in five years' time, it is apparent that industry would prefer a conservative approach to increase the TAC. Option 3 would maximise the economic benefit to the fishing industry until the next catch limit review, but may result in larger cuts being required in the future.

6 Conclusion

Results from the 2016 stock assessment indicate SCI 2 biomass is approximately 101% B_0, which is well above the default management target of 40% B_0. These results demonstrate that the improvement in stock status identified in the 2013 stock assessment has continued, and that there is the opportunity to consider options for increased utilisation in this fishery.

Option 1 is the *status quo*. The other two options proposed an increase to the TAC and TACC, representing a 15% and 30% increase in TACC relative to the *status quo*. MPI considers that the two options proposed in this document to increase the TAC, TACC and associated allowances to utilise the available biomass, present a relatively low sustainability risk.

MPI's preferred option is Option 2. This option increases the TAC to 161 tonnes with a TACC of 153 tonnes, and maintains the allocation for other sources of fishing related-mortality at 5% of the TACC. Customary Māori and recreational allowances will be maintained at zero. Increasing the TAC and TACC to this level would allow increased utilisation with less risk to the sustainability of the stock than Option 3.

The SCI 2 fishery is assessed on the relatively short time period of three years between surveys, and MPI is confident that appropriate management action will be possible if the stock declines significantly within the next three years.

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.

PART B: INSHORE FISHERIES

Bluenose (BNS 1, 2, 3, 7 and 8)

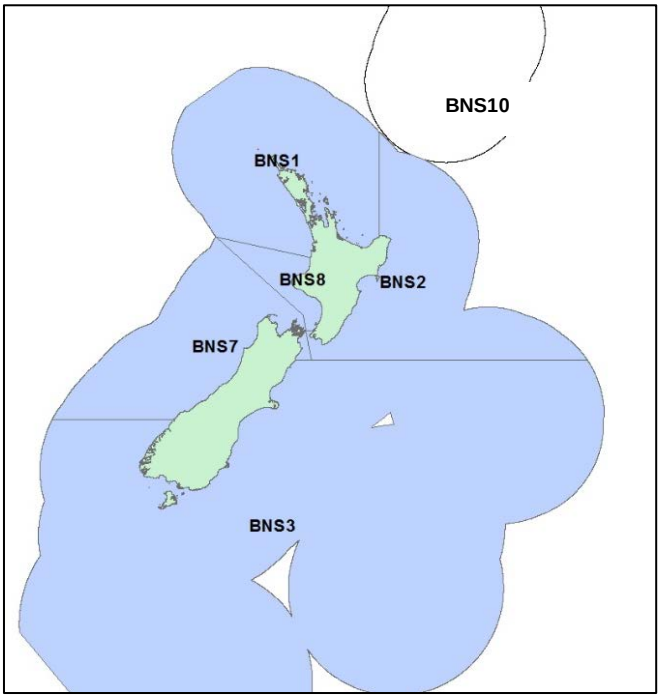


Figure 1: Quota management areas (QMAs) for bluenose (BNS 1, 2, 3, 7 and 8)

1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits for bluenose stocks (BNS 1, 2, 3, 7 and 8; Figure 1).[24]

Table 1 outlines current management settings alongside three options for reductions to the combined (for BNS 1, 2, 3, 7 and 8) bluenose total allowable catch (TAC) and total allowable commercial catch (TACC). Stock-specific TACs, allowances, and TACCs are proposed for each option (see Table 4).

Table 1: Proposed management settings (combined TACs, TACCs, and allowances) for bluenose for 2016/17 (all values in tonnes)

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 (*Status quo*)	1195	1100	9	63	23
Option 1a	*1133*	*1038*	*9*	*63*	*22*[25]
Option 2 (MPI Preferred)	990	900	9	63	18
Option 3	704	620	9	63	12

[24] BNS 10 has a TACC of 10 tonnes and a reported catch of 30 kg.

[25] Option 1a is an industry proposal that was not included in the Consultation Document as it was proposed in the submission by FINZ, and has been adjusted slightly to maintain proportionality. As the allowances were not detailed in the submission, these are assumed figures based on the *status quo* for recreational and customary Māori limits, and other sources of fishing-related mortality is set at 2% of the TACC, in line with standard practice.

Following on from management actions in 2011 and 2012, MPI considers a further catch limit reduction is needed to meet the objectives of a rebuilding plan that was initiated in 2011, when the national stock was assessed to be between 14 and 27% of the virgin biomass (B_0) compared to the default target of 40% B_0. This rebuilding plan is consistent with the Harvest Strategy Standard[26] (HSS) defaults for low productivity stocks such as bluenose. MPI notes that while the HSS provides policy guidance based on international best practice, you are not legally obliged to follow it.

The objective of the rebuild is to reach the 40% biomass target within a time window between 2031 and 2037 (within 2 x T_{MIN}[27] from the 2011 assessment). A decision was made to defer planned catch reductions in 2013 to allow for further investigation of new monitoring information that suggested biomass may have been increasing at a higher rate than anticipated. That monitoring information, as well as further information from 2014 and 2015, has now been reviewed and incorporated into an updated stock assessment. The stock assessment indicates that action to date has resulted in the biomass decline either levelling off or biomass gradually increasing. The assessment estimates the stock to currently be between 17 and 27% of the virgin biomass level (still well below the target) and provides updated biomass projections to guide further management decisions.

The projections suggest that the *status quo* TAC and TACC will not achieve the rebuilding plan objectives and poses a greater sustainability risk to the stock than Options 2 and 3. MPI therefore does not support the *status quo* (Option 1). Fisheries Inshore New Zealand (FINZ) has suggested an alternative to Option 1, Option 1a, which is based on the management procedure they have developed. It is not MPI's preferred option as the parameters of the management procedure are not set to achieve the target biomass level and timeframe as designated in the HSS and associated guidelines. MPI advised FINZ of concerns regarding departure from the HSS and requested that robust justification be submitted, however, MPI does not consider sufficient justification to have been provided.

Options 2 and 3 reduce the combined TAC and TACC for the upcoming fishing year by approximately 20% and 40% respectively. The alternative levels of reductions provide different levels of certainty about putting the stock on course to achieve the rebuild target within the time frame. Option 2 proposes a level of utilisation that is lower than Options 1 and 1a, and therefore more likely to support an increase to the stock, but is still unlikely to achieve the target within the rebuilding time frame. MPI considers that while Option 2 is more likely to put the stock on course to achieving the rebuild than the *status quo* or Option 1a, it would need to be supported by further work in the short term to ensure that rebuilding objectives are met. Option 2 is considered an interim option designed to solidify the rebuilding currently occurring, while a new management procedure (MP) is developed to guide long-term management of the stock. Further management action will likely be required under this option for the 2017/18 fishing year. Option 3 implements the last phase of the rebuilding strategy put in place in 2011 and is designed to rebuild the stock to the target level without further management action. Under any option, monitoring of the stock would need to continue to track the rebuild and take advantage of utilisation opportunities as biomass nears the target. Under options1, 1a and 2 it is proposed that the reductions would be spread proportionally across the five management stocks in line with the current proportions.

[26] The Harvest Strategy Standard and accompanying Operational Guidelines were formally adopted in 2008 as the guiding policy for determining management strategies for fisheries. The metrics suggested are 'defaults' aimed at best practice and should be applied unless particular circumstances warrant a justified departure.

[27] Twice the length of time that it has been estimated that the stock would reach the target in the absence of fishing.

Given the value of the bluenose fishery, MPI considers that there would be benefits in doing further work to determine the best way to manage and monitor bluenose over the longer term to achieve the rebuilding objectives. For example, in recent years the industry has led investigation into the potential application of a management procedure based on catch per unit of effort (CPUE) as an index of stock relative abundance to provide greater certainty on management responses. MPI would like to continue work in this area and considers that a management procedure could be available to inform a review in 2017.

Ten submissions were received in response to the Discussion Document regarding the review of TACs and TACCs for bluenose stocks.

Six submissions, all from industry, supported Option 1, maintaining the *status quo*. One submission (FINZ) suggested an alternative option based on a management procedure which would result in a minor reduction in catch limits. This was also supported by three other submissions. Two submissions (one from industry and one from iwi) supported Option 2. One submission from iwi supported either Option 2 or 3. One submission from recreational fishing interests supported Option 3.

One submission from iwi proposed an alternative option of a combined TAC and TACC reduction of 100 tonnes.

MPI recommends Option 2, to reduce the combined bluenose TAC and TACC by 200 tonnes from 1 October 2016 to provide greater likelihood than the *status quo* that the stock biomass will achieve the rebuilding target within the timeframe. Option 2 is seen as an interim step which allows further work to be done to develop an agreed management procedure for bluenose, however, further catch limit reductions may be needed to achieve the rebuilding target and timeframe.

No changes are recommended to the allowances for customary Māori and recreational fishing interests under any option. The allowances for other sources of fishing-related mortality are proposed to be set in proportion to the respective TACCs and retaining the existing relationship between the TACC and allowance.

2 Purpose

2.1 BACKGROUND

Following on from the Introductory and Statutory Considerations at the beginning of this Decision Document, the purpose of this section is to provide the detailed information, assessment of statutory obligations, and recommendations relevant to the proposals for bluenose stocks.

2.1.1 Biological characteristics of bluenose

Bluenose is a long-lived species, with an estimated maximum age of 76 years, and has low natural mortality.[28] These biological characteristics indicate that under the HSS Guidelines bluenose is characterised as a low-productivity stock. Low productivity stocks are typically vulnerable to overfishing, and slower to recover from depleted levels.

[28] The Plenary considers natural mortality rate, M, is unlikely to be greater than 0.1.

Males and females are thought to mature at about 15 to 17 years of age and at lengths between 60 and 65cm. Spawning probably peaks from February to April, annually. No distinct spawning grounds have been identified for bluenose in New Zealand waters.

Bluenose distribution ranges from near the surface to depths of 1200 metres, with numbers highest at around 400 metres depth. Depth distribution changes with size, with individuals generally moving to deeper waters as they grow. Bluenose may also migrate to shallower waters during the day to feed.

The best available information, including from the 2016 stock assessment, assumes that there is a single biological stock for bluenose in New Zealand waters. Biological stock boundaries are not known for New Zealand bluenose, but similarities in catch and CPUE trends between each of the five bluenose QMAs suggests there may be just one biological stock across all these areas, or a strong relationship between the fish in these areas. Tagging studies have shown the species is capable of extensive migration, which suggests the single stock hypothesis is plausible. Further, rapid replenishment on fished features lends credence to the single stock hypothesis. However, there is no conclusive information available to confirm this hypothesis or alternative hypotheses of stock relationships.

2.1.2 Fishery description

2.1.2.1 Commercial

Total reported landings of bluenose by the commercial sector are shown below in Figure 2. These data are broken down by individual bluenose QMA in Figure 7 (Section 8 Supplementary Information – Bluenose Catch Data). The commercial fishing sector harvests the greatest amount of bluenose, followed by substantially smaller amounts taken by recreational and customary fishers.

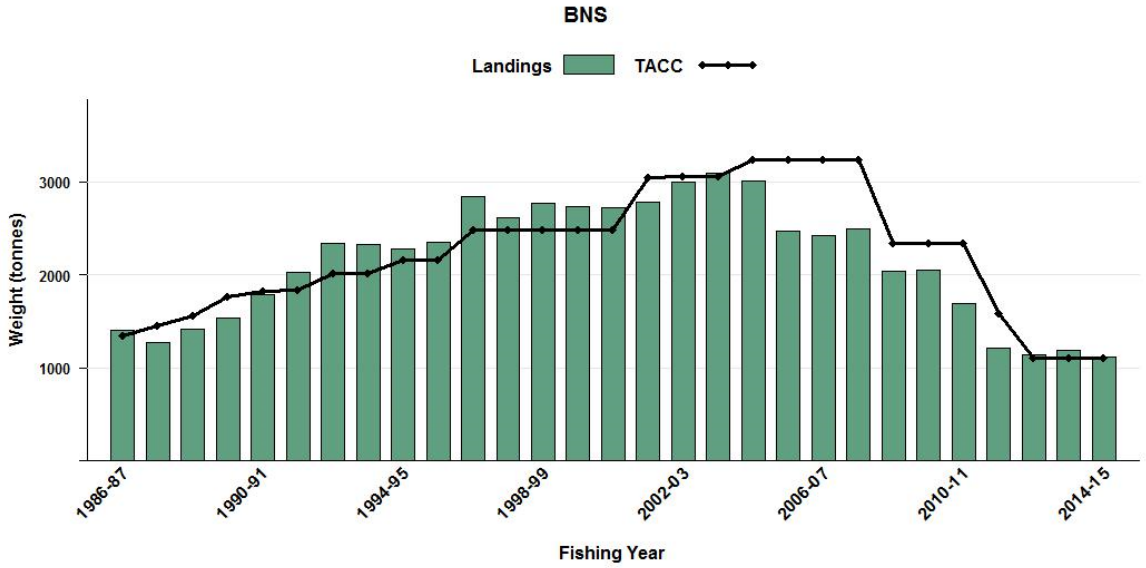


Figure 2. Total reported landings (t) of bluenose and total TACCs (t) from 1986-87 to 2014-15 for BNS 1, 2, 3, 7 and 8 combined.

The largest domestic bluenose fisheries occur in BNS 1 and 2. Historically, catches in BNS 2 were predominantly taken in the target alfonsino and bluenose trawl fisheries, but in recent

years have been primarily taken by target bottom longline fishing. There is a target line fishery for bluenose in the Bay of Plenty and off Northland (BNS 1). Target line fisheries for bluenose also exist off the west coast of the South Island (BNS 7) and the central west coast of the North Island (BNS 8). Bluenose in BNS 7 are also taken as bycatch in the hoki trawl and ling line fisheries. The BNS 3 fishery is focussed on the eastern Chatham Rise where bottom longline bluenose catches were historically a bycatch of ling and häpuku/bass target fisheries. Target bluenose lining has predominated since 2003-04. There has been a consistent bycatch of bluenose in the alfonsino target bottom trawl fishery and bluenose have been targeted sporadically in a mid-water trawl fishery in BNS 3 since the early 2000s. The bottom trawl fishery in BNS 3 has diminished. A small amount of target setnet fishing for bluenose occurred in the Bay of Plenty until 1999 and has occurred again since 2012. Target bluenose setnet fishing also occurs sporadically in the Wairarapa region of BNS 2. Setnet catches off the east coast of the South Island have been a mix of target and bycatch in ling and häpuku/bass target sets and off the east coast of the South Island have been a mix of target and bycatch in ling and häpuku/bass target sets.

Between 1992 and 2009, all bluenose stocks were included, for at least some of the time, in Adaptive Management Programmes (AMPs). The goal of the AMPs was to increase commercial utilisation in low-knowledge stocks while providing a cost-effective way of obtaining more information on stock size. Bluenose TACCs were increased under the AMPs. Commercial harvest levels were subsequently identified as a key driver of the decline in stock abundance. The 2016 Fisheries Assessment Plenary noted other drivers such as recruitment and environmental factors may also have contributed.

2.1.2.2 Recreational

Bluenose is primarily targeted by recreational fishers around deep inshore reefs. Anecdotal information from Recreational Forum members suggests recreational fisher interest in bluenose has increased in recent years. Regulations[29] governing the recreational harvest of bluenose from stocks include a daily bag limit of 5 per person for all areas that was implemented as part of the 2011 rebuilding plan and has been in place since 2012.

The total combined recreational allowance for all bluenose QMAs is 63 tonnes. The best available information on current recreational catch is provided from the 2011/12 National Panel Survey (NPS) which estimated the total recreational catch in BNS 1, 2, 3, 7 and 8 was 34.8 tonnes.[30] However, the NPS did not take into account recreational harvest that was taken by fishers aboard amateur charter vessels. The best available information is that around 1000 bluenose were retained by charter vessels from all areas for each of the past three fishing years (2012-15). This equates to approximately 10 tonnes per year from all QMAs.[31] The NPS estimate also does not include bluenose taken using recreational methods on commercial vessels with authorisation from MPI under s 111 of the Fisheries Act 1996 (the Act). Any catch taken in this manner must be reported. Approximately 1 tonne per year has been reported over the last five years, for all areas.

The amateur charter vessel and s 111 catches are broadly distributed proportionally across QMAs.[32] An estimate based on the 2011/12 NPS, plus the average amateur charter vessel and s 111 catches (from the last few years) is around 46 tonnes. This is within the 63 tonne combined recreational allowance. MPI notes that there is uncertainty in using the estimate from 2011/12

[29] Fisheries (Amateur Fishing) Regulations 2013

[30] The estimates for bluenose are based on a relatively small number of events and fishers, and as a result are subject to a relatively high uncertainty. They also do not include amateur catch taken on charter vessels or by commercial fishers under s111 approvals.

[31] Assuming an average weight of 10kgs per fish.

[32] Bar the charter catch for BNS 7 which is proportionally higher.

to estimate or predict current catches. A new NPS is due to begin in 2017 which will provide updated estimates of recreational bluenose catches.

MPI considers that at this time there is no new information to suggest recreational allowances should be changed.

2.1.2.3 Māori customary interests

Bluenose is an important kaimoana species for tangata whenua. Bluenose is classed as taonga by some tangata whenua.[33] There are a number of Forum Fisheries Plans relevant to the bluenose stock. For example, Te Waka a Maui me ona Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan, and the Rekohu/Wharekauri iwi have produced the Chatham Islands Fisheries Forum Plan.

MPI considers that the management options presented in this Decision Document are consistent with the Management Objectives of these plans, in that they are aimed at ensuring that the fishery remains sustainable and that environmental impacts are minimised.

Information currently held by MPI on Māori customary catch of bluenose in many areas is limited. For those tangata whenua groups operating under the customary fishing regulations[34], there is a requirement for Tangata Kaitiaki/Tiaki to provide MPI with information on Māori customary harvest of fish. However, some tangata whenua are still operating under regulation 50-52 of the Fisheries (Amateur Fishing) Regulations 2013, and it is not mandatory to report permits that are issued.

There is one reported authorisation for BNS 7 in the Cook Strait for the April-June 2011 quarter; the quantity approved was 30 (with no unit of measure given) and no actual quantity harvested was declared. There is also one reported authorisation for BNS 3 for the October-December 2012 quarter; the quantity approved was one (also with no unit of measure) and it was declared as harvested. No other customary authorisations or customary catch have been reported for bluenose in any QMA since 2007. This indicates that tangata whenua use of customary Māori harvesting rights for taking bluenose is nominal and they are most likely fishing under their recreational right. MPI is working to improve the reporting of information on customary harvest.

Before making a decision about changing the TAC, you are required to provide for the input and participation of tangata whenua and to have particular regard to kaitiakitanga (s 12 (1) of the Act).

MPI's intention to review bluenose catch limits was discussed at two Chatham Island iwi forums this year and with the following iwi forums - Te Waka a Māui me Öna Toka Forum and Mai I Nga Kuri a Wharei ki Tihirau. The rebuilding plan has been discussed previously at iwi forums operating around New Zealand as part of the implementation of the 2011 plan.

Given the distribution (tending to be deeper) of bluenose, mātaitai closures and section 186 closures are unlikely to have any bearing on bluenose harvest and the associated options presented in this paper.

[33] Chatham Islands Fisheries Forum Plan @ 44° 2011/2016.

[34] Fisheries (Kaimoana Customary Fishing) Regulations 1998 and Fisheries (South Island Customary Fishing) Regulations 1999.

2.2 OTHER SOURCES OF FISHING-RELATED MORTALITY

There are various potential other sources of fishing-related mortality of bluenose, but MPI is not able to quantify these precisely. Sources may include the under reporting of landings, discarding to avoid deemed value payments and unseen mortality caused by particular fishing methods. Industry has also noted depredation by orca as a source of mortality. The allowance for other sources of fishing-related mortality is currently set at 23 t, around 2% of the combined TACC for all stocks. For options 1a, 2 and 3, the allowance is varied accordingly, at 21, 18 and 12 tonnes respectively. The allowances for specific stocks are proposed in proportion to respective TACCs.

2.2.1 Management approach

The Act requires that you set the TAC for bluenose so that the stock moves towards (or above), or is maintained at (or above), the biomass that will produce the maximum sustainable yield (B_{MSY}). A specific management biomass target has not been agreed for bluenose, but an interim proxy for B_{MSY} (40% of the unfished biomass as suggested by the HSS) is currently used, and was relied upon in determining the rebuilding strategy that began in 2011.

The Operational Guidelines for New Zealand's Harvest Strategy Standard (the HSS Guidelines) explain the productivity of stocks according to their biological features. It is generally accepted that low productivity stocks are those with high age at maturity, high longevity and slow growth or low fecundity. Stocks such as these tend to be less resilient to fishing and take longer to recover from being depleted. Given that bluenose is long-lived and late maturing, 40% B_0 is considered to be an appropriate proxy for B_{MSY}. Since the HSS was approved in 2008, a level of 40% B_0 has become increasingly widespread as a proxy for B_{MSY} in many parts of the world. Recent work contracted by MPI that incorporates the natural variability of stocks, as well as uncertainty, underlines that B_{MSY} for a species like bluenose should be of the order of 40% B_0.

The HSS also suggests appropriate rebuilding timeframes for stocks that have fallen below 20% B_0 (the soft limit). The HSS suggests that stocks be rebuilt within a default period of twice the time it would take to rebuild without fishing (2 x T_{MIN}). This default is a compromise between the fastest possible rebuild (if the fishery was closed), maintaining a viable fishery during the rebuild, and making meaningful progress over both the short and long terms towards rebuilding the stock. Experience elsewhere in the world suggests that timeframes much longer than one human generation (~25 years) tend to reduce the incentive to take immediate action towards initiating a rebuild.

Given that the bluenose stock has been under the target (40% B_0) for as long as 16 years, MPI considers it important to take action in the short term to ensure the rebuild progresses towards the HSS defaults. These are minimum target biomass levels and rebuild times which reflect international best practice in sustainable fisheries management.

The management approach to bluenose changed in 2011 when a stock assessment indicated that the combined TAC for the five bluenose QMAs was unsustainable. The 2011 stock assessment assumed a single biological stock for bluenose and estimated the biomass to be between 14 and 27% of the virgin biomass (B_0 – the average biomass of the stock in the years before the fishing started). This indicated that the bluenose stock size (B_{2011}) was below the proxy target for B_{MSY} (40% B_0)[35] and as Likely as Not (40-60%) to be below the Soft Limit (20% B_0).[36] The then

[35] Fisheries Assessment Plenary, May 2015, Stock Assessments and Stock Status Volume 1: Introductory Sections to Hoki. http://fs.fish.govt.nz/Page.aspx?pk=61&tk=212

[36] Formal rebuild strategies are recommended by the *HSS* and associated guidelines when stock declines below the soft limit.

Minister of Fisheries and Aquaculture agreed to a plan aimed at rebuilding bluenose stocks to the target within $2xT_{MIN}$ (20-26 years). This involved a three-year phased reduction to catch limits (see Table 2). The first and second stages were implemented, with reductions to TACs, TACCs, some allowances and changes to recreational bag limits,[37] and increases to deemed values to incentivise fishers to balance catch with annual catch entitlement (ACE).

In 2013, you decided to maintain the existing catch limits and not to implement the third phased TAC and TACC reductions. This decision was made on the basis of new information which suggested that the biomass was increasing at a rate higher than anticipated. This decision allowed new information to be considered and analysed through MPI's scientific peer review processes. This monitoring information as well as more data from 2014 and 2015 have now been reviewed and incorporated into an updated stock assessment.

It should be noted that the current assessment approach relies strongly upon CPUE data from the commercial fishery to provide an index of bluenose relative abundance, to support monitoring of the effectiveness of the rebuild measures. Further catch reductions may result in changes to fishing practices, such as the withdrawal of vessels and changes in the spatial and temporal distribution of fishing effort. This may disrupt the continuity of the CPUE series and affect the ability to monitor the fishery effectively using this method.

MPI considers that there would be benefits in doing further work to determine the best way to manage and monitor bluenose over the longer term regardless of decisions on management settings for the 2016/17 fishing year. However, the decisions in 2016 are likely to have an impact on how this management discussion proceeds.

Bluenose in New Zealand waters are considered to be a single biological stock, therefore discussion in this document largely refers to combined TACs, TACCs and allowances. However, s 13 requires you to make separate decisions for each bluenose QMA (see Table 4). Reductions are proposed pro-rata across the QMAs, in line with previous reductions.

Table 2: 2011 Rebuild Plan – TACs, TACCs and allowances, by year (all values in tonnes)

Year	Total Combined TACs	Total Combined TACCs	Total Combined Customary Māori Allowances	Total Combined Recreational Allowances	Total Combined Other Sources of Fishing-related Mortality
2010/11	2477	2325	42	63	47
2011/12	1685	1580	9	63	33
2012/13 (Current Settings)	1195	1100	9	63	23
2013/14 (not implemented)	704	620	9	63	12

2.3 RATIONALE FOR MANAGEMENT INTERVENTION

2.3.1 Earlier concerns and 2008 review

Since bluenose stocks were brought into the QMS in 1986-87, most stocks had TACC increases provided under the previous adaptive management programme (AMP). The objective of the AMP was to improve information about stocks through more intensive monitoring. By 2005, the increases under the AMP had more than doubled the initial combined TACC for bluenose

[37] The limit is now 5 for all areas. The change came into effect in May 2012.

stocks. The AMP was terminated from September 2009. In 2008, close correspondence between declining trends in most trawl and line CPUE indices for bluenose increased confidence in CPUE as an index of abundance. Standardised CPUE indices based on data from most major fisheries taking bluenose within the EEZ declined an average 64% over the period 2001-02 to 2006-07. Concerns arising from this decline in relative abundance led to decisions to reduce all bluenose TACCs as from 1 October 2008. The combined reduction for all QMAs was 898 t, or 28%.

The first fully quantitative stock assessment was conducted in 2011, and the results showed that bluenose stocks were below the soft limit of 20% of the virgin biomass. A management review followed and the decision was to rebuild the stocks to the target biomass, and within $2xT_{MIN}$, consistent with the HSS defaults and as determined by you. You also agreed to implement phased TAC and TACC reductions over three years to provide time for industry to plan and adapt to the lower TACCs determined as necessary to rebuild bluenose. The first two reductions were made in 2011 and 2012, but the third in 2013 was deferred to allow time for new information to be analysed and assessed.

2.3.2 Previous review

Bluenose TACs were last reviewed in 2013. In October 2013, the combined TACs remained at 1195 t, the combined TACCs remained unchanged at 1100 t, and the combined allowances for other sources of fishing-related mortality remained at 23 tonnes. The combined customary Māori allowances and recreational allowances remained unchanged, at 9 tonnes and 63 tonnes, respectively. The 2013 review did not implement the final TAC reduction as set out in the rebuilding plan, because there was new CPUE data that suggested further reductions may not have been needed at the level proposed. That information has since been further analysed and supplemented as discussed above. Currently, the best available information is an updated stock assessment produced in 2016.

2.4 NEW INFORMATION

2.4.1 Stock assessment

The 2016 stock assessment provides the best available information on stock status and how future stock size is expected to change under different catch levels. The stock assessment was updated in 2016 to include the most recent data on catch and CPUE. The 2016 assessment confirms the results of the 2011 assessment and suggests that the combined bluenose stocks are About As Likely as Not (40 to 60%) to be below the soft limit of 20% B_0 and Very Unlikely (<10%) at or above the default target of 40% B_0 (see Figure 3). $B_{CURRENT}$ is estimated to be between 17% and 27% of B_0. For these pre-2016 biomass trajectories, a combination of scenarios was modelled to address the uncertainty in historical catch levels (low, medium and high), natural mortality rates (M of 0.06, 0.08, 0.10) and stock-recruitment steepness (h of 0.75 and 0.9). The biomass trajectories reveal that the TAC reductions made previously have resulted in biomass decline either levelling off or biomass gradually increasing, as shown in Figure 3.

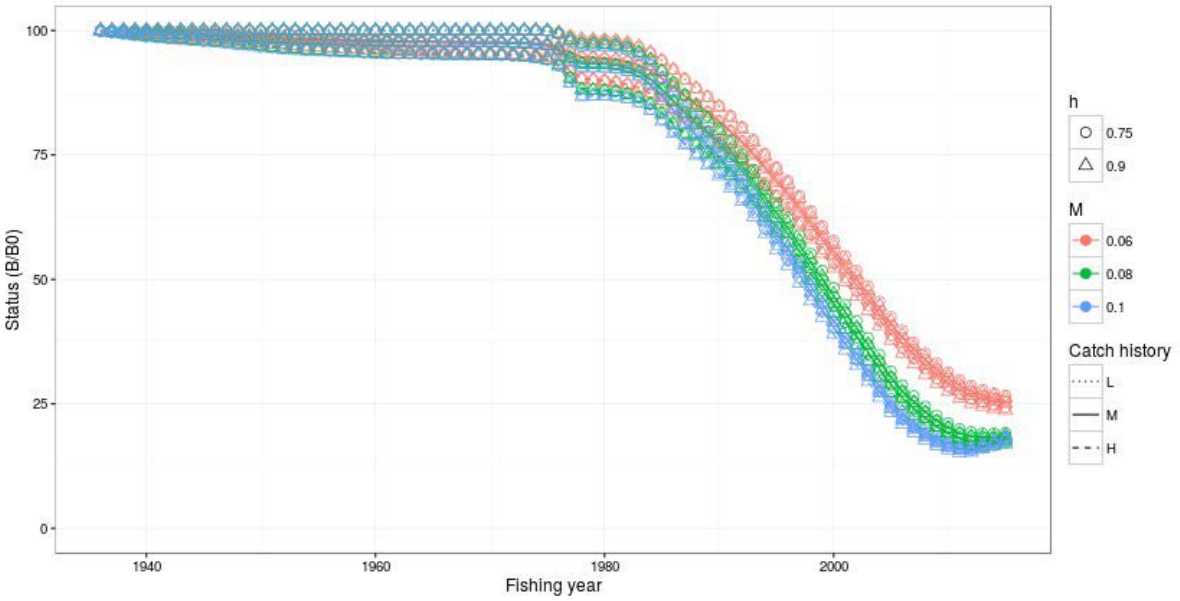


Figure 3. Stock status estimates up to 2015 under different estimates of catch history, natural mortality and stock recruitment steepness.

Projections forward from 2015 were also completed to explore biomass trajectories under different future commercial catch levels for the three main TACC options presented in this paper (1100, 900 and 620 t). The projections under these three options are shown in Figures 4, 5 and 6.

The aim of the projections was to explore rebuilding trajectories and times for the three main TACC options. Uncertainty was incorporated using alternative values for h, M and catch history (see above). The projections were tested against the previously agreed rebuilding strategy which was based on the stock biomass attaining 40% B_0 (the interim target biomass) within $2xT_{MIN,}$ starting in 2011. The matrix of projections for T_{MIN} from the 2011 assessment is shown in Table 3. This shows the projected rebuild date for each set of parameters in Figures 4, 5 and 6, which would be twice the number indicated in the matrix. This gives the range of 2031-2037, indicated by dotted lines in Figures 4, 5 and 6.

As the projections were relatively insensitive to catch history, the medium catch history was used for these projections. No combination of parameters is considered more plausible than the others. As demonstrated, there is a spread of uncertainty associated with each of the catch levels proposed in these options.

Table 3: Matrix from 2011 BNS assessment – shows TMIN for each set of m and h for mid-catch history

		Steepness of stock recruit relationship (h)	
		0.75	0.9
Natural mortality (M)	0.06	13	12
	0.08	13	12
	0.1	11	10

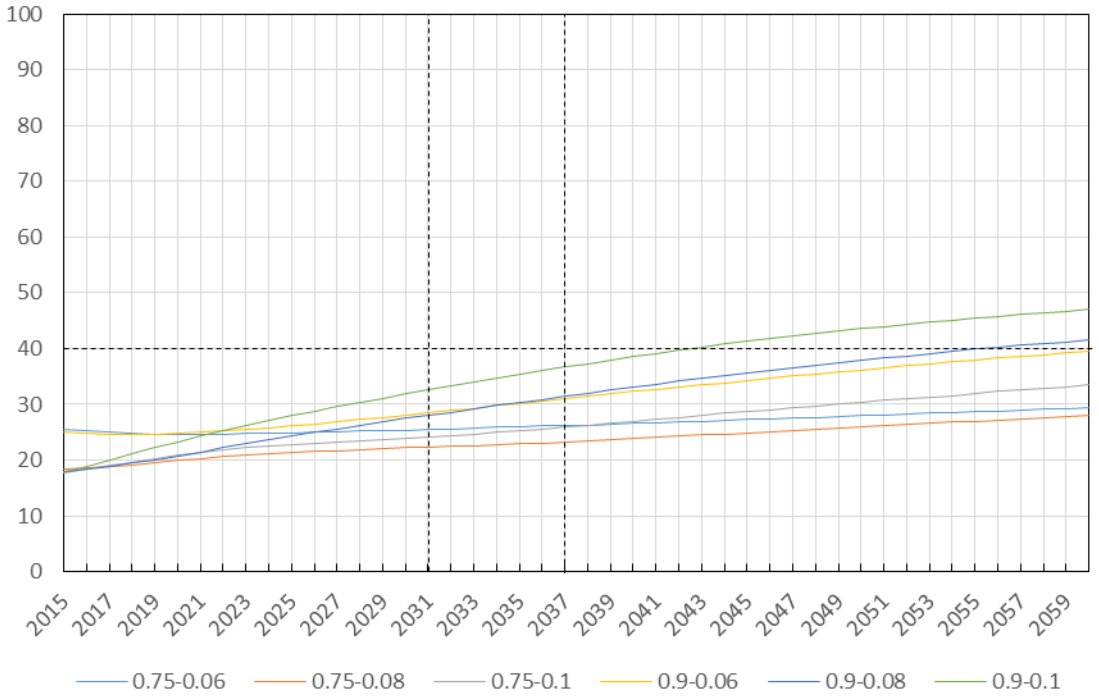


Figure 4: Stock status (% B_0) trajectories for a 1100 tonne TACC (Option 1), under each of 6 combinations of stock-recruitment steepness and natural mortality, using mid-level catch histories. Target biomass is indicated by the horizontal dashed line. Target timeframe falls within the two vertical dashed lines.

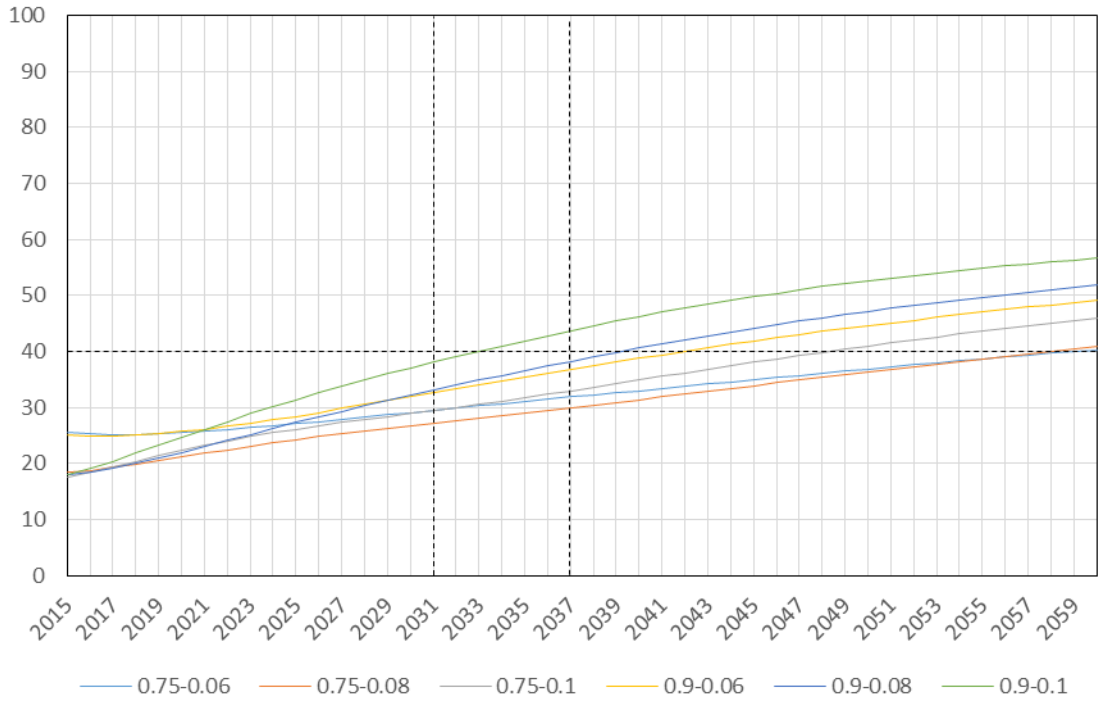


Figure 5: Stock status (% B_0) trajectories for a 900 tonne TACC (Option 2), under each of 6 combinations of stock-recruitment steepness and natural mortality, using mid-level catch histories. Target biomass is indicated by the horizontal dashed line. Target timeframe falls within the two vertical dashed lines.

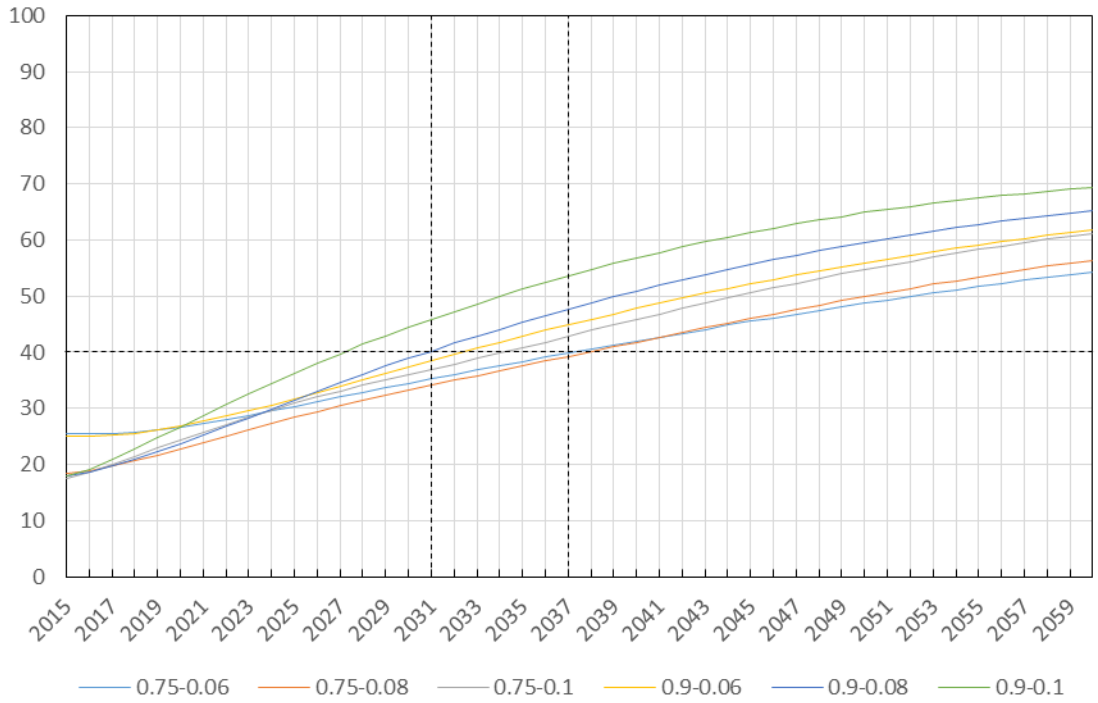


Figure 6: Stock status (% B_0) trajectories for a 620 tonne TACC (Option 3), under each of 6 combinations of stock-recruitment steepness and natural mortality, using mid-level catch histories. Target biomass is indicated by the horizontal dashed line. Target timeframe falls within the two vertical dashed lines.

2.4.2 Management procedure as an alternative to guide the rebuild

Since 2011, FINZ has worked with BNS quota owners to develop a management and monitoring plan for bluenose that could ensure the rebuild while mitigating the need for severe cuts.

As part of the management plan, industry has implemented a new catch sampling programme aimed at better understanding recruitment. They have also developed a management procedure (MP). An MP is a modern approach to fishery management and typically consists of a management objective(s), agreed data collection and monitoring tools, and a set of rules which translate the data into a proposed management response (e.g. TACC). By design, the set of rules should lead to the management objective being achieved.

The management procedure proposed by FINZ has a management objective to rebuild the stock to 35% B_0 in 30 years, and uses a catch per unit effort (CPUE) series which will be calculated annually to determine the TACC. MPI notes that the recent CPUE used in the proposed MP was not reviewed by the science working group as it was not available in time. In addition, MPI notes that the MP does not encapsulate the uncertainty in the biological parameters as is done in the assessment and projections relied on by MPI. FINZ proposes monitoring of the sizes and ages of BNS taken in the commercial fishery that could be used to further improve the rules in the future (see section 5.1.2).

3 Consultation

3.1 SUBMISSIONS RECEIVED

Submissions on the proposals for bluenose stocks were received from the following:

a) New Zealand Sport Fishing/LegaSea (NZSF)

b) Sealord Group Ltd. (Sealord)
c) Chatham Islands Finfish Association (Chatham Finfish)
d) Talley's
e) Southern Inshore Fisheries Management Company Ltd. (Southern Inshore)
f) Fisheries Inshore New Zealand (FINZ)
g) Iwi Collective Partnership
h) Ngati Kahungunu Iwi
i) Nga Hapu of Te Uru O Tainui Customary Fisheries Forum
j) Sanford Ltd. (Sanford).

A brief summary of the submissions is outlined below. Copies of the submissions are available in Appendix II. MPI's response to issues raised in the submission can be found within the relevant sections of this Decision Document.

3.2 SUMMARY OF SUBMISSIONS

3.2.1 Option 1

Sealord submitted support for Option 1 (to retain the *status quo*) as it believes the stock is likely rebuilding and management action can be delayed. Sealord proposes that no TACC changes be made until the management procedure, targets, and rebuilding strategy can be reviewed.

Sealord notes that it takes BNS 3 as bycatch when targeting hoki and alfonsino, and that the reduction under Options 2 and 3 overlooks the impact on utilisation of those fisheries.

Sealord also notes the data gathering initiatives by industry since 2011, the potential for better assessment, and that the data shows the previous management actions have at least halted the decline in bluenose stocks.

Sealord comments that the age composition data collected by industry has not been used in the 2016 assessment, but has shown that most BNS bycatch of its vessels in BNS3 has been relatively young fish between 4 to 10 years old. Sealord notes this apparent increased abundance of young fish is surprising given the assessment showing low stock status.

Sealord notes the view that the recent assessment using several more years of CPUE data, and assuming 0.09 as the more likely estimate of natural mortality, shows a clear rebuilding signal (MPI notes that the Science Working Group did not conclude that any of the natural mortality rates used in the assessment (0.06, 0.08, 0.1) was more plausible than the others). Sealord also notes that the assessment did not account for the reduction in CPUE as a result of orca depredation.

Talley's supports Option 1, although it would prefer engagement about alternatives because in its view Options 2 and 3 are not acceptable. Talley's would prefer Option 1 along with further industry engagement about additional management commitments to allow continued rebuilding of the fishery, retaining quota value, and fulfilling expectations into the future.

Talley's rejects any suggestion that further TACC reductions are needed at this time and would prefer that more work is done on CPUE assessment, scientific information (otolith readings) and collection of legitimate anecdotal information. Talley's notes that doing the work will require that sufficient economic incentive be provided and that cutting TACCs does not provide any enthusiasm or incentive to do anything.

Talley's submits that the rebuild target and timeframe might simply be too tough and more aspirational than realistic or necessary. Talley's submits that in three years the fishery has gone from 'dire straits' to experiencing a notable recovery, and that the science supports the position, along with anecdotal information from fisherman suggesting the fishery is in much better heart than the science might suggest.

Southern Inshore submits support for Option 1 and no change to the TACC for BNS 3 which is not showing a decline in the latest assessment. They also support the alternative option FINZ suggests, which is known as Option 1a. The submission also notes that BNS 7 and 8 are not influenced by the dynamics of BNS 3 or other North Island stocks. The submission claims there is no convincing evidence of connectivity between all bluenose stocks to justify management on a national one-stock basis.

Southern Inshore submits that it has seen the cessation of decline in the bluenose fishery and a reasonable rebuild across all stocks within the last 5 years, which is supported by anecdotal information from fishers. On this basis, the submission proposes that current trends do not support the approach proposed by MPI. The submission supports a more adaptive approach to managing bluenose and further work with Fisheries Inshore New Zealand to develop the management procedure and useful data inputs such as ageing.

FINZ essentially rejects all options barring the *status quo*, but makes an alternative submission to adopt its management procedure, which indicates a reduction of the combined TAC and TACC by 62 tonnes from 1 October 2016 (Option 1a). The management procedure included updated CPUE information up to the end of April 2016, but that information was not reviewed by the science working group as it was not available in time.

FINZ submits that the rebuilding plan adopted by MPI is unnecessarily tied to the HSS policy guidance defaults of a target biomass of 40% B_0 within a time span of 20 to 26 years, and that the Act provides you with flexibility to deviate from the HSS. FINZ notes that its management procedure uses a target of rebuilding bluenose stocks to 35% B_0 in 30 years, and that these differences are immaterial given the decadal timeframes and uncertainty in the science.

FINZ submits its view of several benefits associated with adopting the management procedure, including ensuring the rebuild, being more responsive to change, and growing the information base through industry's ongoing commitment to its monitoring and management plan. FINZ notes that while the additional data can be collected without adopting the management procedure, the certainty provided by the procedure and ongoing economic productivity would support industry's continuing investment in collecting data.

FINZ provided information from quota owners on economic impacts of the proposals. A key factor was that a reduction in the amount of bluenose annual catch entitlement (ACE) could create gaps in vessels' catch plans and undermine their economic viability. FINZ submits that one quota owner suggested that four vessels might be affected and could need to change to a different type of fishing or sell up. FINZ notes another quota owner's view that a 20% TACC reduction would likely result in the loss of one of its three full-time fishers who had some $250 -500k capital investment in vessel as well as job losses for a skipper and two deck hands. Other entities could suffer similar losses.

FINZ notes that while such impacts are a part of commercial fishing, there is no sustainability imperative in bluenose that requires such losses and that the management procedure would be a better way to ensure sustainability and provide for utilisation.

FINZ notes that the Discussion Document did not contemplate changes to the existing allowances for recreational or customary fishing, and goes on to submit that the Document implies an underlying policy position to not only provide in full for recreational demand, but to provide more than that.

FINZ submits on general matters peripheral to the Discussion Document and relating to MPI's fisheries management approach and procedures. These matters are not for your decision within the current sustainability review, but MPI notes that it is working with FINZ and others in industry on pathways to address the very matters raised.

Sanford supports Option 1 for no changes to management settings for the upcoming fishing year. Sanford supports the management procedure developed by FINZ and the associated Option 1a.

Sanford submits that industry have supported and funded the development of the management procedure by FINZ/Trident. They submit that MPI did not pay this enough regard.

Sanford also raises the issue of allocation. They question why the commercial sector should be the only one to experience a reduction in catch limits when the customary and recreational sectors are also responsible for ensuring sustainable fishing.

3.2.2 Option 2

Chatham Finfish supports Option 2 to prevent further depletion of BNS in area 4 without undue penalties on existing fishing, but on the proviso that a separate BNS 4 stock is created along with its own rebuilding plan. Chatham Finfish considers that a separate BNS 4 QMA would better provide for sustainability outcomes by managing at a finer spatial scale. Further information on this is provided under section 5.1.6 below.

Ngati Kahungunu Iwi Incorporated supports a reduction of the total commercial catch for bluenose to 900 tonnes.

Nga Hapu o Te Uru o Tainui submits support for a reduction of the TAC and TACC for bluenose as proposed under either Option 2 or 3. The submission refers to the current assessment of bluenose stock status being below the rebuilding plan objective of 40% and that the *status quo* catch limits will not achieve the target, which poses a greater sustainability risk than Options 2 or 3.

Nga Hapu o Te Uru o Tainui submits that the proposed catch limits do not impact on customary fishing rights and that the existing allowances for customary catch of bluenose be retained at 9 tonnes.

3.2.3 Option 3

NZSF submits that Option 3 must be the minimum TAC and TACC reduction considering the state of the stock.

NZSF submits that bluenose is a poorly understood species, and that spawning locations, nursery areas, migratory patterns, species range, natural age structure, and recruitment strength are all unknown. NZSF submits that stocks with these characteristics are highly susceptible to growth overfishing and at risk of stock recruitment relationships depressing productivity.

NZSF submits that bluenose shows all the characteristics of an overexploited stock in need of rebuilding. The submission adds that rebuilding long-lived, low-productivity stocks is a long process that requires aggressive catch reductions to allow older fish to become more common in the population.

NZSF submits that the HSS rebuilding biomass target of 40%B_0 within 2x T_{MIN} is a minimum standard and not a moving target. NZSF submits that the HSS does not anticipate accepting risk beyond that and it is in everyone's interest to get there on or before time.

NZSF submits that section 9(a) of the Act requires a greater degree of caution from decision makers because the knowledge of species associated with and dependent on bluenose is virtually zero. In addition, section 10(b) and (c) import a degree of caution when assessing risk because we know that biological information on bluenose is uncertain and unreliable. NZSF submits that you must be fully informed of the risks associated with all available management options.

NZSF submits that there must be no acceptance of a 'deal' where catch reductions are exchanged for promises of additional data and hopes for a brighter view. The submission suggests that government must do what it is statutorily obligated to do, which is to reduce commercial catch and impose a rebuilding plan supported by independent monitoring and science.

3.3 ALTERNATIVE OPTIONS PROPOSED IN SUBMISSIONS

The **Iwi Collective Partnership** submits that although there are sufficient grounds to support Option 1, it suggests an alternative proposal to set the combined bluenose TACC at 1000 tonnes – a reduction of 100 tonnes, with retention of the allowances as proposed under Option 1. The alternative TAC would be 1095 tonnes.

The Iwi Collective Partnership suggests that its alternative option is appropriate given the research and commitment that industry has demonstrated over the past 5 years, and industry's view that the 2016 stock assessment shows clear signs of rebuilding. The submission notes that there is a difference of view between industry and MPI about the rebuilding timeframe, and that it is likely that the rebuilding and management action can be delayed.

FINZ submits that an alternative option (Option 1a) should be adopted based on the management procedure they have developed. This option incorporates CPUE data up to 30 April 2016. Option 1a proposes a TACC reduction of 62 tonnes which the management procedure would have otherwise proposed for 2017/18. They submit that the management procedure would then run for two further fishing years and TACCs would be adjusted as necessary. The management procedure would be re-evaluated in 2019 with reconsideration of the biomass target and rebuilding timeframe. For a fuller discussion see section 5.1.2.

3.4 OTHER MATTERS

NZSF submits that it is not convinced of the value of management strategy evaluation for bluenose because of the paucity of validated data for bluenose and that current examples of management procedures only offer support to an industry-preferred view that CPUE is proportional to abundance and that modest increases in CPUE should lead to increased TACCs.

NZSF also submits that it is pointless to monitor bluenose with the intention to alter catch limits frequently in response to signals of CPUE or age. This is because the long-lived, low-productivity nature of the stock with an unknown range and seasonal migration mean that reliable signs of increased abundance will take many years to confirm.

4 Legal Considerations

Legal considerations relevant to bluenose are discussed in the following paragraphs.

4.1 SECTION 8 – PURPOSE OF THE ACT

Option 1 would be associated with the greatest risk of not achieving the HSS rebuilding target and timeframe, although there would be no impact on utilisation in the near term. Option 2 seeks a balance between sustainability risks and undue impact on utilisation, by improving the likelihood of rebuilding within a reasonable time while supporting a reasonable level of catch. Option 3 is more cautious in addressing sustainability risk and provides greatest likelihood of achieving the HSS rebuilding target and timeframe. However, Option 3 would have the greatest impact on utilisation until the biomass target is reached or an interim review indicates greater utilisation might be sustainable.

4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

4.2.1 Associated or dependent species – protected species interactions (section 9(a))

4.2.1.1 Seabirds

Bluenose is taken by target bottom longline fisheries throughout the New Zealand Exclusive Economic Zone (EEZ). Incidental captures of seabirds occur in the bottom longline and setnet fisheries, including black petrel in FMA 1 and 2, that are ranked as at very high risk in the Seabird Risk Assessment.[38] There are a range of recognised best practice mitigation measures in place to minimise seabird captures in the bottom longline fishery. For setnet fisheries there are no standard mitigation measures, however there is a voluntary code of practice and research is ongoing to develop best practice mitigation measures.

4.2.1.2 Marine mammals

According to bluenose longline fishermen, depredation of hooked BNS by orca had increased recently. Future analysis of observer data would inform management responses to this matter. MPI is not aware of any adverse interaction between orca and longline gear targeting bluenose.

4.2.2 Biological diversity (section 9(b))

Bluenose is preyed upon by other fish species, such as broadbill swordfish. The significant decline in bluenose biomass may be having an impact on predator species like broadbill swordfish, subject to the availability of alternative food sources. A decline in abundance may also affect other complex interactions within the ecosystem. For example, bluenose is likely to be an important predator, feeding on tunicates, fish, squid and crustaceans. A change in predation pressure may alter competitive interactions between these species. MPI cannot

[38] The risk was defined as the ratio of the estimated annual number of fatalities of birds due to bycatch in fisheries to the Potential Biological Removal (PBR), which is an estimate of the number of seabirds that may be killed without causing the population to decline below half the carrying capacity. Richard and Abraham (2013).

quantify the scale of the impact of low abundance of bluenose on species interactions, but rebuilding bluenose stocks should improve any existing imbalance.

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

4.2.3.1 Benthic impacts

Bluenose is taken in conjunction with alfonsino in target midwater trawl fisheries directed at the latter species and in target bluenose bottom trawl fisheries. These fisheries are frequently associated with undersea features. MPI has no evidence to suggest bluenose fisheries have a negative impact on benthic habitats.

4.3 SECTION 10 – INFORMATION PRINCIPLES

All scientific 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[39]. Views submitted by tangata whenua and stakeholders have been considered.

4.4 SECTION 11 – SUSTAINABILITY MEASURES

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

a) Section 11(1)(a): take into account any effects of fishing on any stock and the aquatic environment. All information relevant to your decision is discussed above under 'Section 9 - Environmental Principles'.

b) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For this stock a range of measures apply as outlined in the background section of this paper.

c) Section 11(1)(c): take into account the natural variability of the stock. The available biological information is discussed under section 1.1.1 above. As a long-lived species, bluenose is not known to have high natural variability.

d) 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 is not aware of any other policy statements, plans or strategies that should be taken into account for the bluenose fishery.

e) Section 11(2)(c): have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (HGMPA) when setting or varying the TAC relating to stocks with boundaries intersecting with the Park. Sections 7 and 8 of the HGMPA are discussed in the Statutory Considerations in the introductory section of this Discussion Document.

   Section 7 recognises the national significance of the Hauraki Gulf, including its capacity to provide for the relationship of tangata whenua with the Gulf and the social, economic,

[39] It should be noted that FINZ proposed option 1a which used recent CPUE data not reviewed by the science working group as it was not available in time.

recreational and cultural well-being of people and communities. Section 8 sets out objectives for the management of the Gulf. Objectives of relevance include the protection and enhancement of the natural, historic, and physical resources of the Gulf; the protection and enhancement of those resources with which tangata whenua have an historic, traditional, cultural, and spiritual relationship; and the maintenance and enhancement of the contribution of the Gulf's resources to the social and economic well-being of the people and communities of the Gulf and New Zealand.

Some inshore parts of the BNS1 stock boundaries intersect with the Park boundaries, however, there is little fishing for bluenose in these areas. Nevertheless, the resources of the Gulf include bluenose and rebuilding the bluenose stock is consistent with the above objectives.

f) Section 11(2)(d): have regard to any planning document lodged by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011. No planning documents applicable to the bluenose fishery have been lodged.

g) Section 11(2A)(b): take into account any relevant fisheries plan approved under section 11A. No plans have been approved under section 11A that you need to take into account.

h) Sections 11(2A)(a) and (c): take into account any conservation or fisheries services, or any decision not to require such services. The management approach section of this paper explains that work is underway to determine a management procedure for this fishery and that industry has implemented a monitoring and data collection programme. In the interim your decisions should take into account that no research services are confirmed in this fishery for the upcoming fishing year.

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.

The proposals for bluenose were discussed with the following iwi forums - Te Waka a Maui me Ona Toka and Mai I Nga Kuri a Wharei ki Tihirau, as well as with iwi on the Chatham Islands. No specific input into developing the options was provided by these forums and kaitiakitanga.

4.6 SECTION 13 – SETTING THE TAC

In cases such as bluenose, where current B_{MSY} is not known, section 13(2A) of the Act provides for you 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_{MSY} level.

MPI considers the options presented in this paper are not inconsistent with the requirements under section 13(2A) that the stock should be managed at or above B_{MSY}, or moving the stock towards or above B_{MSY} (as discussed in section 1.4.1 above). The Act enables you to consider the way in which and rate at which a stock is moved towards a level that is at or above that which can produce the maximum sustainable yield. In this consideration, you shall have regard to such social, cultural, and economic factors as you consider relevant.

While you are not bound to follow the guidance of the HSS and Guidelines, they do suggest that an appropriate proxy B_{MSY} target for bluenose should be 40% of the unfished biomass and the rebuilding timeframe should be within $2xT_{MIN}$ (as explained above in section 2.2.1).

The relative economic impacts of the proposed options are outlined below.

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 Māori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC.

4.7.1 Recreational allowance

No changes to the recreational allowance are proposed under any option as the key impact to be managed is the level of commercial catch. The best estimate of recent recreational catch of bluenose from all QMAs is 46 tonnes and is within the current allowance of 63 tonnes. These quantities represent approximately 4 and 6% of the current TACC respectively. At these levels of catch, any reductions would be unlikely to influence the rebuild. MPI notes that substantial reduction was made to recreational daily bag limits (effectively reduced from 20 bluenose to 5 per day) as part of the management decisions in 2011 aimed at rebuilding the stocks. The reduced bag limits came in to effect in 2012.

4.7.2 Māori customary allowance

The best available information suggests that allowance is adequate to enable iwi to operate customary fishing regulations and to recognise and provide for customary food gathering by Māori as required by Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.
Therefore, there is no indication of a need to adjust allowances.

4.7.3 Other sources of fishing-related mortality

Information to set the allowance for other sources of mortality for bluenose stocks is uncertain. In the absence of additional information, MPI proposes that the allowance be retained at the current setting of approximately 2% of the TACC for each option.

4.7.4 TACC

Option 1 retains the current combined TACC at 1100 tonnes and will have no impact on commercial fishing. At this level of catch, the stock assessment suggests that bluenose biomass decline has halted or increased slightly in recent years. However, the biomass projections under some scenarios show little or no increase, and at this level of catch the interim target biomass is unlikely to be achieved within the timeframe suggested by the HSS and Guidelines. This would mean that bluenose biomass would remain below the target suggested by the HSS for a period longer than deemed appropriate for a low-productivity stock. No specific rationale has been provided to justify this approach, although industry submitters generally favour this option and note that it will provide incentives to maintain industry's commitment to its monitoring and data collection programme.

Option 1a proposes a minor reduction of 62 tonnes to the TACC. The Option was not in the Consultation Document but was proposed by FINZ in their submission based on a MP and supported by three other submissions. MPI does not support Option 1a for the reasons outlined in section 5.1.2. However, MPI is keen to implement a management procedure for bluenose, and is therefore committed to working towards implementing a procedure for the 2017/18 fishing year.

Option 2 would reduce the combined TACC to 900 tonnes and would have some impact on commercial fishing, particularly for the individual stocks with lower TACCs. At this level of catch, the assessment suggests that there is greater likelihood of stock biomass increasing faster and reaching the interim target closer to the HSS timeframe. This option provides an intermediate step that will ensure a faster rebuild while having a moderate impact on fishing, but is likely to require further management action in the coming years to achieve the HSS defaults.

MPI prefers this option as it places more weight on a cautious approach to utilisation and ensuring the rebuild, because bluenose is a low-productivity species and there is uncertainty around the best available information on stock status and yields. Ultimately, a cautious approach should not result in loss of utilisation because, being long-lived, these fish will still be available to be caught in the longer term.

One industry submitter and two iwi submitters supported Option 2, generally to ensure more certainty about a rebuild.

Option 3 would reduce the TACC to 620 tonnes to implement the final step in the phased reduction decided in 2011. This option would have considerable impact on fishing given a reduction in catch of approximately 40%. However, the assessment projections show that under this option there is the greatest likelihood of rebuilding the stock to the interim target and within the timeframe suggested by the HSS defaults. Industry submitters generally noted that Options 2 and 3 would not create the right incentives to maintain industry's monitoring and data collection commitments. One recreational submitter supported Option 3 as the minimum reduction considering the state of depletion of the stock and its biological characteristics as a long-lived and low-productivity species.

4.8 SECTION 75 – DEEMED VALUE RATES

Deemed values are an economic tool that incentivises commercial fishers not to catch in excess of their individual annual catch entitlements. Deemed value rates for bluenose were examined, but none of the metrics in the deemed value guidelines were triggered, hence no changes are proposed.

5 Management Options

The options presented in this Decision Document are consistent with those consulted on, and alternative options proposed by submitters are also discussed.

5.1 ANALYSIS OF OPTIONS

5.1.1 Option 1

Option 1 (*status quo*) sets out the current TAC, TACC, and allowances for customary Maori interests, recreational fishing, and for fishing-related mortality as follows:

- Retain the combined TAC of 1195 tonnes;
- Retain the combined TACC of 1100 tonnes;
- Retain the combined allowance for other sources of fishing-related mortality of 23 tonnes (around 2% of TACCs), and;
- Make no changes to allowances for Māori customary and recreational interests.

Option 1 is supported by most industry submitters, generally based on their view that the bluenose stock has shown good signs of increasing over the recent 5 years under the *status quo* TAC and TACC. Industry submitters also note that the rebuilding target and timeframe being adopted by MPI are based on defaults, and that alternative pathways to rebuilding bluenose should be considered.

Section 13 requires that, for a stock below B_{MSY}, you set a TAC to move the stock towards or above B_{MSY}. The way and rate to achieve the B_{MSY} level is at your discretion, taking into account the stock's biology and such social, cultural and economic factors as you consider to be relevant.

Option 1 is not supported by MPI. At this combined TAC and TACC, the best available information from the 2016 stock assessment projections suggest this option will not result in the stock rebuilding to the default target within the timeframe as outlined in the HSS (Figure 4). While accepting that the available information shows that the biomass decline has been halted under the current combined TAC and TACC, the 2016 assessment shows only a slight increase in biomass over the last 5 years. Given the low-productivity characteristics of bluenose, MPI considers it is reasonable that the HSS defaults should be followed unless alternatives are justified. The Plenary Report notes that current bluenose biomass is as likely as not below the soft limit (20% B_0), in which case the HSS suggests that a formal and time-bound rebuilding strategy be applied. MPI has not been presented with suitable rationale to justify departing from the defaults and remains concerned that the sustainability risk to the stock is highest under Option 1. This option may delay the rebuild, and the stock will likely remain at lower levels for longer than under Options 2 and 3. It is likely that under this option further reductions will be required in the future to achieve the target and timeframe.

However, you should note that you are not bound to follow the HSS guidance, and that you have discretion to choose an alternative way and rate in which to move bluenose stock biomass towards or above B_{MSY}.

5.1.2 Option 1a (FINZ proposal)

Option 1a proposes to:

- Reduce the combined TAC from 1195 tonnes to 1133 tonnes;

And would require

- Reducing the combined TACC from 1100 tonnes to 1038 tonnes;
- Reducing the allowance for other sources of fishing-related mortality to 22 tonnes;

- Making no changes to allowances for Māori customary and recreational interests.

Option 1a proposes a minor reduction of 62 tonnes to the TACC. The Option was not in the Consultation Document but was proposed by FINZ in their submission and supported by three other submissions. It is based on a management procedure which is a modern approach to fishery management and is typically comprised of a management objective(s), agreed data collection and monitoring tools, and a set of rules which translate the data into a proposed management response (e.g. TACC). By design, the set of rules should lead to the management objective being achieved.

FINZ submits several benefits associated with adopting the management procedure, including ensuring the rebuild, being more responsive to change, and growing the information base through industry's ongoing commitment to its monitoring and management plan.

The Science Working Group has accepted the scientific aspects of the MP, but MPI believes that the parameters of the MP are not appropriate to be used as a basis for managing bluenose. The MP is based on parameters of 35% B_0 within 30 years, as opposed to the 2011 Ministerial decision, and the HSS, which specify 40% B_0 within 2 x T_{MIN} (20-26 years). As noted in section 2.2.1 these HSS defaults are a compromise between the fastest possible rebuild (if the fishery was closed), maintaining a viable fishery during the rebuild, and making meaningful progress over both the short and long terms towards rebuilding the stock. Experience elsewhere in the world suggests that timeframes much longer than one human generation (~25 years) tend to reduce the incentive to take immediate action towards initiating a rebuild. While FINZ submits that the differences in targets are immaterial given the decadal timeframes and uncertainty in the science, MPI contends that the projected rebuild rate at these catch limits is not appropriate for a shared fishery such as bluenose. MPI advised FINZ of concerns regarding departure from the HSS and requested that robust justification be provided, however, MPI does not consider that to have been provided.

MPI notes that the recent CPUE used in the proposed MP was not reviewed by the science working group as it was not available in time. In addition, MPI notes that the MP does not encapsulate the uncertainty in the biological parameters as is done in the assessment and projections relied on by MPI.

For these reasons MPI does not support Option 1a. However, MPI is keen to implement a management procedure for bluenose, given the benefits outlined above, and is therefore committed to working towards a procedure which can meet the HSS targets. MPI recommends Option 2 as an interim option, with a view to developing an MP in collaboration with, or independent of, industry. Should this not eventuate over the coming year, other management measures may be necessary to continue the rebuild to the specified target biomass and timeframe for the 2017/18 fishing year.

It should be re-iterated that the HSS is not legally binding, and that you have discretion around the way and rate at which a stock rebuilds. Section 13 requires that, for a stock below B_{MSY}, you set a TAC to move the stock towards or above B_{MSY}. Both the MP's parameters and the HSS defaults are not inconsistent with your statutory requirements.

Impact

As this option was not consulted on the impact has not been established. However, the relatively small 62 tonne reduction is not expected to have a significant socio-economic impact.

5.1.3 Option 2 (MPI Preferred)

Option 2 proposes to:

- Reduce the combined TAC from 1195 tonnes to 990 tonnes;
- Reduce the combined TACC from 1100 tonnes to 900 tonnes;
- Reduce the allowance for other sources of fishing-related mortality to 18 tonnes;
- Make no changes to allowances for Māori customary and recreational interests.

Option 2 is supported by one industry and two customary submitters. The industry submitter seeks to prevent further depletion, particularly in the area around the Chathams. Two customary submitters support Option 2, generally to ensure the growth and sustainability of the bluenose fishery.

Option 2 reduces TACs and TACCs by approximately 20%. Option 2 proposes a level of utilisation that is lower than Option 1 and therefore more likely to support the stock to increase, but is still unlikely to achieve the target within the rebuilding time frame. MPI considers that while Option 2 is more likely to put the stock on course to achieving the rebuild than the *status quo,* it would need to be supported by further work in the short term to ensure that rebuild objectives are met. Only one projection based on the 900 tonne TACC achieved the target within the time frame (Figure 5). However, MPI believes that this option is the most appropriate balance of sustainability and utilisation. Given that the bluenose stock has been under the target (40% B_0) for about 16 years, MPI considers it important to take action in the short term to ensure the rebuild progresses towards the HSS defaults. These are minimum target biomass levels and rebuild times which reflect international best practice in sustainable fisheries management.

Impact

Compared with the *status quo*, Option 2 has higher short-term costs. It proposes a 200 tonnes reduction from the TACC, worth around $1 million.[40] In comparison, the larger reduction under Option 3 (discussed below) has short-term costs of approximately $2.6 million (see Table 6). In addition to the loss in revenue illustrated by these economic indicators, there will also be potential effects on the nature of the commercial fishery such as whether it is viable for some operators to continue fishing with certain methods in certain areas, as well as impacts on industry's monitoring and data collection programme. In general, these effects will be greater under Option 3 than under Option 2, and are discussed below.

5.1.4 Option 3

Option 3 proposes to:

- Reduce the combined TAC from 1195 tonnes to 704 tonnes;
- Reduce the combined TACC from 1100 tonnes to 620 tonnes;
- Reduce the allowance for other sources of fishing-related mortality to 12 tonnes;
- Make no changes to allowances for Māori customary and recreational interests.

One recreational submitter supports Option 3, based largely on the uncertainty around the biological characteristics of bluenose and that latest information that suggests the current biomass remains far off the target.

Option 3 reduces TACs and TACCs by approximately 40%. Option 3 is the most cautious option in regards to sustainability. The proposed combined TACC of 620 tonnes is consistent

[40] Based on port price. These figures should be taken as comparative only, as TACCs may not be fully caught.

with the final reduction from the rebuilding plan decided in 2011. The 2016 stock assessment and projections indicate that the proposed catch level is generally consistent with achieving the rebuild. Figure 6 demonstrates that there is greatest certainty of meeting the rebuild target and timeframe under this catch limit than under Options 1 and 2. Reaching the target is likely to result in greater sustainable yields, higher catch rates, and stocks being better buffered against environmental variability.

Impact
Compared with Options 1 and 2, Option 3 has the highest short-term costs; 480 tonnes would be cut from the combined TACC, representing a loss of around $2.6 million.[41] There would also be wider effects on the nature of the bluenose fishery, and likely impacts on industry's commitment to monitoring and data collection that is important for management.

In 2014/15, 100 fishers landed bluenose. For the majority of these fishers (82%), bluenose made up less than 10% of their total landed catch weight. This suggests the most fishers currently taking bluenose are not overly dependent on bluenose landings and may be able to absorb the impact of the proposed reductions. However, for some fishers, bluenose landings represent a significant proportion of their catch and income. In 2014/15, there were 10 fishers for whom bluenose represented over 30% of the weight of their total landed catch. The reduction in the availability of ACE is likely to force these fishers to either target other stocks or stop fishing altogether. Many affected fishers may initially transfer effort to other long-line fisheries. In response to previous consultations it was noted that with long-line catches of hapuku/bass and ling already being a high proportion of the TACCs in these fisheries, there is little capacity in those fisheries to absorb transfer of effort from the bluenose fishery.

Reducing the combined total TACC to 620 tonnes is likely to reduce target bluenose fishing in most areas and may impact bluenose bycatch fisheries in some areas. In recent years, for some bluenose stocks (BNS 3 and BNS 7), bycatch levels were close to or exceeded the proposed TACCs under both Option 2 and 3. This could mean target fisheries such as hoki, ling, alfonsino and hapuku/bass are constrained by the availability of bluenose ACE. MPI is not able to quantify this impact on target fisheries where bluenose is a bycatch. MPI notes if bycatch exceeds the TACCs this could impact the time frame required for rebuilding bluenose stocks.

The TACC reductions proposed in Options 2 and 3 will likely lower the overall quota value of the bluenose fisheries in the short-term. However, if the management strategy is viewed as positive and likely to lead to better catches in the future (and possible TACC increases), then quota prices may increase over the medium to long-term.

Under Option 3, the stock is projected to meet the rebuild target within the time frame under almost all scenarios, which will likely give greater sustainable yields and higher catch rates in a shorter time than under Options 1 and 2. However, the targeted fishery may cease and the socio-economic impact would be significant.

5.1.5 Alternative options proposed by submitters

The Iwi Collective Partnership proposes an alternative that would see the combined TAC and TACC reduced by 100 tonnes. They submit that the alternative smaller reduction is appropriate given the research and commitment industry has demonstrated over the last 5 years, and the likelihood that rebuilding and management action can be delayed.

[41] Based on port price. These figures should be taken as comparative only, as TACCs may not be fully caught.

Fisheries Inshore New Zealand submits that an alternative option (Option 1a) should be adopted based on the management procedure they have developed. This option incorporates CPUE data up to 30 April 2016. Option 1a proposes a TACC reduction of 62 tonnes which the management procedure would have otherwise proposed for 2017/18. They submit that the management procedure would then run for two further fishing years and TACCs would be adjusted as necessary. The management procedure would be re-evaluated in 2019 with reconsideration of the biomass target and rebuilding timeframe.

MPI does not support these alternatives for a number of reasons. The best available information suggests that a catch reduction is required in order to rebuild the stock to the HSS target level within the timeframe. The options presented in the Discussion Document are based on the best available information and on achieving the HSS rebuilding target and timeframe as agreed by you in his 2011 decision. The Iwi collective's proposal for a 100 tonne reduction is not based on a defined target or scientific evidence. The collective submit that management action can afford to be delayed, however MPI reiterates that action has been deferred since 2013 when the third planned reduction was not made. Option 1a presented by FINZ and supported by three industry submissions is based on a management procedure that has not been accepted as a basis for management by MPI or by you. It does not achieve the HSS defaults which reflect minimum levels for MSY compatibility. A departure from the HSS defaults is possible but requires justification; MPI does not believe that adequate rationale has been provided by FINZ to justify such a departure. However, MPI is keen to continue developing the management procedure over the coming year in order to reach agreement on the specifics (see section 5.1.2).

5.1.6 Apportioning any changes across the individual bluenose stocks (BNS 1, 2, 3, 7, 8)

In line with the rebuild measures to date, and as set out in the Discussion Document, MPI proposes that any catch reduction is spread proportionally across the TACs (and TACCs) for all the bluenose QMAs. The catch limits and allowances under each of the proposed options, spread proportionally by QMA, are shown in Table 4.

However, there are other choices that could be made for how the reduction is spread across QMAs. One industry submitter suggested that BNS 3 was not showing a decline in the latest assessment and so there should be no reduction to the TACC for that stock. Further, the submitter's view is that there is no convincing evidence that there is any connectivity between all BNS stocks to justify management on a national basis, other than for cost effectiveness.

MPI acknowledges there is some uncertainty around stock relationships, however, the single stock hypothesis is currently the accepted basis for assessment and management. This is supported by evidence of generally similar trends in catch and CPUE across the fisheries in each of the individual bluenose stocks (see section 2.1.1). Apportioning any required catch reductions to QMAs helps maintain the value of quota holdings and proportionally shares sacrifices needed to rebuild the stocks.

Table 4: Proposed TACs, TACCs and allowances for BNS 1, 2, 3, 7 and 8 by stock (all values in tonnes)

				Allowances		
Stock	Option	TAC	TACC	Customary	Recreational	Other mortality
BNS 1	1 (*status quo)*	425	400	2	15	8
	2	351	327	2	15	7
	3	251	230	2	15	4
BNS 2	1 (*status quo)*	474	438	2	25	9
	2	392	358	2	25	7
	3	279	247	2	25	5
BNS 3	1 (*status quo)*	194	171	2	18	3
	2	162	140	2	18	2
	3	114	93	2	18	1
BNS 7	1 (*status quo)*	69	62	2	3	2
	2	57	51	2	3	1
	3	40	34	2	3	1
BNS 8	1 (*status quo)*	33	29	1	2	1
	2	28	24	1	2	1
	3	20	16	1	2	1

Economic indicators and impact by individual bluenose stock

To frame the options set out above, the nature of the economic impact to each bluenose fishery is suggested by looking at the current indicators of the value of the fishery. Table 5 shows the port[42], export, ACE and quota prices for 2014/15, while Table 6 demonstrates the projected potential changes in landings revenue in 2016/17. These assume the total TACC is being caught in each QMA.

42 Port price is the surveyed average price paid by licensed fish receivers ('LFRs') to independent fishers for fish landed to those LFRs, as set or updated by rule 12 of the Fisheries (Cost Recovery) Rules 2001 (see rule 3: Interpretation). The following limitations are known about port prices: survey replies may be skewed because industry know they are used to set cost recovery levies; does not differentiate harvest method – fish caught by one method over another may command a price premium; ownership structure can influence port price – port prices change depending on whether the LFR is catching and landing the fish themselves, using contract fishers or taking fish from an independent fisher; does not reflect price differential for different grades of fish – fishers receive different landed prices depending on the size of the fish caught.

Table 5: Current indicators of the economic value of the BNS fisheries

QMA	2014/15 Port Price ($/kg)	2014/15 Export Price ($/kg)*	2014/15 ACE Price ($/kg)**	2014/15 Quota Price ($/kg)***
BNS 1	$6.46	$10.53	$2.16	$23.93
BNS 2	$5.40	$10.53	$2.30	$19.39
BNS 3	$3.24	$10.53	$2.19	$12.95
BNS 7	$4.23	$10.53	$1.45	$15.32
BNS 8	$5.76	$10.53	$1.35	N/A****

* Meatweight export price for H & G, whole and other form, both chilled and frozen BNS for 2015 calendar year.

** Average price for 2014/15 fishing year.

*** Average price from 2004/05 fishing year to 2014/15 fishing year.

**** Not enough quota trades of BNS8 to determine a valid quota price.

Table 6: Summary of potential decreases to landings revenue in 2016/17

QMA	Option 1		Option 2		Option 3	
	Port Price	Export Price	Port Price	Export Price	Port Price	Export Price
BNS 1	$0	$0	$471,580	$768,690	$1,098,200	$1,790,100
BNS 2	$0	$0	$432,000	$842,400	$1,031,400	$2,011,230
BNS 3	$0	$0	$100,440	$326,430	$252,720	$821,340
BNS 7	$0	$0	$46,530	$115,830	$118,440	$294,840
BNS 8	$0	$0	$28,800	$52,650	$74,880	$136,890
TOTAL	$0	$0	$1,079,350	$2,106,000	$2,575,640	$5,054,400

6 Other Matters

A few management matters outside of your immediate decisions on setting and allocating the TAC were raised in response to the review. The matters are discussed below. Overall, MPI considers that the matters raised indicate the need for continuing to work with stakeholders to discuss the range of approaches to rebuilding bluenose stocks and managing them in the future.

6.1 MANAGEMENT PROCEDURE

Industry has proposed a management procedure to guide the future management of bluenose. The Science Working Group accepted the technical aspects of the management procedure for bluenose, but MPI has not accepted it as a basis for stock management. MPI is concerned that the management procedure does not achieve the HSS defaults for bluenose, but aims for a lower target biomass reached in a longer time. In MPI's view, adequate rationale for this was not put forward. However, MPI considers that management procedures can provide useful guidance for management and wishes to continue working towards an acceptable management procedure for bluenose. MPI recommends Option 2 as an interim option, with a view to developing an MP in collaboration with, or independent of, industry. Should this not eventuate over the coming year, other management measures may be necessary to continue the rebuild to the specified target

biomass and timeframe for the 2017/18 fishing year. Factors such as raised in a recreational group's submission, including uncertainty in biological information and a suitable frequency for review of bluenose management, would be considered.

6.2 SEPARATE QMA FOR THE CHATHAM ISLANDS

The Chatham Islands Finfish Association supports Option 2, but on the proviso that consideration is given to creating a separate QMA for bluenose around the Chatham Islands.

You are able to recommend that the Governor General subdivides a QMA if you consider it to be necessary to ensure sustainability, or if 75% of quota owners have requested the change. MPI notes that there is insufficient evidence to suggest a separate biological stock around the Chathams, hence it is unlikely that sustainability reasons could support the need for change. The submission from the Association makes no mention of the proportion of quota owners in support of the proposal. MPI suggests that this form part of the discussion of wider management issues with all stakeholders.

7 Conclusion

The best available information suggests that current bluenose biomass is well below the target and is as about likely as not to be below the soft limit (20% B_0). The HSS requires in these circumstances that a formal and time-bound rebuilding strategy be applied. A rebuilding strategy has been in place since 2011, however, the final of three staged reductions was deferred, meaning that current catch is set at 2013 levels. The stock did respond immediately to the first two reductions, however, at current catch levels the stock is not projected to reach the HSS targets (40% B_0 within 2 x T_{MIN}) as determined by you in 2011. Three options were consulted on to continue the stock rebuild, each of which MPI believe meet your obligations under the Act.

Option 1 (*status quo*) was preferred by the majority of submissions; these all came from industry. MPI does not support this option as the latest projections indicate that the stock is very unlikely to meet the HSS targets under this scenario. FINZ submission suggests an 'Option 1a' based on the management procedure they have developed. Under this option there would be a small reduction to the TACC effective from 1 October 2016. MPI does not support this option as the parameters of the management procedure are not consistent with the HSS defaults and adequate justification for departing from these defaults has not been provided. However, MPI remains committed to developing a management procedure that does meet the HSS targets.

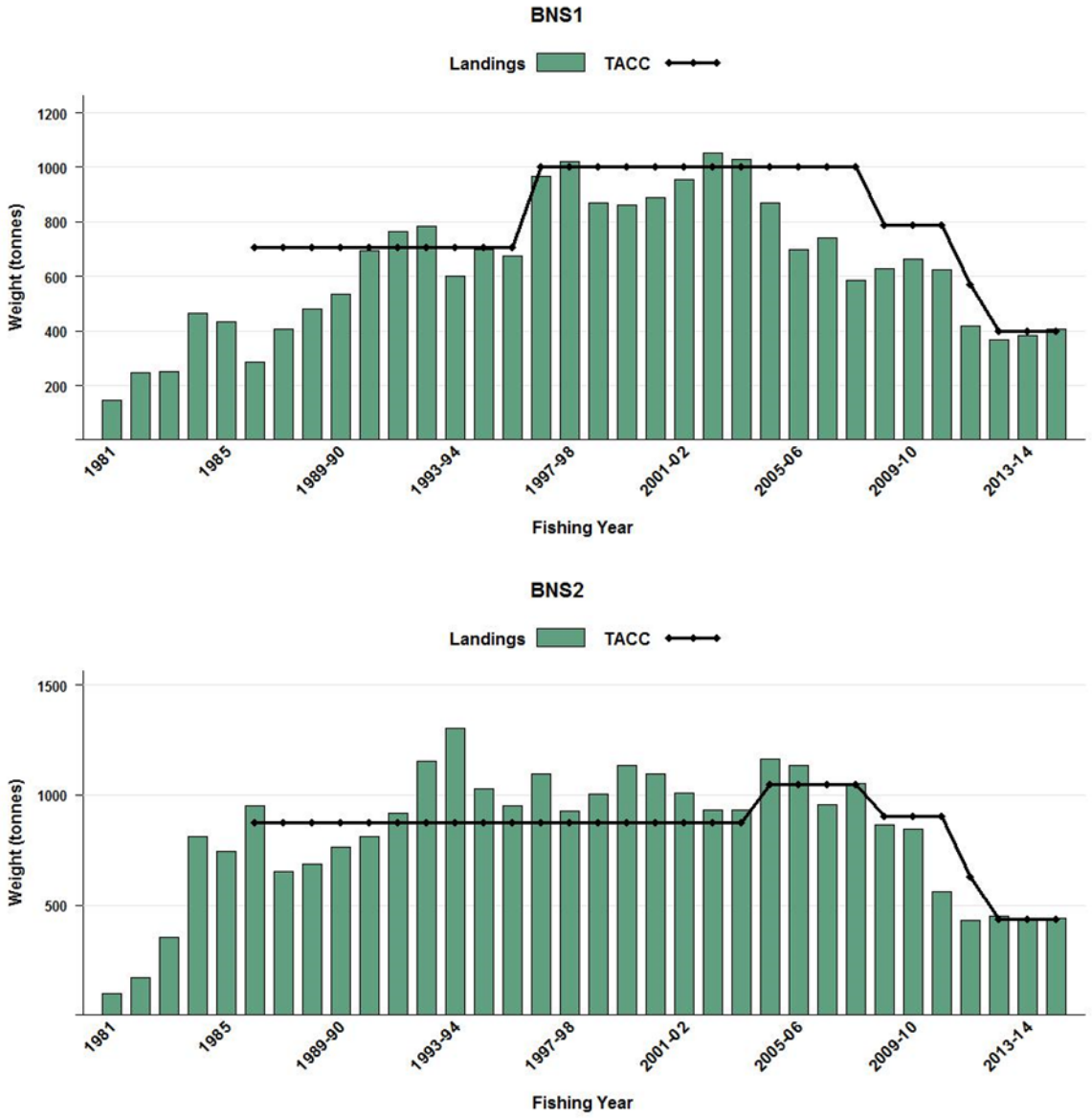
Option 2 was preferred by three submissions and is MPI's preferred option. Option 2 proposes to reduce the combined bluenose TAC and TACC by 200 tonnes from 1 October 2016 to provide greater likelihood than the *status quo* that the stock biomass will achieve the rebuilding target and timeframe. Option 2 is seen as an interim step which allows further work to be done to develop an agreed management procedure for bluenose. MPI remains committed to finding a management procedure that can meet the HSS defaults. With an active management procedure, it should be noted that further catch limit reductions would still likely be needed in order to achieve the rebuilding target and timeframe.

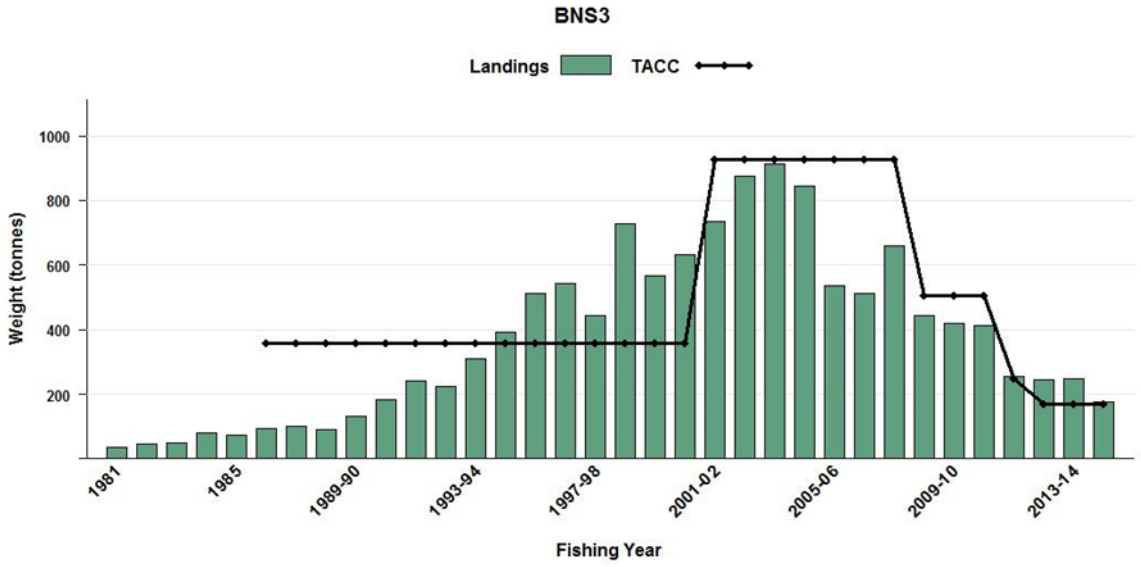
Option 3 was preferred by one submission. This option proposes a 40% reduction to the combined TAC and TACC and gives the greatest certainty that the stock rebuild will meet the HSS target and timeframe, however it will have serious socio-economic impacts. Therefore, it is not preferred by MPI.

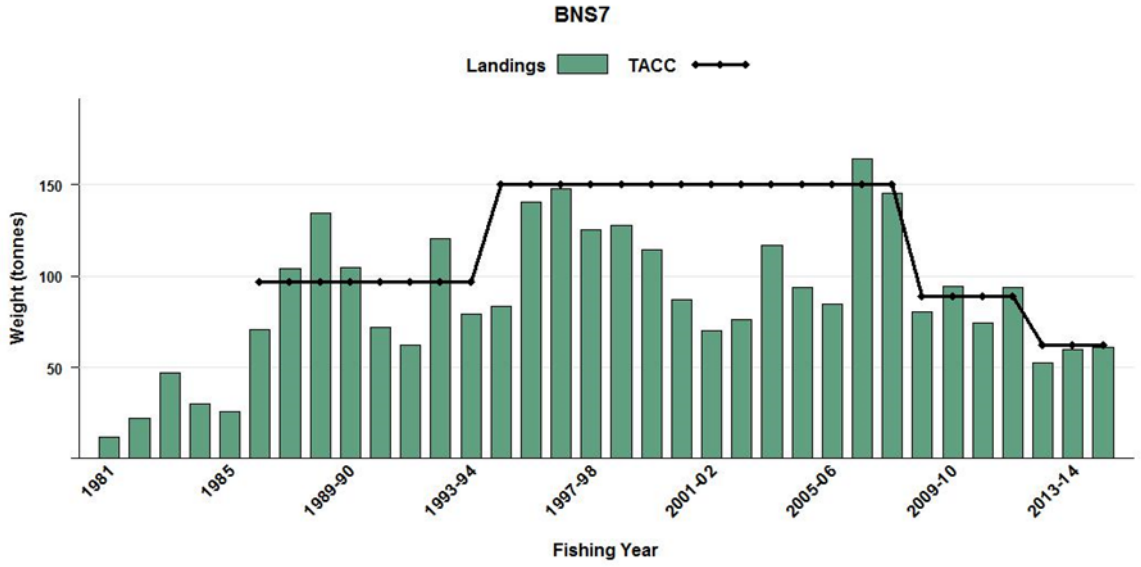
It is important to note that you have broad discretion in exercising your powers of decision-making, as set out in the statutory considerations section above. You will make your own independent assessment of the information presented to you before making a final decision on varying a TAC, allowances and TACC.

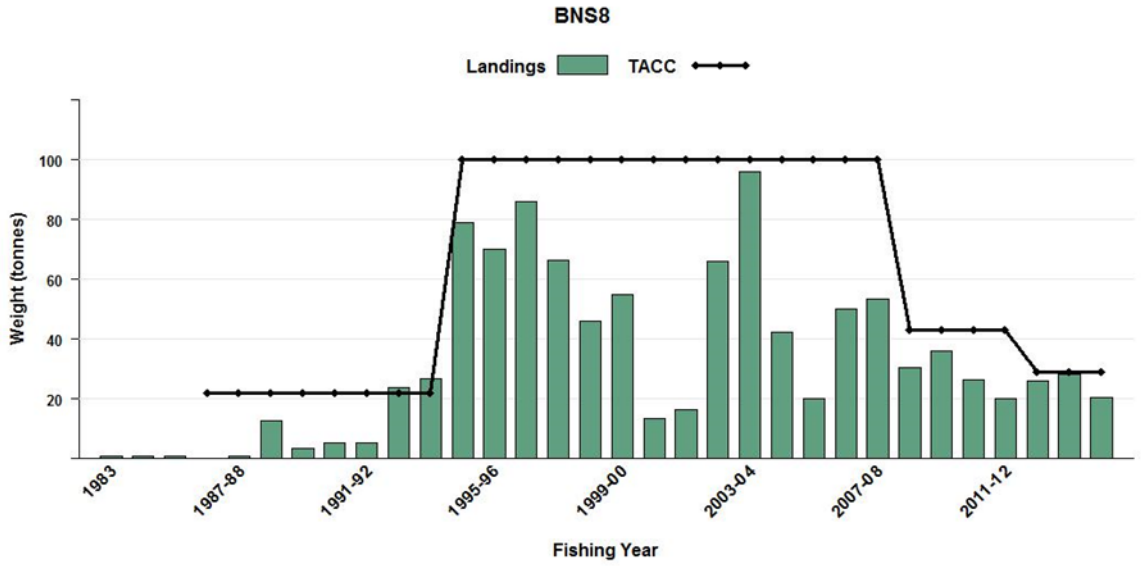
8 Supplementary Information – Bluenose Catch Data

Figure 7: Bluenose catch (tonnes) versus TACC (tonnes) by QMA and fishing




BNS3
Landings
TACC
Weight (tonnes)
1000
800
600
400
200
1981
1985
1989-90
1993-94
1997-98
2001-02
2005-06
2009-10
2013-14
Fishing Year


BNS7
Landings
TACC
Weight (tonnes)
150
100
50
1981
1985
1989-90
1993-94
1997-98
2001-02
2005-06
2009-10
2013-14
Fishing Year


BNS8
Landings
TACC
Weight (tonnes)
100
80
60
40
20
1983
1987-88
1991-92
1995-96
1999-00
2003-04
2007-08
2011-12
Fishing Year

John dory 7 (JDO 7)

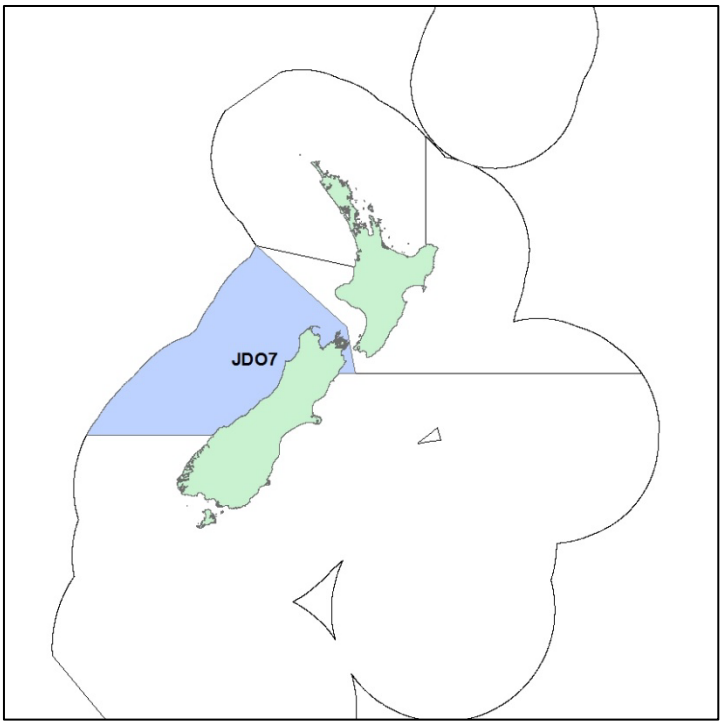


Figure 1: Quota management area (QMA) for JDO 7

1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits for John dory (*Zeus faber*) in quota management area (QMA) 7 (JDO 7; Figure 1).
MPI consulted on three options for management settings for JDO 7 for the upcoming fishing year – one that retains the *status quo* and two that increase the total allowable commercial catch (TACC), as well as the recreational, customary Māori and other sources of fishing-related mortality. These options are set out in Table 1:

Table 1: Proposed TACs, TACCs and allowances for JDO 7 (all values in tonnes)

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 *(Status quo)*	161	150	1	2	8
Option 2	185	170	2	4	9
Option 3 (MPI Preferred)	206	190	2	4	10

Two submissions were received on the proposals for JDO 7. One from Southern Inshore Fisheries Management Company Ltd which supported Option 3, and one from New Zealand Sports Fishing Council (NZSFC) which supported Option 1 (*status quo*), with a suggested one tonne added to both the recreational and customary Māori allowances.

After considering the submissions received, MPI recommends Option 3. This option proposes to increase the total allowable catch (TAC) by 45 tonnes. As part of this option the TACC for

JDO 7 is increased by 40 tonnes, the recreational allowance is increased by two tonnes, the customary Māori allowance is increased by one tonne and the allowance for other sources of fishing-related mortality is increased by two tonnes.

2 Context

2.1 BACKGROUND

2.1.1 Biological characteristics of John dory

John dory are widespread, being found in the eastern Atlantic Ocean, the Mediterranean Sea and around New Zealand, Australia and Japan. They are common in the inshore coastal waters of northern New Zealand, and to a lesser extent in Tasman Bay, to depths of 50 m.

John dory spawn more than once in a season. There appears to be substantial variation in the time of spawning in New Zealand, with spawning occurring between December and April on the northeast coast. A definitive spawning period has not been established for JDO 7. The eggs are large and pelagic, taking 12–14 days to hatch. Initially John dory grow rapidly with both males and females reaching 12 to 18 cm standard length (SL) after the first year. From the second year onwards females grow faster than males and reach a greater maximum length. Females mature at a size of 29 to 35 cm SL and in general, larger females mature earlier in the season and are more fecund. Males mature at 23 to 29 cm SL. John dory have a maximum age of 12 years.

These characteristics mean John dory populations can fluctuate widely as a result of fluctuations in recruitment.

Large fluctuations in stock biomass can provide opportunities for increased utilisation when strong year classes appear in the population. These fluctuations also mean management measures are required to rapidly reduce catches at times of persistent low recruitment.

2.1.2 Fishery description

2.1.2.1 Commercial

John dory in JDO 7 is predominantly caught by bottom trawl targeting flatfish (25%), barracouta (23%) and tarakihi (18%). Interdependencies between these stocks and other species occur as a consequence of being taken as part of a mixed inshore trawl fishery. Landings from JDO 7 increased markedly after 1999/2000, as a result of increasing abundance. No data were available for JDO setnet fisheries in the South Island.

The JDO 7 TACC has been increased three times since 2003/04 and is currently 150 tonnes (Figure 2). The JDO 7 commercial catch limit has been exceeded five out of the last 10 fishing years. Since the TACC was increased in 2012/2013 the TACC has been exceeded once by 742 kg (less than 1%).

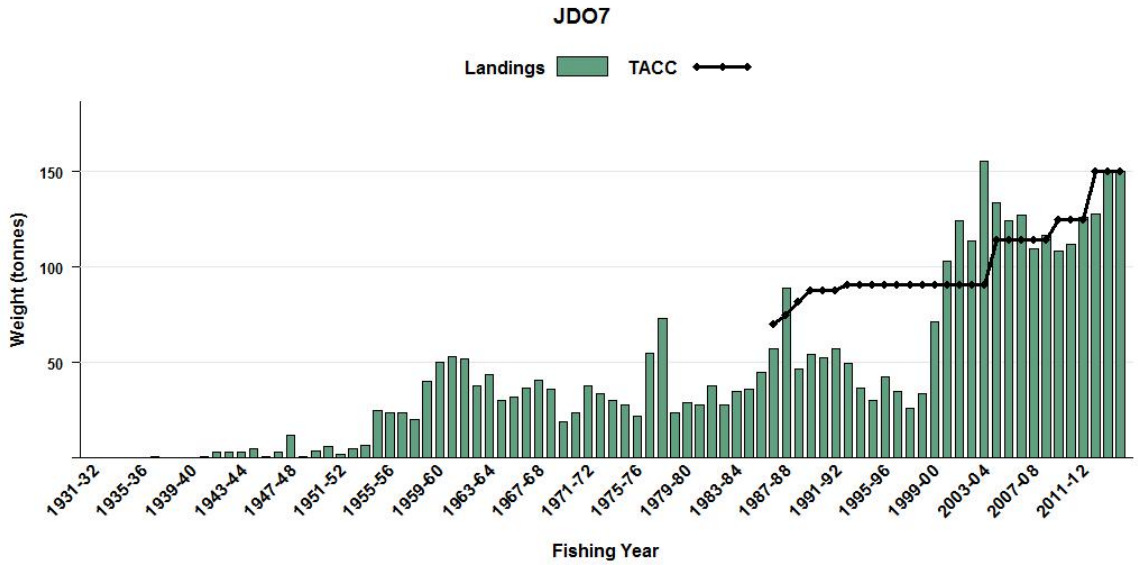


Figure 2: Landings and TACC for JDO 7 from 1931/32 to 2015/16

2.1.2.2 Recreational

There is a medium amount of recreational interest in JDO 7. Most John dory in JDO 7 is caught by rod and line with some spearfishing catch and occasional set-net catch.

The Fisheries (Amateur Fishing) Regulations (2013) (the Amateur Fishing Regulations) which govern the recreational harvest of John dory from JDO 7 include a combined maximum daily bag limit of 20. There is a minimum mesh size of 100 mm for nets.

The most recent information on recreational catch is from a National Panel Survey of recreational fishers. This estimated that 1351 individual fish were harvested in the JDO 7 management area in the 2011/12 fishing year.[43] This is equivalent to a harvest of 1706 kg based on an estimated mean weight of 1.263kg per fish.[3] Given that ramp surveys indicate an increase in recreational fishing effort since 2011/2012, it is likely that this harvest exceeds the current recreational allowance of 2 tonnes. MPI notes that there is uncertainty in using the estimate from 2011/12 to estimate or predict current catches. An updated estimate of recreational catch is expected to be available in 2019.

Recreational catch taken from commercial vessels (under Section 111 authorisation) has averaged approximately 110 kg of JDO 7 per year (5 year average).

2.1.2.3 Māori customary interests

The South Island Customary Fishing Regulations (the SI customary regulations) have been adopted in some parts of JDO 7, but not the Tasman Bay/Golden Bay and Marlborough Sounds areas.

There has been no customary harvest of JDO 7 reported to MPI in the last five years for the West Coast South Island where tangata tiaki have been appointed under the SI customary regulations. It is likely that customary Maori fishers are fishing under the recreational regulations for this species in this area.

[43] Wynne-Jones J, Gray A, Hill L, Heinmann A (2014) National Panel Survey of Marine Recreational Fishers 2011-2012: Harvest Estimates. New Zealand Fisheries Assessment Report 2014/67. 139p.
[3] Hartill B,Davey N (2015) Mean weight estimates for recreational fisheries in 2011-2012. New Zealand Fisheries Assessment Report 2015/25. 37p.

Information currently held by MPI on Māori customary catch of JDO 7 is uncertain for the Marlborough Sounds/Golden Bay areas where the SI customary regulations have not yet been adopted. For tangata whenua still operating under regulations 50 and 51 of the Amateur Fishing Regulations 2013, it is not mandatory to report to MPI on any permits issued or catch taken.

The taiāpure of Whakapuaka (Delaware Bay), and the mātaitai reserves of Okuru/Mussel Point, Tauperikaka, Mahitahi/Bruce Bay, Manakaiaua/Hunts Beach, Okarito Lagoon, Te Tai Tapu (Anatori), Te Tai Tapu (Kaihoka) are all within the JDO 7 quota management area. MPI notes that the proposals in this paper will not significantly impact on, or be impacted by, these taiāpure and mātaitai reserves.

2.1.2.4 Other sources of fishing-related mortality

There are various potential other sources of fishing-related mortality of JDO 7, but MPI is not able to quantify these precisely. Sources may include discarding to avoid deemed value payments and unseen mortality caused by particular fishing methods. The allowance for other sources of fishing-related mortality is currently set at 5% of the TACC. MPI has no information to suggest this proportion should be changed.

2.1.3 Management approach

The west coast South Island (WCSI) trawl surveys have been accepted as providing an index of abundance and used to determine a proxy biomass target (the mean total biomass from the surveys between 1992 and 2011) for JDO 7.

The proxy biomass target provides a reference point and provides guidance on how to best respond to new information on JDO 7. MPI is currently in initial stages of a project to develop management approaches for stocks like JDO 7 to provide greater certainty about when and how management intervention will be undertaken.

In the interim, options proposed for the upcoming fishing year reflect the best available information. While a future review could occur ahead of any future fishing year, it is most likely that a review would next be considered for JDO 7 in 2018. This is when the final information from the 2017 WCSI trawl survey is scheduled to become available.

However, given that JDO 7 is characterised by variable abundance, an early indication of biomass trend could be helpful to ensure an appropriate response if biomass declines. NIWA can be requested to provide preliminary estimates in April 2017 if MPI deems an earlier review to be necessary.

2.2 RATIONALE FOR MANAGEMENT INTERVENTION

2.2.1 Previous review

The TAC for JDO 7 was last reviewed in 2012 in response to information from the WCSI trawl survey in 2011.

The TAC was increased from 131 tonnes to 161 tonnes. The TACC was increased from 125 tonnes, to 150 tonnes. Maori customary fishing and recreational allowances were both unchanged. The allowance for other sources of fishing-related was increased to 8 tonnes.

2.2.2 Current status

Information from the most recent inshore trawl survey (including Tasman and Golden Bays, March-April 2015 (voyage KAH1503)) shows that the relative abundance for 2015 was the highest in the time series, more than 22% higher than the previous high in 2011 (Figure 3). The 2015 survey biomass estimate of 487 tonnes is assessed as likely (>60%) to be above the target biomass.

In most years a large proportion of JDO 7 biomass has been from the west coast, mostly north of Cape Foulwind. In 2015, less than 30% was from the Tasman and Golden Bay region.

Recruitment is also higher than 2011 and 2013 and almost as strong as 2009. Most of the smaller fish were from the Tasman and Golden Bay region, which is typical of most years.

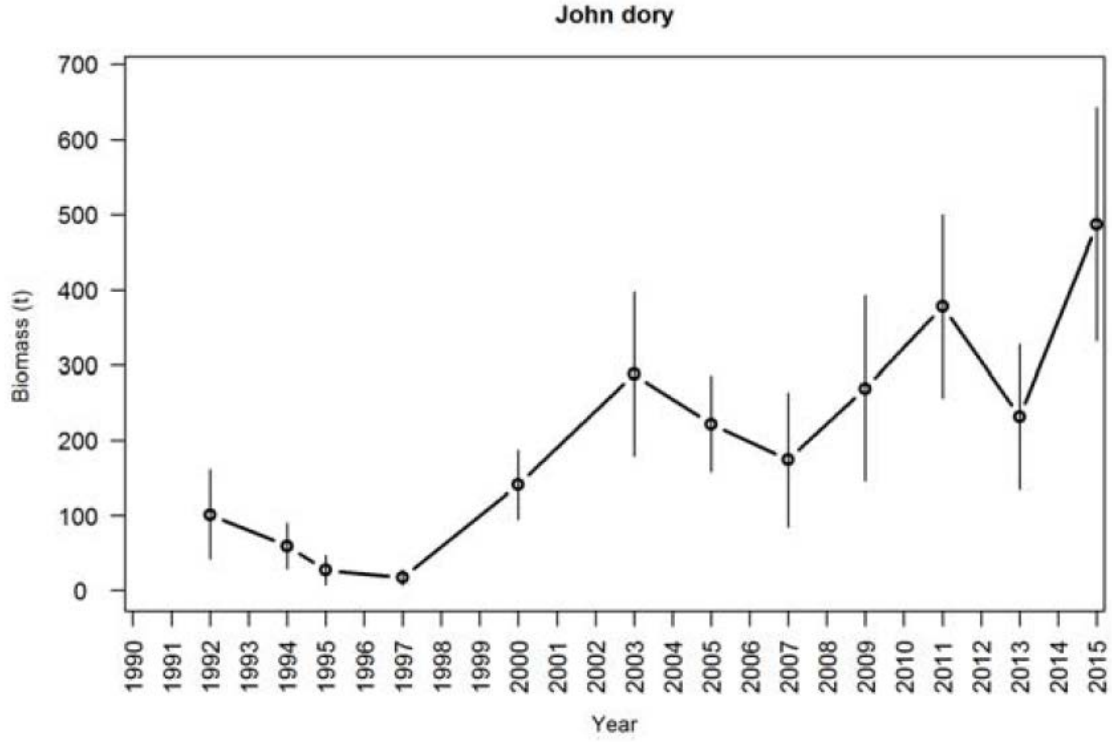


Figure 3: Trends in biomass for JDO 7 from West coast South Island inshore trawl surveys

3 Consultation

MPI consulted on your behalf on the three options set out in Table 1. MPI followed its standard consultation process of posting Discussion Documents on the MPI website and alerting stakeholders to this and concurrent fisheries consultations through a letter sent to approximately 780 iwi representatives, companies, organisations and individuals. The consultation period ran from 10 June to 11 July 2016. Opportunities were provided for both input and participation and consultation at the Tier 1 Iwi Fisheries Forums.

3.1 SUBMISSIONS RECEIVED

Two submissions on the JDO 7 proposals were received from the following:

a) Southern Inshore Fisheries Management Company Ltd and
b) New Zealand Sports Fishing Council (NZSFC).

3.2 SUMMARY OF SUBMISSIONS

A brief summary of the submissions[44] is outlined below. Further details of the submissions are discussed in the relevant sections of this paper.

Southern Inshore Fisheries Management Company Ltd supports Option 3. The company's main justification is that because the JDO 7 biomass is healthy and is predominantly a bycatch fishery, it should not become a limiting factor to the target fishery.

The New Zealand Sports Fishing Council (NZSFC) supports Option 1 (*status quo*) with one tonne added to both the recreational and customary allowance.

The NZSFC is concerned that despite periods of lower abundance, there has never been a TACC decrease for JDO 7, only increases in response to above average survey results.

The NZSFC is concerned that increases in abundance of John dory on the west coast are not reflected in Tasman and Golden Bays, which in their opinion are showing signs of overfishing.

The NZSFC is concerned if there is a TACC increase for JDO7 it is inevitable that trawl effort will increase and there will be environmental impacts from this increased effort. They state that the highly dynamic west coast may be able to withstand increased trawl effort, but there could be serious consequences if more trawl effort was applied in the Tasman/Golden Bays, because those areas are already showing signs of overfishing in their opinion.

4 Legal Considerations

The following section provides information in addition to the Statutory Considerations outlined earlier in this document.

4.1 SECTION 8 – PURPOSE OF THE ACT

MPI considers that all options presented in this paper satisfy the purpose of the Fisheries Act 1996 (the Act) in that they provide for utilisation in the JDO 7 fishery while ensuring sustainability.

Available information suggests all management options will ensure the sustainability of the stock. Option 1 is cautious and does not take advantage of an increase in biomass. In contrast, increasing the TAC under Option 2 and 3 will allow for increased utilisation of the JDO 7 stock, but will require close monitoring and another TAC review should biomass decline significantly in the near future. MPI would manage this risk by reviewing the JDO 7 stock again if the 2017 WCSI trawl survey information showed a significant decline in biomass.

4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

4.2.1 Maintaining associated or dependent species (section 9(a))

As discussed in the Statutory Considerations section of this paper, s 9(a) of the Act is focused on species (including protected species) that cannot be targeted commercially and are affected by the taking of a harvested species. This principle requires you to take into account that these non-harvested species should be maintained above a level that ensures their long-term

[44] Copies of the submissions are available in Appendix II

sustainability. The effect of John dory fishing on protected species, specifically seabirds and marine mammals, is discussed below.

Options 2 and 3 could result in an increase of interactions with protected species in these fisheries, although MPI does not expect this to be significant. MPI considers that current management processes will ensure that the long-term viability of these affected protected species populations is not negatively impacted by any of the proposed options.

4.2.1.1 Seabirds, mammals and protected fish

Seabird interactions with New Zealand's commercial fisheries are managed by the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA Seabirds). The NPOA Seabirds addresses New Zealand's obligations under international law to take into account the effects of fishing on associated species such as 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.

MPI works closely with industry to increase awareness amongst the fleet of the risk of interactions, and emphasises the importance of adherence to the current marine mammal operational procedures (MMOPs). The MMOPs aim to reduce the risk of interactions with marine mammals by requiring that vessels minimise the length of time the fishing gear is on the surface, remove all dead fish from the net before shooting the gear, steam away from any congregations of marine mammals before shooting the gear, and appoint a crew member to watch for marine mammal interactions every time the gear is shot or hauled.

Due to their low abundance in both the North and South Island waters, the endemic Hector's dolphin is declared as a threatened species under the provisions of the Marine Mammals Protection Act 1978.

The set net and bottom trawl (when targeting flatfish) fisheries have been subject to a range of measures designed to reduce interaction of this fishery with Hector's dolphins and seabirds. The 2015 Plenary Report[45] states interactions between the JDO 7 fishery and protected species are believed to be low. MPI considers there will be no significant change to this level of interaction from the proposed measures.

4.2.2 Biological diversity of the aquatic environment (section 9(b))

The discussion above relating to section 9(a) of the Act is also relevant to the maintenance of the biological diversity of the aquatic environment.

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

4.2.3.1 Benthic impacts

Research has been reported to characterise both New Zealand's benthic environment and the level of benthic impact from fisheries activity. 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.

[45] Ministry for Primary Industries (2015) Fisheries Assessment Plenary May 2015: Stock Assessments and Stock Status

As John dory are largely a bycatch species, MPI does not anticipate any significant increase in trawling activity nor significant increase of benthic impacts arising from the TACC increases proposed 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. All science information upon which the management options are based has been peer reviewed by the Southern Inshore Working Group. The feedback of consultation with Iwi Fisheries Forums, tangata whenua and stakeholders was considered when evaluating these options.

4.4 SECTION 11 – SUSTAINABILITY MEASURES

Only section 11 measures that are directly relevant to JDO 7 are discussed within this section. See Section 2 – Statutory Considerations 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 JDO 7 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 JDO 7.

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 JDO 7. No collective views were provided by the Te Waka a Māui me Ōna Toka Iwi Forum.

The Te Waka a Māui me Ōna Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan (the Plan). MPI considers that the management options presented in this decision document 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. Options 2 and 3 would also increase the benefits from the JDO 7 commercial fishery, contributing towards the achievement of Management Objective 3 of the Plan: to develop environmentally responsible, productive, sustainable and culturally appropriate commercial fisheries that create long-term commercial benefits and economic development opportunities for South Island iwi.

4.6 SECTION 13 (2A) – SETTING THE TAC

As current biomass ($B_{current}$) and the biomass that can produce the maximum sustainably yield (B_{MSY}) are not known, the TAC must be set under section 13(2A). The options presented in this paper take into account the requirements listed in s 13(2A) and 13(3) of the Act, as discussed in the Statutory Considerations section of this paper.

Section 13(2A) requires you 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 MSY. MPI considers that the 2015 West Coast South Island Trawl Survey is the best available information to determine the status of the stock. This survey suggests an increase in stock abundance and the potential for increased utilisation in the fishery. The options within this paper provide you with a choice on how you fulfil your obligations under this section.

Under section 13(3) of the Act, you must consider relevant social, cultural and economic considerations in determining an appropriate way and rate to move the stock towards or above a level that can produce the MSY.

The s 13(2A)(b) requirement 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. John dory in JDO 7 is caught as bycatch in fisheries that target flatfish (25%), barracouta (23%) and tarakihi (18%). Both Options 2 and 3 in this paper would result in an increase in JDO 7 TACC, with the potential to increase the amount of fishing effort in the flatfish and, barracouta commercial fisheries which are both currently under caught. It is unlikely an increase in the JDO 7 TAC will lead to an increase in the tarakihi fishery as currently TAR 7 catch is constrained by the TACC. However any increase in FLA 7 and BAR 7 would likely be minor in the context of existing fishing effort. MPI does not consider that increasing JDO 7 ACE poses a sustainability risk to the key species that are caught in conjunction with John dory. Fish bycatch levels in these fisheries will continue to be monitored.

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 1.7 tonnes of John dory was harvested recreationally in JDO 7 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 JDO 7 if the TAC is increased.

4.7.2 Customary allowance

Information on the customary allowance can be found in section 2.1.2.3 Māori Customary.

There is no data to suggest that an increase in the customary allowance is required, it is considered to be appropriate to provide for a potential increase in harvest given the current levels of elevated biomass.

4.7.3 Other sources of fishing-related mortality

There are various potential other sources of fishing-related mortality of JDO 7, but MPI is not able to quantify these precisely. Sources may include discarding to avoid deemed value payments and unseen mortality caused by particular fishing methods. The allowance for other sources of fishing related mortality is currently set at 5% of the TACC. MPI has no information to suggest this proportion should be changed.

4.7.4 TACC

Information on the current status of the commercial fishery can be found in section 2.1.2.1 Commercial.

The JDO 7 TACC has been increased three times since 2003/04 and is currently 150 tonnes (Figure 2). JDO 7 commercial catch has been exceeded five out of the last 10 fishing years. Since the TACC was increased in 2012/2013 the TACC has been exceeded once by 742 kg (less than 1%).

Given the latest information from the 2015 WCSI trawl survey showing an elevated JDO 7 biomass, it is considered reasonable to increase the TACC to provide for greater utilisation as proposed under Options 2 and 3.

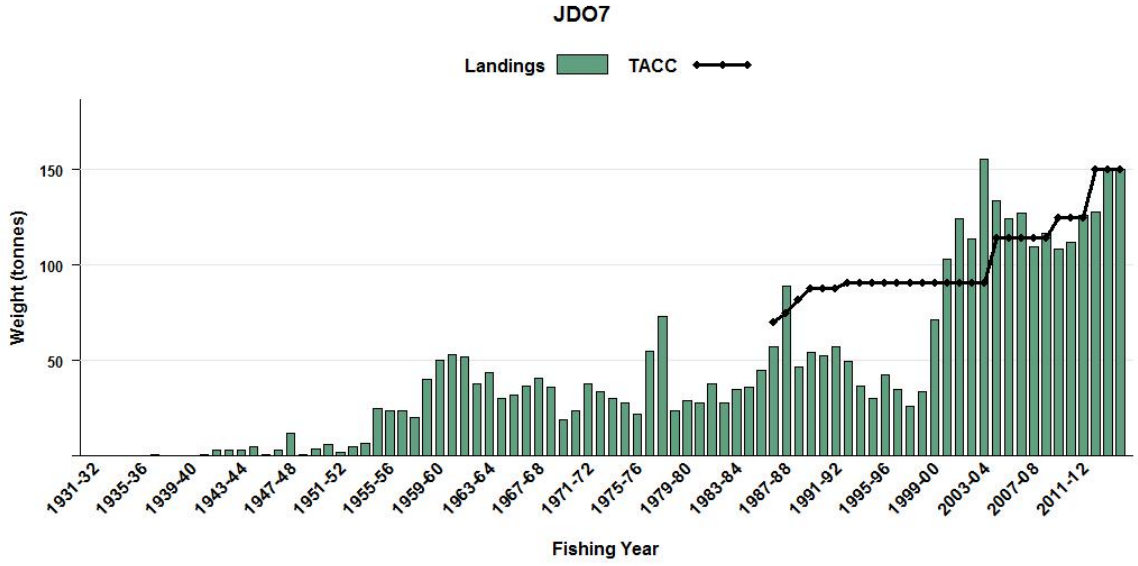


Figure 2: Landings and TACC for JDO 7 from 1931/32 to 2015/16

4.8 SECTION 75 – DEEMED VALUE RATES

MPI has not proposed any changes to JDO 7 deemed values during this round of sustainability measures.

5 Management Options

5.1 ANALYSIS OF OPTIONS

The final options for setting the TAC, TACC, and allowances for JDO 7 (Table 2) do not differ from those consulted on. Option 1 retains the *status quo*, while Option 2 and Option 3 increases the TAC, TACC, recreational allowance, customary Maori allowance and the allowance for other sources of fishing related mortality.

Table 2: Proposed TACs, TACCs and allowances for JDO 7 (all values in tonnes)

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 *(Status quo)*	161	150	1	2	8
Option 2	185	170	2	4	9
Option 3 (MPI Preferred)	206	190	2	4	10

5.1.1 Option 1

Under Option 1, the existing TAC, TACC and allowances would be retained. As the stock is considered to be likely above target the current TAC 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. This option reflects a cautious approach to change given the likely natural biomass fluctuations in this fishery. MPI considers that these risks could be mitigated by ongoing monitoring and regular consideration for management review.

NZSFC supports Option 1 (*status quo*) with an additional one tonne added to both recreational and customary allowances. NZSFC proposes these increases to reflect the best available information for recreational catch and due to uncertainty around the customary allowance.

NZSFC is concerned that despite periods of lower abundance, there has never been a TACC decrease, only increases in response to above average survey results. MPI notes that this is not relevant to future decision making as decisions are made based on the best information available at the time.

NZSFC is concerned that increases in abundance of John dory on the West Coast are not reflected in Tasman and Golden Bays, which in their opinion are showing signs of overfishing. MPI does not agree with this position. The trawl survey data shows a significant biomass increase in both areas. While most of the smaller fish in the 2015 WCSI trawl survey were from the Tasman and Golden Bay region, which is typical of most years, a good proportion of these fish are sexually mature.

NZSFC is concerned that if there is a TACC increase for JDO 7 it is inevitable that trawling will increase and there will be environmental impacts from this increased effort. They state that the highly dynamic West Coast may be able to withstand increased trawl effort, but there could be serious consequences if more trawl effort was applied in the Tasman/Golden Bays, because those areas are already showing signs of overfishing. MPI does not agree with this position. The 2015 WCSI trawl survey shows the biomass has increased on both the West Coast and in Tasman/Golden Bays with the current TAC and level of fishing. As JDO 7 is mainly a bycatch fishery a significant increase in targeting of this stock is not anticipated.

Impact
Retaining the current TAC settings will result in opportunity loss for the commercial sector. This is because Option 1 does not enable industry to respond to elevated biomass in a way that would allow them to maximise value. While recreational catches are low relative to the commercial sector the current settings do not account for increasing recreational catch or best available information on recreational fisheries.

5.1.2 Option 2

Option 2 proposes:

- The TAC be increased from 161 tonnes to 185 tonnes (15% increase)
- The TACC be increased from 150 tonnes to 170 tonnes (13.3% increase)
- The customary Māori customary allowance be increased from 1 tonne to 2 tonnes (100% increase)
- The recreational allowance be increased from 2 tonnes to 4 tonnes (100% increase)
- The allowance for other sources of fishing-related mortality would be increased from 8 tonnes to 9 tonnes (12.5% increase) which is approximately 5% of the TACC.

No submissions were received that support Option 2.

Under Option 2, the existing TAC would be increased by 24 tonnes (approx. 15%). Increasing the TAC by this amount 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. While specific information is not available to assess the likely impact of this level of increase on stock biomass, a 24 tonne increase is considered relatively small.

Option 2 acknowledges the increase in biomass for JDO 7 and allows for a reasonable TAC increase to enable increased utilisation. Recruitment in 2015 is higher than 2011 and 2013 and almost as strong as 2009 which strengthens the argument for increased utilisation.

If the TAC is increased it is proposed to increase the allowance for customary fishing by 1 tonne, recreational by 2 tonnes and other sources of fishing-related mortality by 1 tonne. The remaining 20 tonne increase would be allocated to the TACC.

MPI proposes providing an allowance for other sources of fishing-related mortality at 5% of the TACC. While there is no information available to quantify other sources of fishing-related mortality, MPI considers that the current allowance is too low, given various other sources of fishing-related mortality. An allowance of 5% of the TACC is considered appropriate given the biological characteristics of the stock and mortality associated with the trawling method.

Doubling the recreational and customary allowance accounts for any increases in catch in response to increased biomass. MPI also considers that the proposed recreational allowance better accounts for the uncertainty in estimating the current recreational catch as described above. While no customary authorisations for JDO 7 have been reported to MPI in the last five years, MPI notes this information is uncertain. An increase in the customary allowance allows for the exercise of customary rights in the future.

Impact
The increases to allowances are intended to better align with current fishing practices in JDO 7.

The commercial sector is the most constrained by the current settings. Increasing the TACC will allow commercial fishers to take advantage of increased abundance of John dory. Based on the 2015/2016 port price of $6.22 per kilogram, an additional commercial catch of 20 tonnes would be worth approximately $124,000 annually.

A 20 tonne (13.3%) increase in the TACC is likely to be a modest response to the increased JDO 7 biomass. With current monitoring through the WCSI trawl survey, it will be possible for MPI to respond to changes in stock biomass (increases and decreases) in a timely manner in future.

5.1.3 Option 3 (MPI Preferred)

Option 3 proposes:

- The TAC be increased from 161 tonnes to 206 tonnes (28.0% increase)
- The TACC be increased from 150 tonnes to 190 tonnes (26.7% increase)
- The customary Māori customary allowance be increased from 1 tonne to 2 tonnes (100% increase)
- The recreational allowance be increased from 2 tonnes to 4 tonnes (100% increase)
- The allowance for other sources of fishing-related mortality would be increased from 8 tonnes to 10 tonnes (25% increase) which is approximately 5% of the TACC.

MPI recommends that you implement Option 3, as it considers this best responds to the new information provided by the 2015 WCSI trawl survey as well as an expected increase in recreational and customary Māori harvest.

Under Option 3, the existing TAC would be increased by 45 tonnes. Increasing the TAC 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.

While specific information is not available to assess the likely impact of this level of increase on stock biomass, a 45 tonne increase (28%) coupled with ongoing monitoring is considered to be a viable approach to maximising utilisation while ensuring the sustainability of this fishery. Recruitment in 2015 is higher than 2011 and 2013 and almost as strong as 2009 which strengthens the argument for increased utilisation.

It is expected that the current biomass of JDO 7 will be able to sustain a catch 40 tonnes higher than the current TACC in the short-term while the biomass is high. However, it is also expected that biomass will naturally fluctuate over time; hence, a 190 tonne TACC may not be appropriate in the long-term.

MPI recommends that under this option ongoing biennial monitoring through the WCSI trawl survey is essential. The TAC will need to be reviewed again if there are any significant changes in abundance. As the JDO 7 fishery will next be surveyed in 2017 the sustainability risk of Option 3 is considered to be low.

The proposed settings for the other sources of fishing-related mortality, recreational and customary allowances under this option are consistent with the rationale provided for Option 2. Southern Inshore Fisheries Management Company Ltd supports Option 3. Their main justification is that as the JDO 7 biomass is healthy and as it is predominantly a bycatch fishery, it should not become a limiting factor to the target fishery.

Impact
A 40 tonne (26.7%) increase in the TACC will better provide for increased John dory within the commercial mixed trawl fishery and provide an opportunity to increase utilisation during a period of strong recruitment and elevated biomass. Based on the 2015/2016 port price of $6.22 per kilogram, an additional commercial catch of 40 tonnes would be worth approximately $249,000 annually.

If the 2017 WCSI trawl survey shows a significant decline in JDO 7 biomass then MPI will need to review the TAC again in 2017. This could result in a reduction of the TACC and a lack of financial certainty for the commercial sector.

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 JDO 7 to 206 tonnes, increasing the TACC to 190 tonnes, increasing the recreational allowance to four tonnes, increasing the customary Māori allowance to two tonnes and increasing the allowance for other sources of fishing-related mortality to 10 tonnes.

Available information on the status of JDO 7 at this time suggests that the stock is experiencing a period of elevated biomass and has been assessed as being Likely (>60%) above the target. The biological characteristics of this stock show that John dory are relatively fast growing and that stock biomass is highly variable and fluctuates in response to strong or weak year classes.

Increasing the TAC and TACC during periods of abundance better provides for increased abundance of John dory within mixed fisheries and creates opportunities for the fishing industry to increase the economic benefits that can be obtained from the fishery.

Increasing the TAC by the amount proposed in Option 3 is not considered to be 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.

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

Paua 7 (PAU 7)

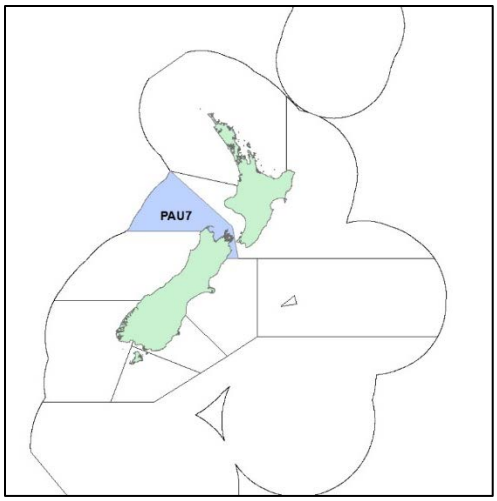


Figure 1: Quota management area (QMA) for the paua 7 (PAU 7) stock.

1 Executive Summary

The Ministry for Primary Industries (MPI) has consulted on your behalf on a review of catch limits for the PAU 7 fishstock (see Figure 1).

Best available information shows that there is a need to decrease catch limits in the PAU 7 fishery because the stock is below the soft limit. MPI consulted on three options for management settings for PAU 7 for the upcoming fishing year. During consultation seven submissions were received in support of an alternative catch reduction option (Option 2 revised). Three options are presented in this paper (refer to Table 1):

Table 1: TACs, TACCs, and allowances options for PAU 7 for your consideration (all values in tonnes). Option 2 (shaded) represents the alternative catch reduction option (a 50% reduction to the TACC) put forward by some stakeholders during consultation. The revised Option 2 replaces the original consulted on, which proposed a TACC reduction of about 40%.

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 *(Status quo)*	220.24	187.24	15	15	3
Option 2 revised (MPI preferred)	133.62 ↓ (40% reduction)	93.62 ↓ (50% reduction)	15	15	10 ↑
Option 3	115 ↓ (48% reduction)	75 ↓ (60% reduction)	15	15	10 ↑

The customary Māori and recreational allowances under each option are proposed to remain the same as in the *status quo*, while the allowance for all other mortality to the stock caused by fishing is proposed to increase for all options other than the *status quo*.

Eleven submissions were received on the proposals for PAU 7:

- No submissions were received in support of the *status quo* (Option 1) or the most conservative TAC and TACC reduction[46] (equivalent to an approximate 40% TACC reduction).
- Seven submissions (from the paua industry and iwi) were in support of an alternative TAC and TACC reduction (Option 2 revised), representing a middle-ground approach (i.e. a 50% TACC reduction) between the reductions originally consulted on.
- Three submissions (from recreational interests) were in support of the largest reductions to the TAC and TACC (i.e. a 60% reduction to the TACC, Option 3).
- One submission was in support of reductions, but did not support any specific option.

After considering the submissions received, MPI recommends Option 2, that the TAC for PAU 7 is reduced by 86.62 tonnes from 220.24 tonnes to 133.62 tonnes, and the TACC is reduced by 50% from 187.24 tonnes to 93.62 tonnes. In addition, MPI proposes that the allocation for other sources of fishing-related mortality be increased by 7 tonnes from 3 tonnes to 10 tonnes.

Options 2 and 3 produce a similar probability (91% versus 95%, respectively) of moving the stock above the soft limit by 2018. However, MPI notes that the rebuild to the target biomass is expected to take many years, and will be influenced by changes in environmental conditions and future recruitment to the fishery. This leads to uncertainty in how the fishery will respond to the proposed reductions. In general terms, the larger the catch limit reduction the greater the likelihood of seeing increased abundance in the fishery. Under all options, ongoing monitoring of the population will ensure MPI is in a position to act to maintain the rebuild of the fishery. This monitoring programme includes regular checking of catch-per-unit-effort and fine-scale data logger information, and an updated stock assessment in 2019.

Option 2 provides significant catch reductions that are likely to support a rebuild of the fishery, while acknowledging the significant socio-economic impact of the greater reductions proposed in Option 3. Under Option 2 it is estimated that the associated TACC reduction would result in a loss of $2.26 million per annum in commercial revenue[47], and a reduction in asset value of approximately $30 million. Under Option 3 the proposed reductions are expected to result in a loss of $2.69 million per annum in commercial revenue, and a reduction in asset value of approximately $36 million.

The paua industry and iwi submissions received in support of Option 2 also proposed a reduction in the recreational allowance from 15 tonnes to 7.5 tonnes – i.e. that the catch limit reduction proposals apply pro rata across both commercial and recreational harvesters. However, no changes are proposed to the recreational (or customary Māori) allowance at this time.

The best available information shows that the customary take of paua in PAU 7 is well within the existing allowance and MPI recommends that this allowance be retained. Similarly, best available information suggests that the recreational harvest of paua in PAU 7 is at least the current allowance, although MPI notes that this may be an underestimate of actual take.

[46] Represented the original Option 2 consulted on. Option 2 has now been revised to reflect the proposal received in submissions, which proposed a greater TAC and TACC reduction in comparison to the original option.
[47] Approximately 28% of which is already incurred through the voluntary annual catch entitlement (ACE) shelving in place.

Without additional information to quantify how much additional take may or may not be occurring, MPI recommends that this allowance be retained. MPI notes that updated information on recreational harvest is expected in 2019. MPI proposes to use a shared fishery/multisector approach in 2016 to begin discussions on these matters and what additional management tools may be required to support a rebuild of the fishery.

2 Context

2.1 BACKGROUND

2.1.1 Biological characteristics of paua

Paua form large aggregations on reefs in shallow subtidal coastal habitats. They move only over very small spatial scales, such that the species may be considered sedentary. Paua are broadcast spawners and spawning is thought to occur annually.

Habitat-related factors are an important source of variation in the post-settlement survival of paua larvae. Growth, shape, and recruitment can vary over short distances and may be influenced by factors such as wave exposure, habitat structure, availability of food and population density.

Due to their biology, high levels of fishing pressure in a localised area make paua populations susceptible to local recruitment failure. Because paua are largely sedentary, fishing pressure can cause a spatial contraction of populations, which can impede successful spawning (due to reduced density) and subsequently affect overall productivity.

Changes in environmental conditions can impact on the productivity of paua populations. Loss or reduction in drift algae, increased water temperatures, increased sedimentation and run-off can all have an effect on the health and viability of paua populations at various spatial scales.

2.1.2 Fishery description

2.1.2.1 Commercial

Paua was introduced into the Quota Management System in 1986. Average annual commercial landings between 1986 and 2002 were approximately 253 tonnes. In 2002 the TACC was reduced to the current setting of 187.24 tonnes. Average annual commercial landings reduced to 180 tonnes between 2002 and 2012. Landings have decreased further in the last four fishing years (133.5 tonnes in 2014/15) as a result of voluntary shelving, discussed later in this section.

Commercial fishers gather paua by hand while free-diving. The use of underwater breathing apparatus is not permitted in PAU 7. Commercial fishers may only harvest paua that have a minimum legal size of 125 mm shell length; however, there are areas within PAU 7 where commercial fishers have voluntarily instituted a larger voluntary minimum harvest size of 126 mm (Cape Koamaru to Wairau River from 2014/15), 130 mm (west coast) and 132 mm (east coast) shell length.

In addition to the customary spatial closures (summarised below in Section 2.1.2.3.3), there are four marine reserves (Long Island, Horoiangi, Tonga Island and Westhaven) and the Cook Strait submarine cable and pipeline protection area where fishing (by all sectors) is prohibited.

Declines in biomass and the relatively low level of commercial catch-per-unit-effort (CPUE) have been a concern for the PAU 7 industry and MPI. To stimulate a rebuild in the fishery, industry have shelved annual catch entitlement (ACE) at various times over the last 15 years. In 2002, following a voluntary commercial catch reduction, the TAC was reduced by 20%. This reduction was further supported by additional voluntary shelving of ACE (of varying levels) by industry from 2003/04 to 2004/05. The catch reductions resulted in an increase in CPUE for several years. Since then biomass plateaued and from 2010 has been declining.

Consequently, in each of the last four fishing years (inclusive of the current 2015/16 fishing year) industry have voluntarily shelved approximately 20, 22, 28 and 28% (respectively) of available ACE to support a rebuild in paua abundance and enhance economic performance (i.e. more fish in the water with lower catching costs).

2.1.2.2 Recreational

PAU 7 is an important shellfish fishery for the top of the South Island, especially around the Marlborough Sounds and east coast. The recreational fishery is primarily a dive fishery, although there are areas where hand-gathering from shore can occur. Anecdotal information from MPI compliance and local communities suggests that some areas of PAU 7 are under intense recreational fishing pressure, particularly those areas that are more easily accessible.

Regulations[48] governing the recreational harvest of paua include a minimum legal size of 125 mm shell length, a recreational daily bag limit of 10 paua, and a recreational accumulation limit of 20 paua. Recreational harvest may only occur by hand gathering or free-diving. The use of underwater breathing apparatus is not permitted.

The most recent information on recreational catch is available from a National Panel Survey of recreational fisheries. The survey estimated that approximately 14.13 tonnes was harvested in PAU 7 in the 2011/12 fishing year.[49] It is assumed by MPI Science Working Groups that 14.13 tonnes is likely to be an underestimate of recreational harvest because shore-based gathering/diving was not well captured in the National Panel Survey methodology.

In the survey it was estimated that about 90% of paua in PAU 7, were taken by hand gathering while diving. This was primarily recorded as occurring from boat and to a lesser extent from shore. In comparison, the survey estimated only 0.1% was taken by hand gathering from shore. MPI notes that there is uncertainty in using the estimate from 2011/12 to estimate or predict current catches. An updated estimate of recreational catch is expected to be available in 2019.

The National Panel Survey does not include recreational harvest that was taken on amateur charter vessels or by commercial fishers under section 111 approvals (which provide for recreational catch on board commercial vessels).

Amateur charter vessel data is based on voluntary records since paua is not a mandatory species for catch reporting. Consequently, MPI notes that there is a high degree of uncertainty in the

[48] Fisheries (Amateur Fishing) Regulations 2013

[49] Wynne-Jones J, Gray A, Hill L, Heinmann A (2014) National Panel Survey of Marine Recreational Fishers 2011-2012: Harvest Estimates. New Zealand Fisheries Assessment Report 2014/67. 139p.

available information. The charter vessel data available covers Fisheries Management Area 7 – i.e., both PAU 6 (south-west of PAU 7) and PAU 7 (Figure 1). The best available information suggests that from 2011/12 to 2014/15 between 32 and 105 paua were harvested each year, or about 7–36 kg from these two areas. However, operators do not always report all the voluntary fields (e.g., catch, retained and weight).

Paua harvested under s111 of the Act must be reported. The amount of paua reported under s111 has steadily increased from 179 kg in 2010/11 to 621 kg in 2014/15.

The combined recreational harvest estimate is approximately 15 tonnes.

2.1.2.3 Māori customary interests

Paua is tāonga to Māori. Being able to provide paua to feed whānau (family) or manuhiri (guests) has always been part of the cultural heritage of tangata whenua in PAU 7. Paua shells have also been used extensively for decorations and fishing devices.

Nine iwi have interests in the PAU 7 area: Rangitane o Wairau, Ngāti Apa, Ngāti Rārua, Ngāti Tama, Ngāti Kuia, Te Atiawa, Ngāti Kōata, Ngāti Toa, and Ngāi Tahu. Eight belong to the Te Tau Ihu Forum, and all to the broader Te Waka a Māui me ona Toka Forum (TWAM Forum). The purpose of the TWAM Forum is "to collaborate on fisheries management issues within Te Waipounamu for the benefit of present and future generations, while recognising and providing for the traditional relationship of Iwi members with their respective customary and commercial fisheries".

2.1.2.3.1 Customary fisheries regulations

The customary harvest of paua in PAU 7 is primarily managed under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013 (amateur fishing regulations), which allow customary harvest to be authorised for the purposes of hui or tangi.

Two small parts of the fishery are managed under the Fisheries (South Island Customary Fishing) Regulations 1999 (customary fishing regulations). The regulations enable the taking of fisheries resources for customary food gathering purposes from South Island fisheries.

Tāngata whenua can nominate Tāngata tiaki/Kaitiaki (guardians) to authorise customary take under the customary regulations. Tāngata tiaki/kaitiaki have been only been appointed for the two mātaitai reserves located on the west coast within Te Tai Tapu o Mohua.

2.1.2.3.2 Customary harvest

Reporting of customary harvest is a management tool for Tangata Tiaki/kaitiaki to manage customary fisheries and also for MPI to manage each fishstock. Under the customary fishing regulations, it is mandatory for customary fishers to report actual catch to the authorising Tāngata tiaki/kaitiaki, who reports back to MPI on a three-monthly basis. Where amateur regulations apply, customary take is only required to be reported back to the permit authoriser if it is specified on the permit.

Records indicate that about 200 to 5,500 paua were reported to have been collected each year from 2001/02 to 2014/15, with an average of 1,700 paua each year (or 0.68 tonnes). MPI notes that between 2010/11 and 2012/13 the number of paua approved for harvest declined by about half (from >3,000 to <1,500), and for half of the 2014/15 fishing year only 100 paua were

taken. About 70% of the customary harvest that has been reported was taken from Port Underwood, Queen Charlotte Sound, and Tory Channel.

These data should be interpreted with caution as the reporting on these authorisations does not necessarily represent the full potential or actual harvest of customary fishing. There is no reporting requirement for much of the PAU 7 area and the Te Tau Ihu Forum report that a precautionary approach is used when issuing authorisations because of their perception that the fishery is under pressure.

2.1.2.3.3 Mātaitai reserves and taiāpure

Mātaitai reserves can be established over traditional fishing grounds to recognise and provide for customary food gathering by Māori and the special relationship between tangata whenua and places of importance for customary food gathering. Taiāpure can be established in areas that have customarily been of significance to an iwi or hapu as a source of food, or for spiritual or cultural reasons.

Within PAU 7 there is one taiāpure (Whakapuaka (Delaware Bay) Taiāpure) and two mātaitai reserves - Te Tai Tapu (Kaihoka) and Te Tai Tapu (Anatori). MPI notes that the proposals in this paper are unlikely to impact on the taiāpure and mātaitai reserves, nor will the mātaitai or taiāpure reserves affect the options proposed.

Te Ohu Kaimoana and Ngāti Kuia note in their submissions the importance of Tory Channel (Kura Te Au), Port Underwood, and d'Urville Island, particularly as mahinga kai areas in Te Tau Ihu that are not currently gazetted as mātaitai or taiāpure reserves. They consider that it is important that any future management continues to take account of the importance of these areas to iwi.

2.1.2.4 Other sources of fishing-related mortality

There are various potential other sources of fishing-related mortality of paua, but MPI is not able to quantify these precisely. Sources may include unseen mortality caused by fishing and illegal catch.

The allowance for other sources of fishing related mortality is currently set at 1.6% of the TACC (3 tonnes). MPI considers that this value is an underestimate of the likely contribution of other sources of fishing-related mortality in the PAU 7 fishery, which should be amended in the setting of catch limit allowances.

2.1.2.4.1 Incidental mortality

Sub-legal paua may be subject to handling mortality if they are removed from the substrate to be measured. Paua may die from wounds caused by removal, desiccation or osmotic and temperature stress at the surface or indirectly from being returned to unsuitable habitat or being lost to predators or bacterial infection. Research in PAU 7 suggests that incidental mortality associated with commercial fishing was 0.3% of landed catch[50].

2.1.2.4.2 Illegal catch

MPI has estimated that illegal catch may be around 7.5 tonnes for PAU 7, however this number is highly uncertain. Illegal fishing can include a variety of unlawful activities such as mis- and under-reporting of catch and areas where paua are caught, poaching and the sale of paua on the

[50] Gerring, PK (2003) Incidental mortality of paua (*Haliotis iris*) in PAU7. New Zealand Fisheries Assessment Report 2003/56. 13 p.

black market, use of underwater breathing apparatus, taking paua below the 125 mm MLS limit, and harvesting above recreational bag limits. All of these activities have the potential to raise the actual level of extraction. Illegal fishing can have a direct impact on the sustainability of paua stocks and affects all paua fishers.

2.1.3 Management approach

The draft National Fisheries Plan for Inshore Shellfish categorises PAU 7 as a Group 1 fishery, meaning it is one of New Zealand's most sought after shellfish fisheries. Paua is a valuable inshore commercial fishery, and is highly valued by many iwi and recreational fishers. Given the high level of benefits from paua, there is a strong management focus on ensuring paua fisheries remain healthy, and are managed at high levels of abundance so that they can continue to provide benefits over the long term. The high biological vulnerability of paua fisheries (e.g., due to the risks associated with localised depletion), mean that PAU 7 is subject to regular stock assessments to monitor and inform management.

The management approach for PAU 7 is that the TAC is reviewed when stock assessment projections indicate that the stock abundance will decline and/or remain below the target abundance level under current catch with greater than 50% probability.

2.2 RATIONALE FOR MANAGEMENT INTERVENTION

2.2.1 Previous reviews

The TAC for PAU 7 was last reviewed in 2002. The review resulted in an approximately 20% reduction in the TAC and TACC for the 2002/03 fishing year. The TAC was decreased from 273.73 tonnes, to 220.24 tonnes. The TACC was decreased to 187.24 tonnes, from 240.73 tonnes. Māori customary fishing and recreational allowances were retained at 15 tonnes each. The allowance for other sources of fishing-related mortality remained at 3 tonnes.

From 2002, following the TAC reductions (and additional ACE shelving by industry to 2006), fishery abundance began to increase, but the rate of increase was slow. By 2009/10, the fishery was showing signs of decline, which was confirmed in the 2011 PAU 7 stock assessment with the stock just above the soft limit. The decline in biomass and the relatively low level of commercial catch-per-unit-effort (CPUE) were a concern. As a response, the industry (following discussions with MPI) undertook further ACE shelving to stimulate a rebuild. From 2012, the paua industry put in place a minimum of 20% ACE shelving, which increased to approximately 28% in the last two years.

The lack of rebuild, despite industry's concerted ACE shelving efforts, is due to a number of environmental (natural and man-made) factors, some of which cannot be controlled, as well as fishing-related factors. The current situation indicates that stronger action is required to rebuild the overall stock, and that the rebuild is likely to require a number of years before a significant increase in abundance is observed.

2.2.2 Current status

The best available information on the status of the PAU 7 fishery that can be used to inform TAC setting for PAU 7 is the 2015 PAU 7 stock assessment[51]. Stock status is assessed in relation to the target reference point (40% of unfished biomass – B_0), the soft limit (20% B_0), the hard limit (10% B_0) and estimated exploitation rate.

The 2015 assessment estimates the PAU 7 stock biomass to be somewhere between 16 and 21% B_0 with 95% confidence, with the greatest chance of being at 18% B_0. This abundance level sits below 20% B_0, the soft limit for the fishery. The soft limit represents the level of stock biomass where the requirement for a formal time-constrained rebuilding programme for the fishery is triggered (guided by the MPI Harvest Strategy Standard). If fished at the current TAC and TACC the stock will continue to decline.

Model projections, under two alternative catch level scenarios, indicate that lower catch levels increase the chance and speed of rebuilding the stock (Table 2). Alternative model projections can be viewed in the 2015 stock assessment report[52].

Table 2: Summary of key indicators from the three year projections (to 2018) for the base case stock assessment model under two catch reduction scenarios.

2018 Projections	50% TACC reduction	60% TACC reduction
Biomass (tonnes)	1030 (799–1314)	1068 (838-1353)
$\%B_0$	0.24 (0.18–0.31)	0.25 (0.19-0.32)
$\%B_{MSY}$	0.91 (0.69–1.18)	0.95 (0.72-1.22)
Probability of future spawning biomass being greater than B_{MSY}.	0.24	0.3268
Probability of the future spawning biomass being greater than the current amount of biomass.	0.99	0.9972
Probability of the future spawning biomass being above the target of 40% B_0.	0.00	0.0002
Probability of the future spawning biomass being below the soft limit of 20% B_0.	0.09	0.05
Probability of the projected biomass being below the hard limit of 10% B_0.	0.00	0
Probability that the exploitation rate (U) is greater than the exploitation rate that will achieve the target of 40% B_0.	0.83	0.3346

All projections estimate that biomass is likely to increase under each scenario. However, the larger catch reductions have a greater probability of resulting in increased biomass and a much lower probability that biomass will continue to remain below the soft limit.

The projections to 2018 suggest that if future recruitment remains at long term average, the spawning stock abundance will increase as follows:

[51] Fu, D. (2016). The 2015 stock assessment of paua (*Haliotis iris*) for PAU7. New Zealand Fisheries Assessment Report 2016/35. 52 p.
[52] Ibid.

2018 Projections	40% TACC reduction	50% TACC reduction	60% TACC reduction
$\%B_0$	23%	24%	25%
5th and 95th percentiles	(17-30%)	(18-31%)	(19-32%)

The 50% and 60% projections form the primary basis for the catch limit reduction options to support a rebuild.

However, if future recruitment is lower than the longer term average, the projected spawning stock abundance would not increase as much, and there would be a greater probability of staying below the soft limit under the same catch reduction scenarios.

It is extremely unlikely that the spawning stock biomass will reach, or be above, the target (40% B_0) in the short term under any scenario of catch reduction. If current catch remains the same for the future and recruitment is below average, the probability of the spawning stock biomass in 2018 being below the soft limit (20% B_0) will be greater than 50%.

MPI notes that uncertainty in the stock assessment model projections increase as projections are extended beyond three years. For this reason the Shellfish Working Group does not recommend extending projections further than three years into the future.

Sensitivities to data and uncertainties were tested and indicate that the above conclusions are robust to the range of assumptions tested.

3 Consultation

MPI consulted on your behalf on the three options set out in Table 3 below. MPI released the discussion document for consultation on 10 June 2016 for approximately four weeks of consultation. The consultation period closed on Monday 11 July 2016.

Table 3: TACs, TACCs, and allowances options for PAU 7 (all values in tonnes).

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 *(Status quo)*	220.24	187.24	15	15	3
Option 2 (original)	152↓	112↓	15	15	10↑
Option 3	115↓	75↓	15	15	10↑

3.1 SUBMISSIONS RECEIVED

Eleven submissions were received on the PAU 7 proposals from the following:

a) Graham Beattie
b) Ian Bilbrough
c) Brian Davis
d) Reid Forrest
e) PauaMAC7 Industry Association Inc. (PauaMAC7)

f) Paua Industry Council Ltd. (PIC)
g) Ngāti Kuia
h) NZ Rock Lobster Industry Council (NZRLIC)
i) NZ Sport Fishing Council/LegaSea (NZSFC/LegaSea)
j) Saavid Diving Ltd.
k) Te Ohu Kaimoana Ltd.

3.2 SUMMARY OF SUBMISSIONS

A brief summary of the submissions is outlined below. Copies of all submissions are available in Appendix II.

No submissions received supported retaining the *status quo* or Option 2 (an approximate 40% reduction to the TACC).

Seven submissions received from industry (including PIC and PauaMAC7), and iwi (Ngāti Kuia and Te Ohu Kaimoana) proposed that an additional option be considered, now presented in this paper *Option 2 revised*, an approximate 50% reduction to the TACC. The primary issues and concerns raised in these submissions were the proposed allocation of any TAC reduction, and the lack of measures to constrain recreational harvest. These submitters are in strong support of a shared pain – shared gain approach to support the rebuild of the fishery.

Three submissions (from NZSFC/LegaSea, Beattie and Forrest) support Option 3, an approximate 60% reduction to the TACC. Two of these submissions also raised concerns about potential recreational harvest and the increase in that harvest they have observed. NZSFC/LegaSea note that recreational interests are open to discussions on managing the fishery to ensure its long-term viability.

Further details of the submissions are discussed in the relevant sections of this paper.

4 Legal Considerations

4.1 SECTION 8 – PURPOSE OF THE ACT

MPI considers that all options (excluding the *status quo*) presented in this paper satisfy the purpose of the Act in that they provide for utilisation in the PAU 7 fishery while ensuring sustainability:

- Option 1 (*status quo*) is the least cautious approach and would not support a rebuild in the fishery. The existing TAC and TACC, if fully fished, would result in a further decline in paua abundance.
- Option 2 provides for an increase in future biomass, while minimising the impact on commercial utilisation opportunities. It represents a middle ground approach to the proposed reductions originally consulted on, with greater certainty in the likelihood of observing an increase in biomass in the short term (in comparison to the original Option 2 consulted on), but with less economic impact than that of Option 3.
- The TAC and TACC under Option 3 provides the greatest constraint on utilisation of the PAU 7 stock and provides for the fastest way to achieve an increase in abundance.

4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

Sections 9(a) and (b) require you to take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

Associated or dependent species are defined by the Act as any non-harvested species (those that may not be taken with lawful authority) taken or otherwise affected by the taking of any harvested species. The method for commercial harvest of paua is hand-gathering while freediving. Consequently, there is no bycatch of any associated or dependent species in this fishery.

There is limited information to provide an assessment of the effects of the paua fishery on either biological diversity or associated and dependent species. There is evidence of an interdependence relationship between paua, kina, and seaweeds. The continued loss of large paua from reefs by fishing may have a localised displacement effect on kina and seaweeds. The effects of this displacement on the inshore benthic community structure are unknown.

Section 9(c) requires you to take into account that habitat of particular significance for fisheries management should be protected. No such habitats have been identified within PAU 7. It is considered unlikely that the method of hand-gathering would have a demonstrable adverse effect on habitat.

4.3 SECTION 10 – INFORMATION PRINCIPLES

All scientific 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. Views submitted by tangata whenua and stakeholders have been considered. Any uncertainty in information relevant to your decision has been identified and discussed in the body of this paper.

4.4 SECTION 11 – SUSTAINABILITY MEASURES

Only section 11 measures that are directly relevant to PAU 7 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 PAU 7 fishery, for example recreational bag limits, and fishing method constraints as described in the background section.

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 is

not aware of any policy statements, plans or strategies that should be taken into account for PAU 7.

4.5 SECTION 12- CONSULTATION

Section 12(1)(b) of the Act requires that you provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga before setting or varying a TAC.

MPI met with the Te Tau Ihu Forum in March 2016 to discuss the assessment information, projections and aspirations for the fishery that have been used to inform the proposals. The forum's input was incorporated into the discussion in the consultation document. The Forum noted their concerns on stock status and their actions to manage harvest in a precautionary manner, and in consideration of other potential risks that may affect abundance in the fishery (e.g., forestry/deforestation, sedimentation, and the potential for increased recreational catch should a recreational fishing park be established).

MPI met with Te Waka a Māui me ona Toka Iwi Forum in June 2016, following the release of the discussion document. The Forum did not provide a written submission on the proposals, but the proposals were discussed with MPI at the meeting. The Forum expressed support for an alternative TAC option (i.e. Option 2 in this paper) to that consulted on, but one that falls within the original range.

The Forum also proposed a combination of a reduction in TACC and shelving of ACE. They considered such an approach would enable them to protect their hard fought settlement assets and not diminish the tribal estate. The Forum also considers that as recent entrants into the commercial fishery, iwi shouldn't have to take as big a reduction to the TACC. Additional comments at that meeting on a variety of issues have been noted within this paper.

The Te Waipounamu Iwi Forum Fisheries Plan covers PAU 7 and identifies paua 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.

4.6 SECTION 13 (2A) – SETTING THE TAC

In cases such as PAU 7, where there is some uncertainty around the estimates of B_{MSY}, section 13(2A) of the Act provides for you 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_{MSY} level.

MPI considers the options presented in this paper are not inconsistent with the requirements under section 13(2A) that the stock should be managed at or above B_{MSY}, or moving the stock towards or above B_{MSY}.

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.

Four [NZRLIC, PIC, PauaMAC7, Ngāti Kuia] submissions consider the Act contains a strong implicit preference for proportional allocation because compared to non-proportional approaches, proportional allocation is implicit in the underlying objectives of the Quota Management System. Their submissions strongly oppose allocation decisions that give preference to recreational fishing at the expense of the commercial sectors, as they:

- create uncertainty about the availability of future commercial harvest levels, and
- reduce incentives for investment in the fishery and make co-operation among quota share and ACE owners more challenging

MPI notes that there is no clear statement in the Act to indicate Parliament's preference or intention that the TAC be allocated in accordance with any particular approach. Similarly, MPI does not have a set policy, but relies on Ministerial discretion being appropriately exercised in each case where decisions on allocation are required, given the specifics of each stock. There are existing examples of this diversity of approach and it is in line with what the Court of Appeal has said.

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 SECTION 75 – DEEMED VALUE RATES

MPI has consulted on changes to PAU 7 deemed values. A discussion of the deemed value rates for PAU 7 is included in the Decision Document on "Review of Deemed Value Rates for Selected Stocks".

5 Management Options

5.1 ANALYSIS OF OPTIONS

The final options for setting the TAC, TACC, and allowances for PAU 7 (Table 4) differ from those consulted on. Seven submissions representing industry and iwi interests proposed an alternative middle-ground approach be considered for TAC and TACC reductions. The original Option 2 represented an approximate 40% reduction to the TACC, and had an 85% probability that the fishery would move above the soft limit within three years. Option 2 (revised) now represents a more conservative approach to supporting the rebuild with a greater TAC and TACC reduction proposed, and a 91% probability that the fishery will move above the soft limit within three years. In comparison, the proposed catch limit reductions in Option 3 have a 95% probability that the fishery will move above the soft limit within three years.

Table 4: TACs, TACCs, and allowances options for PAU 7 (all values in tonnes).

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 *(Status quo)*	220.24	187.24	15	15	3
Option 2 (revised) (MPI preferred)	133.62↓ (40% reduction)	93.62↓ (50% reduction)	15	15	10↑
Option 3	115↓ (48% reduction)	75↓ (60% reduction)	15	15	10↑

Option 1 retains the *status quo*, while Option 2 and 3 decrease the TAC, and TACC; retain the existing customary Māori and recreational allowances, and; increase the allowance for other sources of fishing-related mortality.

MPI notes that ongoing monitoring of the PAU 7 stock is planned under all options to enable annual catch levels to be adjusted in response to future biomass changes. It is expected that biomass will increase over time under both Options 2 and 3. Ongoing monitoring will be required, in conjunction with the next stock assessment (2019/20), to determine when any future review of the TAC will occur.

5.1.1 Total Allowable Catch setting

Three TAC options are put forward for your consideration.

5.1.1.1 Option 1 - Retain the current TAC of 220.24 tonnes

Option 1 would retain the current TAC of 220.24 tonnes. This option does not allow a rebuild in the fishery and if the TAC was fully fished, it would result in a further decline in paua abundance. Given the fishery is estimated to be about as likely as not below the soft limit (where a rebuilding plan is triggered) this option does not provide for such action nor meet your obligation to set a TAC that:

- enables the level of a stock whose current level is below that which can produce MSY to be altered in a way and at a rate that will result in the stock being restored to or above a level that can produce MSY, having regard to the interdependence of stock, and within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting it, or
- is not inconsistent with the objective of moving the stock towards or above a level that can produce MSY.

Option 1 provides the greatest level of use of PAU 7 by all sector groups. However, this option is also likely to compromise the sustainability of the stock, impact the longer term social, economic and cultural benefits the stock could provide, and does not account for the likely greater other sources of fishing-related mortality that are occurring.

No submissions were received that supported retaining the *status quo*.

5.1.1.2 Option 2 – Reduce the TAC from 220.24 tonnes to 133.62 tonnes (MPI Preferred)

Option 2 proposes a middle-ground approach to decrease the TAC to 133.62 tonnes. This option recognises the best available information on biomass that suggests that the stock is about as likely as not below the soft limit and that a formal rebuild plan should be implemented.

MPI considers that Option 2 meets the requirements to support a rebuild of the fishery based on stock assessment projections. In comparison to Option 3 (refer Table 2):

- There is a higher probability (approximately 9% versus 5%) that stock abundance would remain below the soft limit in three years.
- MPI estimates stock biomass will be at 24% B_0 (versus 25% B_0) in 2018.

MPI considers that Option 2 applies significant catch limit reductions with a high degree of certainty or probability that the stock abundance will move above the soft limit in the short term. MPI notes there is a degree of uncertainty as to whether the catch reduction proposed here (or in Option 3) will result in a rebuild to the target level in the medium term.

Assessing the need for longer term actions in paua fisheries is inherently uncertain because they can be strongly influenced by environmental conditions, recruitment into the fishery, and changes in fishing pressure, which is why biomass changes are only projected forward three years. Under all options, ongoing monitoring of the population will ensure MPI is in a position to act to maintain the rebuild of the fishery. This monitoring programme includes an updated stock assessment in 2019.

In comparison to Option 3 there will be a smaller socio-economic impact, while not compromising the primary objective of the proposed change to management measures, which is to rebuild the stock.

MPI received seven submissions, from industry and iwi interests that proposed the TACC reductions that are captured under Option 2 (refer to setting of TACC Section below).

5.1.1.3 Option 3 – Reduce the TAC from 220.24 tonnes to 115 tonnes

Option 3 proposes a larger decrease to the TAC to 115 tonnes than Option 2. This option recognises that the best available information suggests the stock is about as likely as not below the soft limit and that a formal rebuild plan should be implemented.

MPI considers that Option 3 meets the requirements to support a rebuild of the fishery based on stock assessment projections. However, in comparison to Option 2 (refer Table 2):

- There is a lower probability (approximately 5% versus 9%) that stock abundance would remain below the soft limit in three years.
- MPI estimates stock biomass will be at 25% B_0 (versus 24% B_0) in 2018**.**

As noted under Option 2 there is some uncertainty around the rate of rebuild, which will take more than three years under either catch reduction proposal. The fishery will continue to be influenced by environmental conditions, recruitment into the fishery, and changes in fishing pressure that will affect its recovery.

The value of a fishery that reaches target level more quickly includes increased catch rates, associated cost efficiencies, and potential for greater use benefits across all sectors much sooner. Greater stock abundance in a shorter time period also improves stock resilience to

other anthropogenic or environmental factors that could negatively impact on stock health. However, such an approach will also mean the short-term socio-economic impacts will be significant, and greater than that likely under Option 2.

There is a significant risk under this option that without further management controls on total removals (i.e. including recreational harvest) catch will exceed the TAC.

MPI received three submissions from the recreational sector, including NZSFC/LegaSea, in support of Option 3.

5.1.2 Setting of non-commercial allowances

Table 5 provides you with information on current non-commercial allowances for PAU 7 and best available information of non-commercial catch.

Table 5: Current PAU 7 allowances and assumption of non-commercial catches

	Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality (t)
Current allowances	15	15	3
Non-commercial catch assumptions	0.68[53]	14.6	10

5.1.2.1 Customary Māori allowance

There is no proposal to change the customary Māori allowance for PAU 7, and no submissions were received contrary to this proposal. Best available information suggests that the current settings more than provide for current levels of catch. However, MPI notes the uncertainty in customary harvest levels due to existing reporting requirements. The allowance for customary use is not set to constrain catch but to recognise and provide for customary food gathering.

MPI notes that the Te Tau Ihu Forum were strongly opposed to any reduction in customary allowance. The forum noted that they are well positioned to manage the existing allowance based on stock status, their local knowledge, and with a more holistic approach based on their interests and participation in all sectors of the fishery (customary, recreational and commercial). The Forum, Te Ohu Kaimoana and Ngāti Kuia all noted that that iwi have in place the necessary systems and processes to manage their catches following principles of kaitiakitanga.

5.1.2.2 Recreational allowance

MPI proposes to retain the current recreational allowance of 15 tonnes under all TAC options. Based on the estimates of recreational harvest from the National Panel Survey, amateur charter data and recreational harvest by commercial fishers under section 111 approvals, MPI considers that at least 15 tonnes of paua is harvested recreationally annually.

[53] These figures should be interpreted with caution as the information reported on these customary authorisations do not necessarily represent the full potential or actual harvest of customary fishing.

MPI notes that these figures may underestimate the level of recreational harvest in the fishery, which was supported by a number of submissions. However, there is insufficient information to determine the degree of any additional harvest.

MPI considers that it is reasonable to maintain the current recreational allowance in the short term, while MPI undertakes further work to update the recreational harvest estimate in the fishery. However, given current low abundance levels it is open to you to reduce the recreational allowance to contribute towards the rebuild of the fishery – a shared pain, shared gain approach.

Regardless of your approach, MPI notes that there is a need to investigate the potential level of take and additional management controls that may be required to ensure that any TAC reduction is effective and catch is appropriately constrained as the fishery rebuilds. In the absence of further constraint on recreational catch it is possible that a portion of the increased numbers of paua remaining in the water through TACC reductions, could be taken as part of increased recreational harvest (refer to Section 6.1.2 for more detail) over time. MPI considers a shared fishery/multisector approach is the best avenue to investigate what additional management tools may be required to support a rebuild of the fishery.

Submission comments
Seven industry and iwi submissions (including PIC, PauaMAC7, Ngāti Kuia) and their supporters, as well as via comments from the Te Tau Ihu and Te Waka a Maui me ona Toka Iwi Forums, oppose the lack of consideration to reducing the recreational allowance and associated controls to contribute to a rebuild of the fishery.

The Te Tau Ihu and Te Waka a Māui forums considered that any reduction to the TACC should be applied pro rata to the recreational allowance. Similarly, submissions from the paua industry, Ngāti Kuia, Te Ohu Kaimoana and NZRLIC all requested that the recreational allowance be reduced to 7.5 tonnes.

These submissions consider the proposed retention of the current recreational allowance means that industry bears the full cost of the proposed TAC reduction. They submit that such a reduction will result in a substantial reallocation of shares in the fishery from commercial to non-commercial users. Similarly, they consider that the subsequent rebuild in abundance will likely result in further implicit re-allocation to recreational fishers and a permanent loss for industry. These concerns are discussed further under Other Matters, in Section 6 below.

In addition, PauaMAC7 consider that sustainability measures should not be used to implement a reallocation of a fishery by stealth. They note that if you consider it desirable to reallocate more of the PAU 7 fishery to recreational users this should be transparent, justified and openly consulted on.

Two recreational submissions also expressed concerns about the overall level of recreational harvest. They noted that significantly more data is required to assess current recreational take. They consider the current daily bag limit is no longer appropriate, given their personal observations that there has been a huge increase in the number of recreational divers and likely take of paua. Consequently, they recommended that a reduction in the recreational daily bag limit be considered.

MPI response
Best available information suggests at least 15 tonnes of paua is harvested recreationally annually; however, the estimate may be an underestimate of overall recreational harvest, but the degree to which is unknown. There is a risk that harvest will exceed the current allowance over time, particularly as the fishery rebuilds. However, in the short term MPI does not consider this will pose a risk to the rebuild.

MPI considers that updated information on recreational harvest is required to assess the potential degree of recreational harvest. MPI notes that any reduction in allowance does not in itself constrain recreational take, and there is limited information to use to do so. Recreational harvest is only constrained through management controls such as daily bag limits, and minimum legal size, for example. The broader concerns raised around levels of recreational harvest and the potential for such harvest to undermine any rebuild efforts are noted and discussed further in Other Matters (Section 6).

MPI notes that the proposed reductions to the TAC in this review are driven by the biological status of the stock, which is well below the target and as likely as not below the soft limit. Consequently, a time bound rebuilding strategy is appropriate. As the TACC and commercial catch has been the dominant contribution to removals for a long time, MPI considers that at this point it is appropriate to rely mostly on limiting commercial catch to enable rebuilding. However, as noted in Section 2.1.2.1, anecdotal information suggests that some areas of PAU 7 are under intense recreational fishing pressure, particularly those areas that are more easily accessible, and so more information on recreational harvest (e.g. volume and the areas under greatest pressures) are required.

Given the low stock status and need to ensure rebuilding, all stakeholders should be encouraged to contribute meaningfully to the rebuild – a shared pain and shared gain approach. MPI considers that all stakeholders (using a shared fishery/multisector approach) should be involved in discussions on recreational harvest, and develop changes to recreational fishing management measures (bag and size limits) as required, which will support the rebuild and contribute to improving information. Without robust information on catch there is limited ability to assess the effectiveness of current harvest constraints such as bag limits. Further details on improving information on recreational harvest in PAU7 (with the next recreational harvest results expected in 2019), and engagement plans to discuss these issues are discussed below in Section 6.1.

5.1.2.3 Other sources of fishing-related mortality allowance

MPI considers that other sources of fishing-related mortality are not adequately captured or provided for in the existing 3 tonne allowance. While information to inform the setting of an allowance for other sources of fishing-related mortality in PAU 7 is uncertain, the current allowance does not consider or allow for any mortality associated with illegal take.

Options 2 and 3 propose an increase to this allowance from 3 tonnes to 10 tonnes that would account for:

- incidental mortality associated with commercial fishing (approximately 0.3% of landed commercial catch, which would equate to less than 0.5 tonne), and
- the potential amount of illegal catch (estimated at approximately 7.5 tonnes, but highly uncertain).

Four submissions note their concern at the proposed increase to this allowance, particularly to account for illegal take. They consider that such volumes would otherwise contribute to the rebuild of the fishery, or harvest by legitimate users, if they were left in the water. Consequently, there is an expectation that MPI increase surveillance within the fishery to reduce such illegal take.

5.1.3 Setting the TACC

Catches from the commercial sector in relation to the TACC have varied over the last ten years, due to the level of shelving of ACE that has been put in place at different times. While the shelving of ACE has resulted in some small increases in stock abundance, overall biomass still remains well below the target level.

Pre-consultation discussions with the paua industry signalled that the industry is supportive of meaningful catch limit reductions that are likely to result in an increase in abundance. Industry submissions contend that as the catch reduction options consulted on are likely to enable the fishery to rebuild, it is appropriate that the choice of rebuild rate is based on the preferences of users of the fishery. PauaMAC7 considers that the choice of rebuild rates should be influenced primarily by industry since:

- Industry is the only sector that will be negatively affected by the proposed reductions
- Industry has already made significant efforts (at substantial cost to quota owners and harvesters) to support the rebuild of the fishery through significant voluntary ACE shelving over several years.

The proposed decreases discussed below vary in the expected way and rate at which they are likely to result in a rebuild of the PAU 7 fishery – with Option 3 providing the fastest rebuild rate but with the greatest socio-economic impact.

5.1.3.1 Option 1 – Retain the current TAC of 220.34 tonnes and within that the TACC of 187.24 tonnes

No submissions were received that supported retaining the current TAC and TACC.

5.1.3.2 Option 2 – Reduce the TAC from 220.24 tonnes to 133.62 tonnes and within that reduce the TACC from 187.24 tonnes to 93.62 tonnes

Option 2 proposes a 50% decrease to the TACC from 187.24 tonnes to 93.62 tonnes. This level of reduction will have a much greater impact on commercial use opportunities and economic benefits derived from the fishery than Option 1, but a lesser impact than Option 3.

The majority of submissions received (including all by industry) proposed this middle-ground approach (Option 2 revised) that would provide a greater likelihood and faster rate of rebuild than Option 1, but with a reduced socio-economic impact and rate of rebuild in comparison to Option 3.

The submissions received from the paua industry, Ngāti Kuia and Te Ohu Kaimoana were all strongly in support of this middle ground approach to applying meaningful reductions to the TAC and TACC to support a faster rebuild, while better recognising the significant economic impact such a reduction will have on the industry.

Impact
Based on the $23.98 per kilogram 2016/17 port price, a 94.24 tonne decrease in commercial catch is worth approximately $2.26 million annually to fishers. However, MPI notes that industry has been shelving approximately 28% of their ACE for the last two years and incurring that portion of revenue loss.

Te Ohu Kaimoana notes that depending on what option you decide, the potential loss in asset value under this option could be around $30 million based on a quota value of $320,000 per tonne. Quota owners, divers, processors and exporters will have significantly less ACE to run their business and the financial implications on them will be significant.

5.1.3.3 Option 3 – Reduce the TAC from 200.24 tonnes to 115 tonnes, and within that reduce the TACC from 187.24 tonnes to 75 tonnes

Option 3 proposes an approximate 60% decrease to the TACC from 187.24 to 75 tonnes. This level of reduction will have a much greater impact on commercial use opportunities and economic benefits derived from the fishery than Option 2.

As noted in industry submissions, since they are bearing the full cost and impact of the catch reduction proposal they consider they should have some say in the way and rate at which a rebuild occurs.

Three submissions from recreational interests supported the largest decrease to the TAC and consequently TACC to support a rebuild of the fishery.

Impact
Based on the $23.98 per kilogram 2016/17 port price, a 112.24 tonne decrease in commercial catch is worth approximately $2.69 million annually in revenue to fishers. The proposed 60% reduction equates to an approximate loss in asset value of $36 million.

5.1.3.4 Proposed alternative TACC options

The Te Waka a Māui me ona Toka Iwi Forum also proposed that MPI consider a combination of a reduction in TACC and shelving of ACE. The Forum considers that recent entrants into the commercial fishery (i.e. iwi) shouldn't have to take as big a cut. MPI noted during those discussions that any such proposal would need to be tabled for consideration and have 100% support from all quota owners. No such proposal was received during the consultation period. The challenges associated with achieving 100% quota holder support for ACE shelving arrangements were noted, and some of these issues are further discussed in Section 6.4.

6 Other Matters

6.1 RECREATIONAL HARVEST

6.1.1 Harvest information

MPI considers that the uncertainty and potential underestimate of recreational harvest levels in the PAU 7 fishery are important to note. Recreational harvest may be exceeding the current allowance, however, there is insufficient information to determine the degree of any additional harvest. The National Panel survey provides the best estimate and methodology available to

estimate recreational harvest for PAU 7. The next National Panel survey estimates are likely to be available in 2019.

MPI notes that while the National Panel survey is likely to provide the best estimates, the method does not capture what may be a reasonable proportion of recreational users in the area (e.g., temporary workers, tourists etc.). Any improvements that can be made to the methodology to potentially improve the estimates will be considered before the start of the next survey.

6.1.2 Harvest controls

During pre-consultation discussions and within submissions from industry and iwi there was a significant interest in developing a shared fisheries approach to support the rebuild of PAU 7 – i.e. shared pain/shared gain.

The Te Tau Ihu and Te Waka a Māui me ona Toka Iwi forums supported any reductions proposed to the TACC also being applied pro rata to the recreational allowance with additional controls. Industry submissions were also supportive of establishing a shared fisheries engagement approach with recreational interests to review what additional measures could be considered going forward to ensure that the fishery rebuilds.

Although the options do not propose changes to the recreational allowance, for any TAC reduction to be effective, fish need to stay in the water. A portion of the increased numbers of paua remaining in the water through TACC reductions, could be taken as part of increased recreational harvest (rather than supporting stock recruitment and rebuild). This concern is highlighted by PauaMAC7, who consider that they have seen similar effects in areas where they have voluntarily increased their minimum harvest size and there is greater recreational pressure on the smaller fish left in the water. MPI notes that while recreational catch may increase over time as the stock rebuilds, the increase in catch will likely take place over a few years. The greater the reduction to the TAC and the faster the rebuild put in place, the greater the risk that recreational harvest will exceed its allowance in a much shorter timeframe, and put at risk the rebuild of the fishery.

Nine submissions (from industry, iwi and recreational fishers) raised concerns over the level of recreational harvest in the PAU 7 fishery. These concerns were also reiterated by both the Te Tau Ihu and Te Waka a Māui me ona Toka Iwi Forums. These submissions and the Forum members proposed a variety of controls be considered to constrain harvest, including:

- Reducing the recreational daily bag limit from 10 paua per person per day to 5 or 6 – in line with the measures that have been taken by Te Korowai along the Kaikōura coastline,
- Introducing recreational catch reporting tools to better monitor recreational harvest so that associated management measures can be designed and implemented with more certainty and greater effectiveness,
- Reduce the current accumulation limit of 20 paua per person,
- Implement a recreational boat levy to contribute towards the management and compliance of the fishery, and
- Require transitional arrivals to purchase a fishing licence to harvest seafood (like the trout fish license).

MPI proposes to begin a shared fishery/multisector approach in 2016 to discuss these matters, and investigate additional management controls that may be required to ensure that any rebuild of the stock is not undermined by increasing recreational catch.

The issue for the future will be whether additional harvest controls are required to constrain recreational take to their allowance while the fishery rebuilds.

6.1.3 Amateur charter vessels

A number of submissions as well as the Te Tau Ihu Forum expressed their concern over the lack of information available from amateur charter vessel (ACV) activities. Amateur charter vessels are not required to report the amount of paua they harvest.

Ngāti Kuia express their concerns over observed increased ACV activities in areas like Kaikōura and the potential for these activities to carry over into the Marlborough Sounds with the establishment of the recreational fishing park. They also note that with the expected increase of three million more Chinese tourists over the next three years, and paua as a delicacy in China, there is an increased likelihood of greater take that may occur via charter vessels. Consequently, they request that MPI make it mandatory for ACVs to report paua catches. Alternatively, the Te Tau Ihu Forum proposed that ACV operators be required to purchase quota to allow for the activity of paid customers to fish.

MPI notes that while the amount of paua harvested is not currently required to be reported, ACV operators are required to report their fishing activity (i.e. what and where they are fishing). The number of fishing events in PAU 7 where paua is targeted averages around 18 each year. The number of fisher days per year has ranged between 48 and 103 during that time. MPI will consider whether to add paua to the list of mandatory reporting for ACVs.

6.1.4 Recreational fishing parks

Ngāti Kuia note that they consider the establishment of a recreational fishing park in the Marlborough Sounds will contribute to an increase in the recreational fishing effort in the area. They consider the recreational sector needs to have a greater awareness of the efforts for a rebuild of the fishery.

The recreational park legislation is not yet finalised, however, the draft policy proposes each recreational park will have a governance group that overseas management of fisheries within the park boundaries parks. It is intended that the group be tasked with providing advice to you on management of fisheries issues within the park, and paua will undoubtedly be part of those considerations. MPI agrees that all stakeholders need to be aware of the efforts to rebuild this fishery.

6.1.5 Export of amateur take and harvest by tourists

Davis notes there is anecdotal evidence that paua meat is being taken offshore within baggage of departing tourists. He considers their possession of this paua is dubious (i.e. whether through legitimate recreational harvest) and considers the transport of paua offshore should only be allowed if appropriately documented (e.g. including receipts from a licensed fish receiver).

Ngāti Kuia consider that 'transitional arrivals' should be required to purchase a fishing license to allow them to harvest shellfish and fish from specific QMAs. They propose border control measures should be put in place to ensure any paua taken out of New Zealand should be accompanied by a licensed fish receiver docket or equivalent.

MPI is aware of these concerns, but would require further detail to progress any further action. In principle, under the current system, any tourist is subject to the same rules and regulations that apply to domestic recreational harvesters. In the case of paua, recreational harvesters (tourists or otherwise) must comply with the daily bag limit and the accumulation limit. That paua may not be sold or bartered, but may be shared with family and friends. The illegal harvest and movement of paua is subject to regular monitoring and investigation. If there is information on specific individuals or groups undertaking illegal harvest and sale (whether through domestic or offshore movements) that should be reported to MPI to enable further investigation.

6.2 SPATIAL TOOLS

Davis submits that while he supports the initiative of marine reserves, protected and customary areas, you must consider and be responsible for the impact on the fishery and to the individual quota owners. He strongly supports a quota retiring approach (through purchase and TACC reduction) when fishers are impacted by spatial closures rather than a redistribution of catch.

MPI notes that such an approach, also referred to as "rebalancing" by some industry bodies has been put forward for consideration as part of the Fisheries Operational Review and is best considered under that process.

6.3 ENVIRONMENTAL EFFECTS

Forrest and Davis consider changes in the environment have also contributed to the declines in paua abundance. These include an increase in kina barrens, resulting in greater competition for the remaining algae and potential impacts on growth. Additionally, they consider the increasing loads of fine sediments in the marine environment are detrimental to paua populations due to the direct effects on paua (i.e. clogging their gill structures), as well as the loss of algae on the rocky coasts. Davis considers that coastal fisheries managements needs to interface with the relationship of land and sea.

NZSFC/LegaSea consider that increasing stock abundance in a short time period will improve stock resilience to other anthropogenic or environmental factors affecting PAU 7.

MPI acknowledges the increasing concerns regarding changes in the marine environment particularly in the Marlborough Sounds. Where such changes are affecting paua productivity, MPI considers that fishing pressure needs to be adjusted to ensure harvest levels are appropriate to support recovery of the stock.

6.4 COLLECTIVE MANAGEMENT AND ACE SHELVING

PIC note in their submission their continued efforts to see the Act amended to enable the collective management of commercial harvesting activity by quota owners (also referred to as

authorised management). They purport that the decline in PAU 7 could have been arrested sooner should such tools were in place.

As noted in Section 2.1.2.1, PAU 7 quota owners implemented an ACE shelving programme over several years to support a rebuild of the fishery. However, for shelving to be effective it requires a high level of support across all quota owners. Quota owners will not shelve their ACE unless they are confident that other quota owners are also foregoing the same share of catch.

PIC considers that implementation of collective/authorised management, as submitted to MPI as part of the Fisheries Operational Review, should be progressed to ensure future shelving efforts are able to be implemented based on majority agreement amongst quota holders. The development of such an approach is also supported by the Te Tau Ihu and Te Waka a Māui me ona Toka Iwi Forums.

MPI notes that the seafood industry's proposals around authorised/collective management are being considered as part of the Fisheries Operational Review.

Conversely, NZSFC/LegaSea do not consider shelving to be a lawful or legitimate tool to rebuild depleted fisheries. They consider you are obliged to ensure sustainability and that while users of the fishery can contribute to conservation or the rebuild effort, you are ultimately required to set a TAC that will move the biomass to or above MSY.

MPI considers that TAC setting has to be the primary tool to ensure sustainability, and to rebuild the stock at a way and rate you consider appropriate. However, MPI also acknowledges that industry are free to choose to rebuild or increase abundance in a stock faster by shelving additional quota if they wish. The shelving of additional quota by fishers can serve as a useful conjunct to any TAC/TACC reductions to improve the probability or speed of a rebuild or to increase abundance in a fishery.

Given the current status of PAU 7, MPI does not consider that the current TAC settings meet your obligations under the Act and that catch reductions are required. However, regardless of what catch reductions you may choose to put in place, MPI notes that industry may choose to consider additional shelving to increase the rate of rebuild. No formal shelving proposals were received during consultation. MPI notes that industry has a strong interest that collective/authorised management tools are established to strengthen such arrangements.

6.5 28N RIGHTS

28N rights originated under sections 28N and 28OE of the Fisheries Act 1983. These sections were part of the major amendment to the Act that introduced the quota management system in 1986. In preparation for commencement of the quota system, commercial fishers' reported catch history was assessed. Fishers could choose the best two of three qualifying years to ensure that individuals were not penalised for one bad year, and the average of these two years was used. However, this meant that the total of those assessed catch histories, recorded as provisional maximum individual transferable quota (PMITQ), was generally greater than the highest total catch for any of the qualifying years for the stock in question. So, aside from any reductions to total catch required for sustainability reasons, in most stocks reductions to PMITQs were also required to get the total of catch rights back to the old TACs.

For some inshore species, the Government offered to receive tenders to buy packages of PMITQ from fishers. Many of the tenders were for amounts greater than the government valuations indicated the rights were worth and were refused. About a third of the required reductions for those species were bought. In a second round, the Government offered fishers 80% of what they had paid in the first round as a last chance to sell rights back, under condition that if insufficient rights were offered the next move would be uncompensated pro rata reductions. About another third was bought. A total of $42 million was spent on the buy-back.

Those that chose not to sell, and to have their rights reduced without compensation, became entitled to have those reduced PMITQ rights restored in the future as quota, should the TACC for that relevant stock be increased. The procedure followed is that the 28N rights are recorded for each fisher as a tonnage, and so when a TACC for a stock is increased, any outstanding 28N rights are honoured first before other quota holders receive an increased catch allocation.

Under the Fisheries Act 1996, these rights are carried forward and clarified under section 23. The implementation of the adjustments to holdings under the quota share system means that 28N right holders get preferential access when a TACC increase happens until all those rights are discharged.

Submission comments
Ngāti Kuia, Te Ohu Kaimoana and PauaMAC7 note that the existence of 28N rights in the PAU 7 fishery means that in future when a TACC is increased there will be a reallocation of quota shares. They consider that the larger the reduction to the TACC under this review, the more distortionary the impact of any subsequent reallocation in future will be under future TACC increases.

Ngāti Kuia, and the Te Tau Ihu and Te Waka a Maui me ona Toka Iwi Forums consider that Iwi Settlement Quota is at risk with the legislative 28N rights and seek legislative changes to ensures Settlement quota lost through a TACC increase in future be proportionately reinstated, as the Crown as a Treaty Partner is required to protect Iwi settlements. They seek action to ensure these settlement rights remain intact under any future adjustments.

MPI response
In PAU 7 there are two fishers that hold 8.83 tonnes of preferential rights. MPI notes while the proposed reductions do not result in any reallocation of quota shares, any future increase to the TACC will trigger 28N rights in the PAU 7 fishery. The implications for settlement quota is that the proportional share is in effect reduced – the degree to which shares are affected depends on the level of increase. This is consistent with the notion that Māori-held quota is treated the same as all other quota. This principle was recognised in the SNA1 Court decision in the 1990s. Any change to this principle would require legislative amendments and be considered across approximately 40 other stocks where 28N rights exist. MPI has noted the concerns raised and forwarded the issue to the Fisheries Operational review team.

7 Conclusion

Available information suggests that abundance is low and there is a need for catch limit reductions to occur to support a rebuild of the PAU 7 fishery. Retaining the *status quo* (Option 1) does not meet the requirements to support a rebuild of the fishery, but provides for the

greatest level of use across all sectors. However, the benefits derived are likely to be short-lived resulting in a further reduction to available biomass.

Two options for decreasing the TAC are proposed for 1 October 2016, which MPI considers are consistent with your statutory obligations. These options recognise the low abundance in PAU 7 and propose different levels of reduction that vary in the level of socio-economic impacts and the likelihood (probability) of seeing an increase in stock abundance in the next three years. Both options produce a similar probability (91% versus 95%) of moving above the soft limit by 2018. However, MPI notes that the rebuild will take a number of years and be influenced by environmental conditions and future recruitment to the fishery, and so there is some uncertainty in how the fishery will respond to the proposed reduction. In general terms, the larger the catch limit reduction the greater the likelihood of seeing growth in the fishery.

Option 2 proposes significant catch reductions that are likely to support a rebuild of the fishery, while acknowledging the significant socio-economic impact of the greater reductions proposed in Option 3. Under Option 2 it is estimated that the associated TACC reduction would result in a loss of $2.26 million per annum in commercial revenue[54], and a reduction in asset value of approximately $30 million. Under Option 3 the proposed reductions are expected to result in a loss of $2.69 million per annum in commercial revenue, and a reduction in asset value of approximately $36 million. Regular research is planned to support ongoing monitoring of PAU 7 to ensure sustainability under either option.

You must also consider the socio-economic impact of each option under the proposed TACC decreases, which are significant. Under Option 2 the proposed TACC reduction is 50%, whereas under Option 3 it is 60%. The difference in lost value between the two options is approximately $0.43 million in annual revenue (through lost harvest) and $6 million in quota asset value. It is proposed that alongside decreases to the TACC the allowance for other sources of fishing-related mortality increase to 10 tonnes under Options 2 and 3. This change will better capture potential illegal harvest and incidental mortality that may be occurring in the fishery.

No changes are proposed to the customary Māori or recreational allowances as best available information suggests that current settings will provide for current levels of catch. While no changes are proposed to the recreational allowance, MPI sought information and views through the consultation process on recreational harvest in PAU 7. A range of concerns on harvest information, recreational controls (particularly daily bag limits), and amateur charter vessel data were submitted on. MPI proposes to use a shared fishery/multisector approach in 2016 to begin discussions on these matters and what additional management tools may be required to support a rebuild of the fishery.

MPI's preferred option is Option 2, in conjunction with these further discussions to garner information from the community on the status of the paua fishery, recreational harvest pressures, and additional management measures that may be required to ensure the catch limit reductions put in place are not undermined.

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.

[54] Approximately 28% of which is already incurred through the voluntary annual catch entitlement (ACE) shelving in place.

Snapper (SNA7)

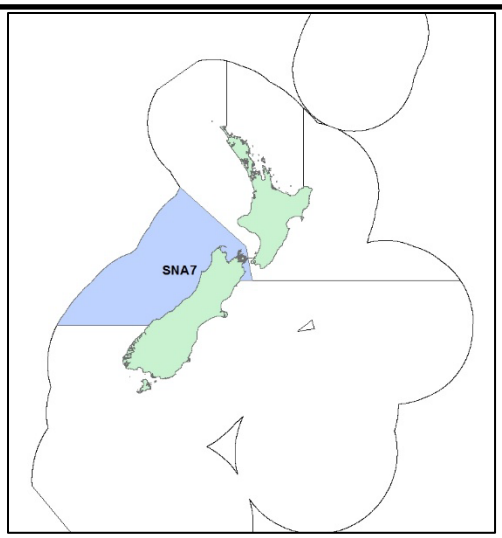


Figure 1: Quota management area (QMA) for the snapper 7 (SNA 7) stock

1 Executive Summary

The amount of snapper in the SNA 7 quota management area (Figure 1) has increased rapidly after a sustained period of low abundance between the 1980s and 2009 where the stock was below 10% of the unfished biomass (B_0).

Following constrained catches since introduction to the quota management system (QMS) in 1986, the rapid increase from 2009 to reach 29% B_0 in the 2014/15 fishing year has been linked to an exceptional level of recruitment[55] in 2007 and possibly another strong recruitment in 2010. The amount of snapper is projected to increase further, although projections are currently only available until 2018/19. Additional monitoring is planned to improve understanding of recent recruitment and support updated projections.

To ensure the stock continues to rebuild to a level that supports maximum sustainable yield (40% B_0) it is also important to identify changes in the fishery that have occurred alongside increasing abundance.

In particular, anecdotal information and preliminary information from an on-site survey that will estimate recreational catch between October 2015 and 30 September 2016, suggests that recreational catch last surveyed in 2011/12, has increased significantly as a result of the increased availability and size of snapper in Golden and Tasman Bay. The available information suggests that the total recreational catch may not be being constrained to the current allowance by current controls on individual fishers, and indicates the potential use and value that could be obtained from SNA 7 by recreational fishers that was not available while the stock was at depleted levels.

While commercial landings have been largely constrained by the total allowable commercial catch (TACC) and the quota management system, commercial fishers have noted the increasing ease in which their snapper entitlement is being caught and the difficulty that this is creating,

[55] Each spawning snapper can produce millions of small eggs in a season but only a portion of these will survive and "recruit" through into the fishery several years later.

particularly in mixed species trawl fisheries. Despite the relatively high costs, deemed values are consistently being incurred for what has been described as unavoidable overcatch in the commercial fishery.

Together, the increased levels of recreational catch and the consistent levels of commercial catch suggest that the total allowable catch (TAC) is now being exceeded. They also reflect a desire for increased use of the fishery.

The TAC and allocations for the SNA 7 fishery were set in 1997, during a period of low abundance. Following consultation MPI proposes two options for responding to changes in the biomass and the fishery (Table 1).

Table 1: Proposed management settings for SNA7 (all values in tonnes)

			Allowances		
Option	Total Allowable Catch	Total Allowable Commercial Catch	Customary **Māori**	Recreational	Other sources of fishing-related mortality
Current settings	306	200	16	90	0
Option 1	326	200	16	90	20
Option 2 (MPI preferred)	545	250	20	250	25

Option 1 is the most conservative and does not provide for an increase in use. Under this option the TAC would be increased by 20 tonnes to incorporate an allowance for other sources of fishing-related mortality. Essentially maintaining the current TAC places greatest weight on any uncertainty in information on recruitment and an emphasis on rebuilding.

In theory Option 1 would provide the greatest rate of rebuild. However, for this rebuild rate to occur, catch would need to be constrained within the TAC. Complete results from the current onsite survey will be available in March 2017. If these results confirm a significant increase in recreational catch, measures would need to be taken to either control catches, or the TAC and allocation settings would need to re-evaluated.

MPI's preferred option is Option 2. Under this option the TAC would be increased by 239 tonnes from 306 tonnes to 545 tonnes. This option gives greatest weight to the opportunity to get greater value from the fishery by allowing for increased utilisation while still ensuring sustainability. Model projections are not available to quantify the difference in rebuild rate between Option 1 and 2, but they suggest with a high degree of certainty that a TAC of 545 tonnes can be supported while the stock continues to rebuild toward target levels, at which point the fishery is estimated to support 600 to 800 tonnes of catch per year. Further monitoring is planned to ensure that the biomass is tracking toward that target.

It is proposed that the TAC increase in Option 2 is allocated primarily to the recreational sector to reflect increased recreational catch and value recreational fishers place on snapper (which in SNA 7 is roughly equivalent to the commercial sector, although this information is uncertain). It is also proposed that the TACC is increased by 50 tonnes and that the allowances for Maori customary fishing and other sources of fishing-related mortality are increased. In effect this option will create a 50:50 split between commercial and recreational fishing in a highly valued shared fishery.

Under both options monitoring would continue alongside discussion with tangata whenua and all stakeholders about how to obtain best value from this shared fishery and maintain a healthy stock for future generations. It is intended that a plan for achieving the rebuild will be prepared to inform any future management reviews.

While only two options for TACs and allocations are presented, there are a number of variations and combinations that could be chosen including a TAC between the two levels proposed or a different approach to allocation. A diverse range of views on these matters were put forward through the engagement process and the consultation.

Industry submissions support the TAC proposed in Option 2 but raise concerns about the level of the proposed recreational allowance. Specifically they suggest that the level of increase will reduce the proportion of closely managed total catch in the fishery and reduce incentives for commercial interests in shared fisheries to support rebuild initiatives.

Proposals were discussed at the Te Waka a Maui Forum where Ngati Tama, supported by Ngati Kuia and Ngati Apa, also proposed that the recreational allowance be increased by no more than 110 tonnes and the remaining TAC should be allocated to the TACC.

The New Zealand Sport Fishing Council and two individual recreational submitters support an increased TAC that allows for a 250 tonne recreational allowance, but do not support a 50 tonne increase to the TACC.

TASFISH put forward a midway option of a 445 tonne TAC, increasing the recreational allowance by 110 tonnes but retaining the current TACC. Many of the other individual recreational fishing submitters either supported *status quo* or a cautious approach.

It is suggested in a number of submissions that the commercial share of the fishery should be managed differently, particularly that consideration should be given to further restriction on the primary method of trawling. Suggestions are also made for improvements to management of the recreational fishery including changes to key recreational rules. MPI considers that it will be important to work through these matters as part of the multi-sector discussions about future management.

MPI note that while there is some agreement on the proposal to increase the recreational allowance, there is less agreement about the level of that increase or whether there should be an increase to the TACC. Option 2 will provide for a 250 tonne recreational allowance and TACC. MPI consider this option not only provides for the increases in recreational catch and value, but allows for a smaller increase for commercial fishing to help address impacts of increased abundance in the mixed fishery. An increased allowance for customary fishing of 20 tonne is also proposed under Option 2. An allowance for other sources of fishing related mortality is provided under both options at a level that corresponds to 10% of the TACC.

2 Context

2.1 BACKGROUND

2.1.1 Biological characteristics of snapper

Snapper are a demersal fish found to depths of about 200m. They occupy a wide range of habitats, including rocky reefs and areas of mud and sandy bottom. Snapper are serial spawners, releasing many batches of eggs during spring and summer. Snapper first reach maturity from 20 to 28 cm fork length at three to four years of age. Water temperature appears to play an important part in the success of recruitment. Generally, strong year classes correspond to warm years and weak classes correspond to cold years.

Growth rate varies geographically and from year to year. The snapper from Tasman Bay/Golden Bay (and the west coast North Island) grow faster and reach a larger average size than elsewhere. They may live up to 60 years or more.

2.1.2 Fishery description

The SNA 7 fishery is small relative to other snapper fisheries around the North Island[56] and is at the southern limit of the distribution of snapper in New Zealand. The stock has been characterised as being influenced by intermittent spikes in recruitment. The majority of catch occurs within the Golden Bay/ Tasman Bay area and this is considered to be a separate biological stock to the Marlborough Sounds.

2.1.2.1 Commercial

The majority of commercial catch in SNA 7 is taken commercially using trawl nets as part of a mixed trawl fishery (multiple target species). The method of pair trawling (BPT) became dominant in the 1970s but declined to about 20% of the catch by the mid-1980s. In the past ten years, pair trawling has continued to decrease and the proportion of single trawl (BT) has increased. Bottom longlining (BLL) has increased to 5% of the catch in 2014/15 and set net (SN) accounts for approximately 4% of the catch in recent years.

In the last 10 fishing years approximately 60% of commercial snapper catch (all methods) has come from statistical area 038 (Golden Bay/ Tasman Bay), 11% from 037, 10% from 035, 8% from 036 and 7% from 017 (Marlborough Sounds) (Figure 2).

[56] The current TAC for SNA 7 of 306 tonnes is equivalent to approximately 4% of the current SNA 1 TAC

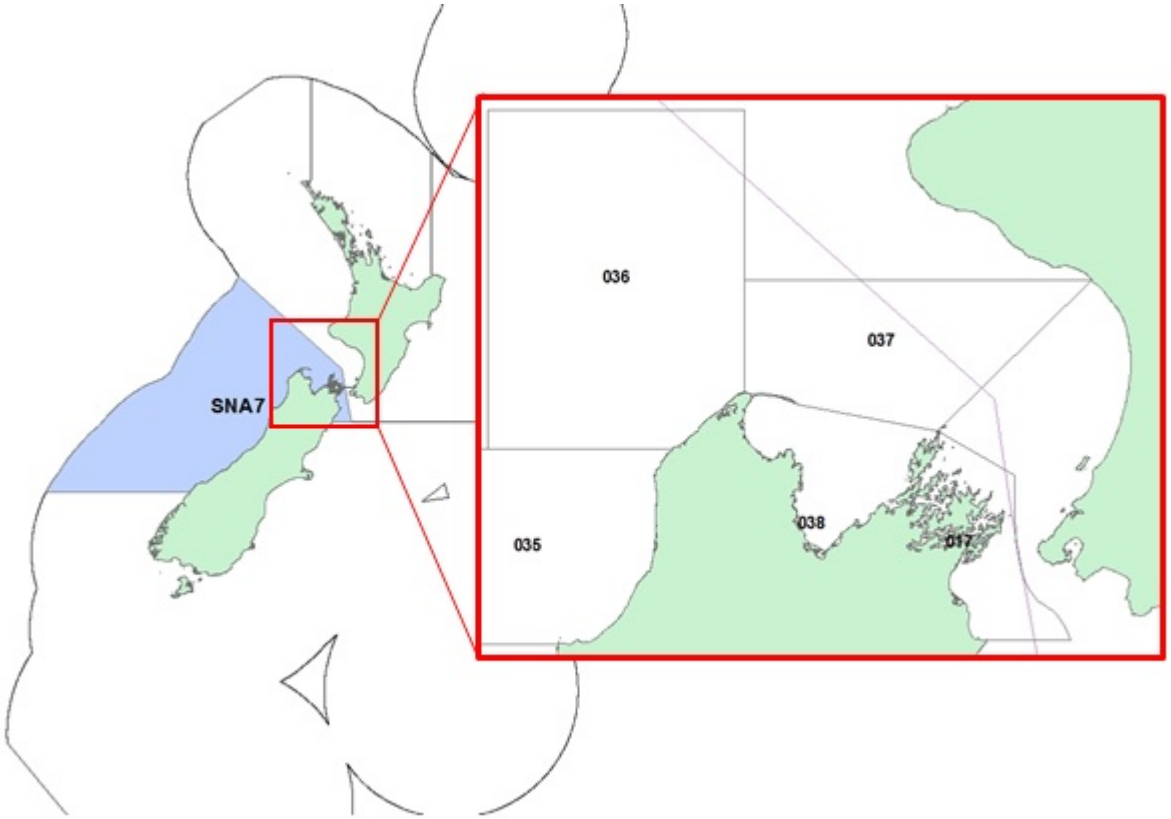


Figure 2: Main statistical areas where SNA 7 catch is reported

While commercial landings have been largely constrained by the total allowable commercial catch (TACC) and the quota management system, commercial fishers have noted the increasing ease in which their snapper entitlement is being caught and the difficulty that this is creating in the mixed fishery.

Despite reports that commercial targeting of snapper has decreased, the TACC for SNA 7 has been overcaught by ~4-8% over the last five years. Other key target species in the mixed trawl fishery include flatfish and gurnard.

2.1.2.2 Recreational

Snapper is a very popular recreational fishery in the Top of the South Island and is primarily taken by hook and line (92% of take in the 2011/12 fishing year).

Regulations governing the recreational harvest of SNA 7 include a recreational daily bag limit of 10 snapper per person. However, a limit of three may be taken from the Marlborough Sounds Area where snapper is less abundant. The recreational minimum legal size (MLS) for snapper is 25 cm in SNA 7.

Information on the level of recreational catch is derived from surveys. The current recreational allowance of 90 tonnes was last reviewed in the context of on an offsite (interview-based) National Panel Survey which was completed in 2011/12. The National Panel Survey estimated recreational catch in the 2011/12 fishing year to be 89 tonnes for SNA 7 (CV of 0.17). Anecdotal information suggests that catches have increased significantly since this time.

MPI currently has a research project underway that is using aerial overflights, boat ramp interviews and web-based ramp cameras to estimate the recreational catch of a range of key

species in the SNA 7 area. The "on-site" survey is measuring recreational catch for the current fishing year (1 October 2015 to 30 September 2016) and therefore only preliminary information is available from this survey. Complete analysis will not be available until after March 2017.

An interim comparison of average boat counts and the gross average snapper catch rates between this survey and the last on-site survey in 2004/5 indicate a substantial increase in recreational catch in Tasman and Golden Bay. This data suggests that the model's prediction of increased recreational catch driven by increasing biomass is not unrealistic.

The on-site survey does not include recreational catch of SNA 7 taken from commercial vessels (under Section 111 authorisation) which amounts to approximately 1 tonne per year. An accurate estimate of the weight is difficult as s 111 take is commonly reported as numbers of individual fish.

An accepted stock assessment model shows that the biomass in SNA 7 has increased rapidly since 2011/12. It is considered plausible that recreational catch varies according to stock availability and abundance, so assuming that the total recreational catch has increased proportionally with biomass, recreational harvest is predicted to have tripled between the last estimate and the upcoming fishing year. This assumption is supported by the preliminary results from the on-site survey and will be confirmed when final results become available in March 2017.

2.1.2.3 Māori customary interests

Snapper (tāmure) is an important kaimoana species for tangata whenua. It is identified by Te Waka a Māui me Ōna Toka iwi forum as a taonga species in the Te Waipounamu Iwi Fisheries Plan. This plan also includes objectives relating to supporting and providing for the customary and commercial interests of South Island iwi.

Information currently held by MPI on Māori customary catch of SNA 7 is uncertain. For those tangata whenua groups operating under the South Island customary fishing regulations, 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.

There have been very few customary authorisations for SNA 7 reported to MPI at this time. This may be a reflection that tangata whenua in the Tasman/Golden Bay and Marlborough Sounds area are still operating under the Amateur Regulations.

2.1.2.4 Other sources of fishing-related mortality

Other potential sources of fishing-related mortality of SNA 7 include mortality associated with the requirement to return fish below the minimum legal size of 25 cm to the sea, other mortality from fish that escape the fishing gear, or illegal discarding.

The sources of mortality outlined above are not able to be quantified precisely. Verified catch reporting information from the SNA 1 fishery indicates juvenile mortality could be 6-8% for the commercial sector based on the return of undersize snapper but similar information is not available for SNA 7.

MPI proposes setting an allowance for other sources of fishing-related mortality of 10% of the TACC which aligns with the current approach in other snapper stocks. This was not included in Option 1 of the consultation document but has subsequently been incorporated into Option 1 of this decision document.

2.1.3 Management approach

The current management settings for SNA 7 were put in place to support a rebuild of the stock. While there have been a number of discussions about how best to manage SNA 7 in the past there is currently no formal plan for this rebuild.

MPI intends to work with tangata whenua and stakeholders to confirm a long-term monitoring and management approach to achieve the SNA 7 rebuild. In the interim, MPI is using the Harvest Strategy Standard (HSS) default of 40% B_0 as a B_{MSY} proxy and target for SNA 7. A relatively high level of research has been undertaken in recent years to understand the changes occurring in the stock and close monitoring is planned to continue. The further discussion with tangata whenua and stakeholders will incorporate this into a formal management plan for SNA 7.

2.2 RATIONALE FOR MANAGEMENT INTERVENTION

The changes in the fishery outlined above suggest the need to consider management action to either better provide for or constrain fishing of SNA 7. An understanding of why current measures were put in place as well as the current status of the SNA 7 stock are important to inform this assessment.

2.2.1 Previous reviews

SNA 7 TAC and/or TACC management settings were previously reviewed in 1990, 1997 and 2013. Historical catch data indicated the initial biomass of SNA 7 had been large but, based on a 1986-88 tag estimate of abundance and low catches, the stock was assumed to have collapsed by the mid-1980s. In 1990, the TACC was reduced from 374 tonnes to 160.3 tonnes. In 1997, a stock assessment indicated that the fishery was slowly rebuilding and a TAC was set at 306 tonnes and the TACC was increased from 160.3 tonnes to 200 tonnes. Allowances were made for Māori customary fishing of 16 tonnes and for recreational fishing of 90 tonnes.

In the 2013 review, industry requested an increase to the TACC to ease pressure from bycatch as the snapper CPUE was increasing. You decided to retain the *status quo* (set in 1997) until more information regarding the CPUE increase could be collected and the status of the stock better understood.

Since that time, an updated SNA 7 stock assessment has been accepted, and industry has partially funded a catch-at-age project aimed at improving understanding of recruitment strength.

2.2.2 Current status

The most recent stock assessment of SNA 7 (2015) estimates the stock to have been at 29% B_0 in 2014/15, which is above the soft limit appropriate for this fishery, but below the interim

target of 40% B_0 . The interim target is based on a default proxy for the biomass that supports maximum sustainable yield (B_{MSY}) as set out in MPI's Harvest Strategy Standard. 40% B_0 has also been used as an interim target for SNA 1.

The assessment indicates that the SNA 7 stock is rebuilding rapidly following substantial decline from 1950 to the mid-1980s due to the impact of high levels of commercial catch (particularly during the late 1970s and early 1980s) and a sustained period of low recruitment between 1980 and 2010.

While recreational harvest, and therefore total catches of SNA 7, are estimated to have increased in recent years, current rates of fishing mortality are considered likely to be below the corresponding target fishing mortality level ($F_{SB40\%}$).

The model projects forward until 2018/19 and assumes that the recreational catch will increase proportionally with increasing biomass. Even though this means that total catches will continue to increase, the SNA 7 spawning biomass is projected to increase from 29% B_0 in 2014/15 to 34.8% B_0 by 2018/19 (Figure 3).

To inform analysis of management decisions for 2016/17 the scenario of also increasing commercial catch by 50 tonnes from October 2016 was modelled (Figure 4). This resulted in minimal differences to the projections (an estimate of 34.6% B_0 in 2018/19).

The rate of increase in stock biomass declines during the projection period as the biomass of a strong 2007 year class approaches a maximum level.

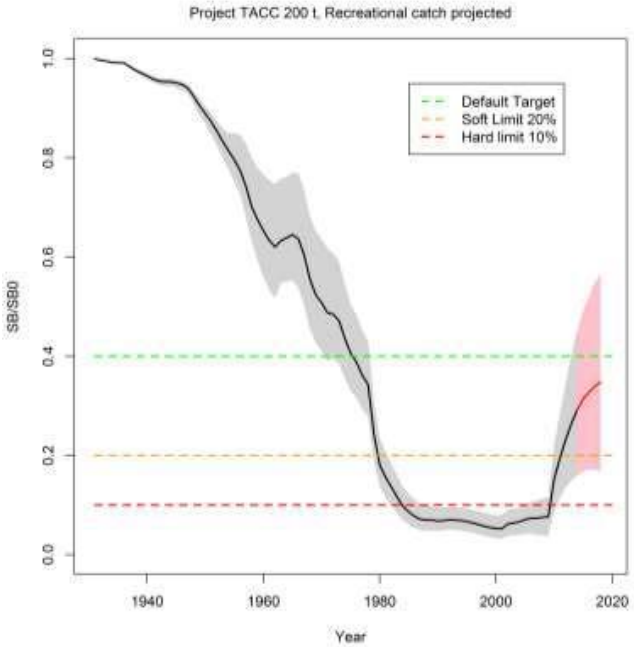


Figure 3. Stock biomass trajectory for the base model with a projected commercial catch (TACC) of 200 tonnes and recreational catch based on a constant exploitation rate. The projection period is from 2014/15 to 2018/19 (red). The shaded area represents the 95% confidence interval.

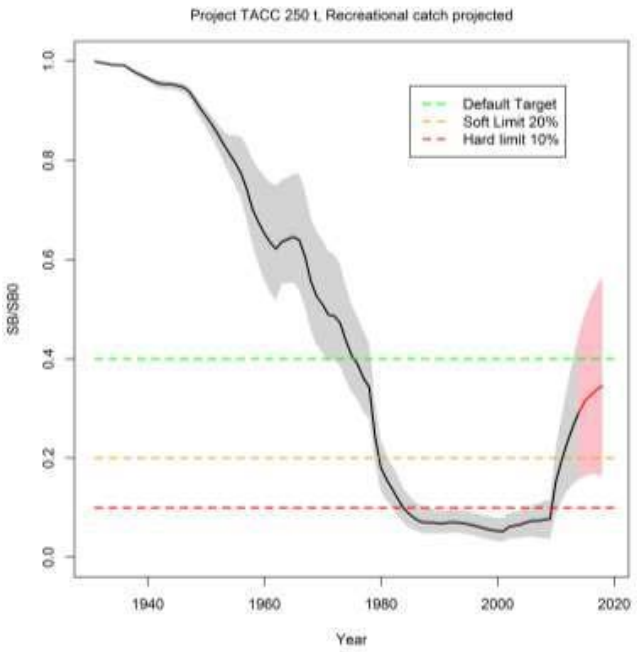


Figure 4. Stock biomass trajectory for the base model with a projected commercial catch (TACC) of 250 tonnes from 2016/17 and recreational catch based on a constant exploitation rate. The projection period is from 2014/15 to 2018/19 (red). The shaded area represents the 95% confidence interval.

The current and projected stock status is sensitive to the estimate of the strength of the 2007 year class and the strength of subsequent recruitment, especially the 2010 year class (Figure 5).

The uncertainty in estimates is represented in Figure 3 and Figure 4 by the shaded areas around the trajectory line. The uncertainty increases over time reflecting the increased uncertainty that is associated with recent recruitment. To address this uncertainty further sampling of the age composition of the commercial catch is planned in the upcoming fishing year. The age composition information is intended to be included within a full stock assessment update in 2017/18 and could inform consideration of any further management changes.

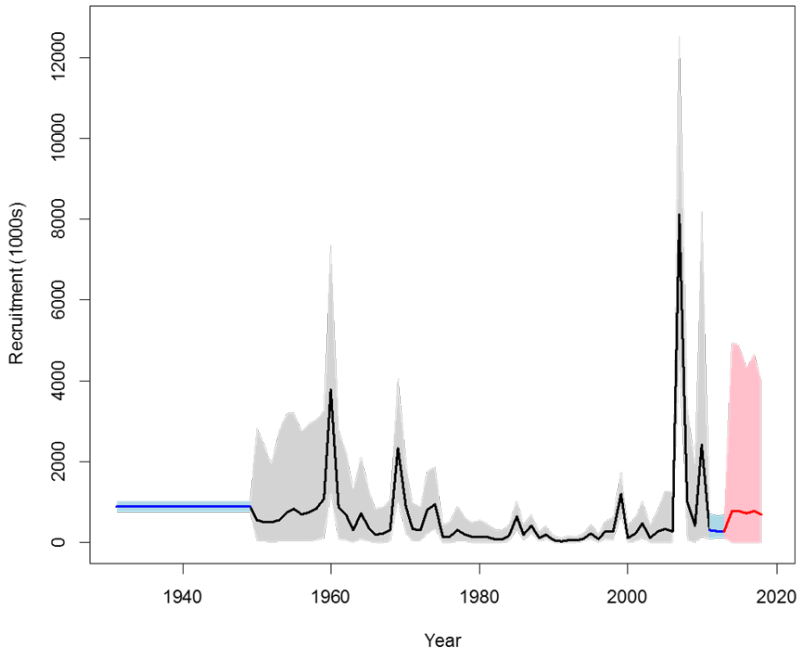


Figure 5: Estimates of annual recruitment (numbers of fish) from the base assessment model. The line represents the median of the MCMC samples and the shaded area represents the 95% confidence interval. The grey time block represents the period for which recruitment deviates are estimated. The blue time blocks correspond to years within the model period for which recruitment deviates were not estimated. The red time block represents the 4-year forecast (projection) period.

3 Consultation

MPI followed an expanded consultation process that involved discussion with iwi forums, the formation of a SNA 7 Management Group and a series of pre-consultation drop-in sessions to provide stakeholders the opportunity to discuss, input and respond to management options. This process was a pilot for how to improve engagement in the management of shared fisheries. The members of the SNA 7 group were selected by MPI but this was not intended to remove any interested stakeholders from the process. MPI will discuss and review the engagement process followed with the members and others as part of next steps for managing the SNA 7 fishery.

The discussion document that invited written submission included the two options set out in Table 2.

Table 2: Proposed management settings (tonnes) for SNA 7

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary **Māori**	Recreational	Other sources of fishing-related mortality
Option 1 *(Status quo)*	306	200	16	90	0
Option 2 (MPI preferred)	545	250	20	250	25

3.1 SUBMISSIONS RECEIVED

In addition to feedback received through the wider engagement process 31 written submissions were received in response to the SNA7 discussion document.[57] 24 of these submissions were received from individuals. Submissions were also received from the following organisations:

a) Bill Benfield Council of Outdoor Recreation Associations (CORANZ)
b) Fisheries Inshore New Zealand
c) Moana Pacific Fisheries Ltd (Moana)
d) NZ Rock Lobster Industry Council (NZ RLIC)
e) NZ Sports Fishing Council (NZSFC)
f) Southern Inshore Fisheries Management Company (SIFMC)
g) Tasman and Sounds Recreational Fishers' Association (TASFISH)

3.2 SUMMARY OF SUBMISSIONS

A brief summary of the submissions is outlined below. Further details of the submissions are discussed in the relevant sections of this paper.

The submissions received cover a range of views with various combinations of TAC and allowances supported.

Industry organisations, NZSFC and some recreational fishers support an increase to the TAC while a large number of the individuals supported a *status quo* or cautious approach. TASFISH proposed a midway option of 445 tonnes.

Submissions that supported an increased TAC also supported an increased recreational allowance however a number of submitters considered 250 tonnes to be too high for the recreational allowance.

Submissions were received both in support and opposition to a TACC increase. A number of recreational fishers that submitted suggest that commercial fishing could be managed better within the existing TACC. In particular, trawling was raised in seven submissions.

Suggestions for alternative snapper bag limits and minimum legal size for the recreational fishery were also put forward. One submitter suggested a closed season between September

[57] Copies of the submissions are available in Appendix II

and December to allow for snapper spawning. Three submitters indicated their desire for recreational reporting to better inform management decisions.

In addition to the written submission process, MPI utilised community drop-in sessions in Blenheim, Nelson, Motueka and Takaka attended by a total of 100 people. While again there was a diversity in views at these sessions, the overall feedback included acknowledgement of rationale to increase the TAC, a strong sentiment that the recreational controls would require review, but also that there was a need to carefully consider current commercial fishing controls like method, temporal, and spatial measures.

MPI response to matters raised in submissions are outlined in the following sections.

4 Legal Considerations

4.1 SECTION 8 – PURPOSE OF THE ACT

MPI considers that both options presented in this paper satisfy the purpose of the Act in that they provide for utilisation in the SNA7 fishery while ensuring sustainability.

However, the two options take different approaches to the uncertainty in information. Option 1 is a cautious approach that does not provide for increased utilisation, maintains current settings and signals the potential need for management review (either recreational controls or the TAC and allocations) after new information on recreational catch is confirmed in March 2017. Option 2 proposes to allow for greater utilisation from 1 October 2016 but may also require further review after new information on both recreational catch and recruitment becomes available.

4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

4.2.1 Maintaining associated or dependent species (section 9(a))

As discussed in the Statutory Considerations section of this paper, s 9(a) is focused on species (including protected species) that cannot be targeted commercially and are affected by the taking of a harvested species. This principle requires you to take into account that these non-harvested species should be maintained above a level that ensures their long-term sustainability. The effect of snapper fishing on protected species, specifically seabirds and marine mammals, is discussed below.

4.2.2 Seabirds, mammals and protected fish

Seabird interactions with New Zealand's commercial fisheries is managed by the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA Seabirds). The NPOA Seabirds reflects New Zealand's obligations under international law to take into account the effects of fishing on associated species such as 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.

Due to their low abundance in both the North and South Island waters, the endemic Hector's dolphin is declared as a threatened species under the provisions of the Marine Mammals Protection Act 1978.

The Maui and Hector's Dolphin Threat Management Plan guides management approaches for addressing both non-fishing and fishing-related impacts on Hector's Dolphin including fishing restrictions or bans in areas of most risk.

The set net and bottom trawl (when targeting flatfish) fisheries have been subject to a range of measures designed to reduce interaction with Hector's dolphins and seabirds.

As the increase proposed is considered likely to cover bycatch from increased abundance, MPI does not anticipate any significant increase in trawling activity nor significant increase of benthic impacts arising from the TACC increases proposed under Option 2.

4.2.3 Biological diversity of the aquatic environment (section 9(b))

The discussion above relating to section 9(a) is also relevant to the maintenance of the biological diversity of the aquatic environment.

4.2.4 Habitat of significance to fisheries management (section 9(c))

4.2.4.1 Benthic impacts

Research has been reported to characterise both New Zealand's benthic environment and the level of benthic impact from fisheries activity. 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 the increase proposed is considered likely to cover bycatch from increased abundance, MPI does not anticipate any significant increase in trawling activity nor significant increase of benthic impacts arising from the TACC increases proposed under Option 2.

4.3 SECTION 10 – INFORMATION PRINCIPLES

The information principles you must take into account in making your decisions are set out in the Statutory Considerations section of this paper. These principles include the principle that decisions should be based upon best available information; that you should be cautious when information is uncertain and that uncertainty in information should not be used as a reason for postponing or failing to take any measures to achieve the purpose of the Act.

Uncertainty in information is clearly identified in this paper. The options in the paper treat uncertainty in information differently. They allow you to choose the weight to place on the uncertainty when making a decision.

All science information discussed in the context of the proposed management options has been peer reviewed by the relevant MPI Fisheries Assessment Working Groups and is considered to be the best available information at this time.

As previously discussed, new information is scheduled to become available in early 2017 from the analysis of an onsite recreational survey that is currently underway in the SNA 7 area. Preliminary information has been obtained from that survey and reviewed by the Marine Amateur Fisheries Science Working Group to support your decisions, but the uncertainty associated with its preliminary nature should be taken into account.

Further information is also scheduled to update the stock assessment and projections of stock biomass. Age composition information will help to address uncertainties about recent recruitment and particularly the strength of the 2010 year class.

Feedback from consultation with Iwi Fisheries Forums, tangata whenua and stakeholders has also been considered.

4.4 SECTION 11 – SUSTAINABILITY MEASURES

Only section 11 measures that are directly relevant to SNA 7 are discussed within this section.

a) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For SNA 7 the measures that apply currently are a TAC, TACC, and allowances for customary take, recreational take, and other sources of fishing-related mortality. A minimum legal size (MLS) applies for commercial catch of snapper of 25 centimetres. Other standard management controls apply to the SNA 7 fishery, for example deemed values, and area and method restrictions.

   The key controls on the recreational fishery are the daily bag limit and the minimum legal size (MLS). In the context of sustainability these controls work in tandem to manage the average annual recreational catch. The controls are not set on an annual basis and are not sufficiently nuanced to respond to annual changes in recreational activity but are intended to control catch so that it fluctuates around the recreational allowance.

   Since 2005, different bag limits have applied for two separate areas within SNA 7. In the Marlborough Sounds a bag limit of 3 applies, while the bag limit for the rest of SNA 7 is 10 fish, consistent with bag limits in SNA 2, SNA 3 and SNA 8. SNA 1 has a slightly smaller bag limit of 7 fish. The MLS for both SNA 7 and SNA 3 is 25 cm, while SNA 2 and SNA 8 have an MLS of 27 cm and SNA 1 has the largest MLS of 30 cm.

   Anecdotal information, model projections and preliminary information from an onsite survey suggest that the daily bag limit and MLS are currently not constraining recreational catch to the allowance. You can decide to make changes to these controls to better manage recreational catch in line with the current allowance (Option 1) or the proposed allowance under Option 2. However, MPI considers that current information is uncertain and decisions would be better informed by the complete analysis of the onsite survey which is scheduled to become available in March 2017.

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. SNA 7 covers the West Coast, Tasman, Nelson and Marlborough Regions. Regional coastal plans are in place to address the cumulative effects of activities in these coastal marine areas. A Marlborough

Environment Plan was also publicly notified on 9 June 2016 that includes specific provisions in relation to fishing methods in specified areas. MPI does not consider any provisions to be relevant to your TAC and allocation decisions.

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.

The Te Waka a Maui me ona Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan. This plan covers SNA 7 and identifies snapper 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 SNA 7 commercial fishery, contributing towards the achievement of Management Objective Three of the Plan.

Te Waka a Māui me Ōna Toka iwi forum was approached on 15 June 2016 for their collective view on SNA 7. Ngati Tama, supported by Ngati Kuia and Ngati Apa, provided feedback on the options proposed. This is included within analysis in this paper.

4.6 SECTION 13(2A) – SETTING THE TAC

In cases such as SNA 7, where there is some uncertainty around the estimates of B_{MSY}, section 13(2A) of the Act provides for you 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_{MSY} level.

40% B_0 represents a default B_{MSY} for stocks with the biological characteristics of snapper and was therefore adopted to guide recent stock assessment work. The preference to use this proxy as a target is not universally accepted by fisheries scientists and has been questioned by SIFMC, but has been used on the advice of managers as best available information and an "interim" until a formal target is agreed.

SNA 7 is currently assessed to be below 40% B_0. The most rapid rebuild possible is one with no fishing mortality, and therefore rebuild is constrained only by the biological capacity of the species and any environmental conditions that affect stock size. At the other end of the spectrum the TAC may be set at a level that ensures that a depleted stock biomass is at least trending towards the target level, but in any particular year the TAC will not immediately move the stock towards that target level.

In determining the way and rate of the rebuild, you must have regard to relevant social, cultural and economic factors.

The s 13(2A)(b) requirement 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. The extent to which the TAC for SNA 7 influences the catch of other species will vary depending on the amount allocated for commercial fishing. Assuming that snapper

continues to be taken largely by trawl the associated stocks are likely to be gurnard, flatfish, tarakihi and to lesser extents barracouta and blue warehou. This increase would likely be minor in the context of existing fishing effort. MPI does not consider that increasing SNA 7 poses a sustainability risk to the key species that are caught in conjunction with SNA 7, but agrees with submitters that suggest it would be useful to review related stocks together.

Section 13 (2A) also requires consideration of the biological characteristics of the stock, and any environmental conditions affecting the stock. The sustained period of low abundance of SNA 7 signals the need for particular caution in these respects. However the recent recruitment may indicate more favourable environmental conditions for snapper, at least in Golden Bay/ Tasman Bay, although it is unknown whether this is temporary or more permanent. The SNA 7 fishery is at the southern limit of the distribution of snapper in New Zealand and has been characterised as being influenced by intermittent spikes in recruitment.

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 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.

MPI notes that there is no clear statement to indicate Parliament's preference or intention that the TAC be allocated in accordance with any particular approach. Similarly, MPI does not have a set policy, but relies on Ministerial discretion being appropriately exercised in each case where decisions on allocation are required, given the specifics of each stock. There are existing examples of this diversity of approach and this is in line with statements from the Court of Appeal.

NZRLIC and Moana submit there is a strong implicit preference in the Act for maintaining the existing proportions or shares in shared fisheries like SNA 7 and suggest that proportional allocation is implicit in the underlying objectives of the Quota Management System. Their submission strongly opposes allocation decisions that give preference to recreational fishing at the expense of the commercial sector, as this creates uncertainty about the availability of future commercial harvest levels and is perceived to reduce incentives for investment in the fishery.

The proposal to significantly increase the share of the TAC that is allocated to recreational fishing is also interpreted as a weakening of the portion of the fishery for which there is close management and monitoring.

MPI notes that it is not practical to manage recreational fishing precisely to an allowance but seeks to ensure that on average catches fluctuate around the allowance. A significant investment has been made in developing and improving a programme for monitoring recreational catch that will periodically estimate recreational catches of snapper in SNA 7 to support future management.

SIFMC supports an increase to the recreational allowance but opposes the proposal to align the TACC and recreational allowance, raising concerns that this is an arbitrary proposal that should have more explicit rationale.

MPI notes that a proportional approach may over time ignore the growing demand for catch or changes in relative value of the catch between sectors. In SNA 7 the existing allocations reflect what was caught by recreational fishers while the stock was depleted rather than the use and value that can be obtained by recreational fishers when the stock is in a healthy state to maximise the value of total catch.

MPI supports the concept of certainty in decision making around allocation and agree that incentives for future management and investment are generated around understanding how and when existing rights will be impacted by the Government. However, certainty is not only provided by following a "proportional approach" to allocation decisions. Certainty can also be provided by making it clear prior to, or as part of your decisions, how you intend to approach allocation for a fishery.

4.8 SECTION 75 – DEEMED VALUE RATES

MPI considered deemed value rates for SNA 7 and decided not to recommend any changes. A discussion is included in the deemed value rates chapter of this Decision Document.

5 Management Options

5.1 ANALYSIS OF OPTIONS

The final options proposed for setting the TAC, TACC, and allowances for SNA 7 are provided in Table 3. Option 1 differs slightly from the "*status quo*" in the Discussion Document by including a 20 tonne increase to the TAC, proposed to be allocated to set an allowance for other sources of fishing-related mortality. Option 2 is the same as the consultation.

Table 3: Proposed management settings for SNA7 (all values in tonnes)

			Allowances		
Option	Total Allowable Catch	Total Allowable Commercial Catch	Customary **Māori**	Recreational	Other sources of fishing-related mortality
Current settings	306	200	16	90	0
Option 1	326	200	16	90	20
Option 2 (MPI preferred)	545	250	20	250	25

5.1.1 Setting the Total Allowable Catch

The two options for setting the TAC indicate a range of possible TAC options that could be chosen depending on how you weigh the uncertainty in information, the benefits of a faster rebuild and the potential impacts on fishers of constraining catches.

5.1.1.1 Option 1 – Increase the TAC by 20 tonnes

Under this option the TAC would be increased from 306 tonnes to 326 tonnes. The stock is currently assessed at 29% of B_0 and therefore is below the B_{MSY} target of 40%B_0. The small increase in TAC is intended to cover an allowance for other sources of fishing-related mortality which is not provided for in existing settings.

Option 1 takes a more cautious approach to the uncertainty in information on recruitment and the limited ability to project future biomass. The similar *status quo* option included in the Discussion Document was supported by 12 submitters who advocated for caution until the biomass achieves target levels.

Option 1 also provides for a faster rebuild than Option 2, however projections are not available to quantify this difference. There are benefits of rebuilding depleted stocks to B_{MSY} as quickly as possible as the stock will support more catches once it reaches B_{MSY}. However, these benefits should be considered against the cost of opportunities to increase utilisation prior to the fishery reaching B_{MSY} and the measures that may be needed to constrain catches in the context of increasing biomass.

In the SNA 7 fishery, commercial fishers are finding it increasingly difficult to avoid snapper in the mixed trawl fisheries as the numbers of snapper increase. Over time this problem will exacerbate until other target fisheries such as flatfish are effectively constrained by the SNA 7 TACC.

Another key factor to consider is the likelihood that recreational fishing is currently exceeding the recreational allowance and therefore contributing to overcatch of the current TAC. Given current uncertainty around the level of recreational catch MPI recommends that decisions on the need and approach to managing recreational catch to support the TAC be made once additional information is available in March 2017.

Therefore, if this option is chosen, MPI consider that it is likely further management action will be required in the short to medium term.

5.1.1.2 Option 2 –Increase the TAC by 239 tonnes (MPI Preferred)

Under this option the TAC would be increased from 306 tonnes to 545 tonnes which allows the opportunity to better provide for recreational catches and an adjustment to the TACC to reflect increased abundance. Projections of future biomass indicate that the SNA 7 biomass will continue to increase under this option to reach 34% B_0 in 2018/19. Option 2 places more weight on providing for increased utilisation and value opportunities while ensuring the stock continues to rebuild. It also places less weight on uncertainty in the future recruitment than Option 1.

The key benefit of Option 2 is the provision for increased utilisation (239 tonnes), much of which is thought to already be occurring. As the stock increases in abundance it will become more difficult to constrain catches to the TAC set in 1997. This option would lessen the immediate need for measures to constrain catch to the TAC and provides for explicit decisions on how an increase in total catch is allocated across sectors.

The key cost of Option 2 may be a reduced rate of rebuild of the stock when compared to Option 1 (assuming catch is constrained to the TAC under that option). If the increased biomass in the fishery is only supported by a small number of year classes there is a risk

associated with increasing utilisation. While there is no detailed information to assess and compare the timeframes to rebuild under either Option 1 or Option 2, projections suggest a significant increase in biomass ($29\%B_0$ to $34\%B_0$) can still be expected under this option.

To further mitigate risk associated with uncertainty around recruitment and the impacts of allowing for more catch during rebuild, ongoing work to monitor the stock and fishing activity is planned. This will feed into work with a multi-sector forum to develop a plan of how best to reach and maintain target levels.

Industry organisations and Ngati Tama supported the Option 2 TAC. NZSFC and some recreational fishers support an increase to the TAC although at lower levels than the option proposed. TASFISH proposed an increase of 139 tonnes.

5.1.2 Allocation of the TAC

Under either option you must decide how to allocate the TAC. As previously discussed the Act does not provide an explicit statutory mechanism to apportion available catch and you have the discretion to make allowances for various sectors based on the best available information. You are not required to meet the needs of any sector in full or give priority for one sector over another. There is no specific list of factors to be considered but reasonable factors may include value, relative value, population size, and current, past or future catches.

MPI proposes two approaches, each linked to the respective option chosen for the TAC.

5.1.2.1 Option 1 – Only change the allowance for Other Sources of Fishing Related Mortality

Under Option 1 it is proposed that no changes are made except to set an allowance for other sources of fishing-related mortality.

This option takes a cautious approach to change and accordingly would be coupled with careful consideration of next steps after new information from an on-site recreational fishing survey becomes available in March 2017. Depending on the outcome of this survey measures could be taken to constrain recreational catches to the allowance (a loss in recreational value) or to reconsider the TAC and allocations. Preliminary information suggests that current recreational catches could be three times the current allowance.

No changes are proposed to the TACC under this option and the impacts of increasing snapper CPUE within the fishery would need to be addressed through other strategies. Despite decreased targeting of snapper in SNA7, $70,812.45 in deemed values were paid for over-catch in the 2014/15 fishing year.

Option 2 – Increase all allowances and the TACC

Under Option 2:

- The Māori customary allowance would increase from 16 tonnes to 20 tonnes
- The recreational allowance would increase from 90 tonnes to 250 tonnes
- The allowance for other sources of fishing-related mortality would be set at 25 tonnes
- The TACC would increase from 200 tonnes to 250 tonnes

5.1.2.1.1 Māori customary

The current Māori customary allowance is 16 tonnes. While information on customary catches of snapper is uncertain, Option 2 proposes a small increase to 20 tonnes. The reasons for the increase are to acknowledge that while unknown, it is reasonable to expect that all sectors are either experiencing an increase in catches or could expect to in the near future. Snapper are an important species and recognised as tāonga in this area.

The 20 tonne allowance is supported by several submitters. NZRLIC proposes a customary allowance of 30 tonnes.

5.1.2.1.2 Recreational

The recreational allowance is 90 tonnes. This allowance was set in 1997 and at the time of the last review (2013) still aligned with best available information (survey in 2011/12). However, since that time anecdotal information and preliminary survey information suggest that recreational catch has increased significantly. Assumptions that recreational catches are increasing in proportion with increased abundance are supported by the preliminary results of the survey. Full results from the survey will not be available until March 2017.

Maximising value from the total catch of SNA 7 is a valid allocation objective for you to take into account in making allocation decisions. Each sector values each additional snapper it is allowed to catch differently. You can improve the value of total catch by allocating catch between sectors based wholly, or in part, on the value each sector places on the additional catch.

There is not enough information to determine the allocation choice that would maximize value for SNA 7. However, nationally, snapper is a high value fishery for recreational fishers. While it is difficult to compare between different uses, best available information suggests that in the SNA 1 fishery the marginal willingness to pay (the amount fishers would be willing to pay for each extra fish) is equivalent between recreational and commercial fishing. There is no information to suggest that relative values would significantly differ in SNA 7, although there is uncertainty in this comparison which is exacerbated by lack of specific data on the value of snapper to recreational fishers in SNA 7, and the age of data on recreational value of snapper in SNA 1.

MPI note that recreational fishers have been utilising a severely depleted fishery since the 1980's so the current allowance is not likely to represent a reasonable level of harvest for them from a rebuilding or rebuilt fishery either from a value or reasonableness perspective.

On balance, MPI believe it reasonable to provide an increased allowance to the recreational sector to better reflect current/future catch and comparative value between the sectors.
MPI note that there is uncertainty around the estimates of current catch. However, MPI believe that an allowance of 250 tonnes better reflects estimates of recreational catch and value. Also, if recreational catch is below the allowance it provides a reasonable opportunity for growth in catch as the fishery continues to rebuild. Under this option the recreational allowance would be the same as the TACC, creating a 50:50 split between the allocations for commercial and recreational fishing.

While submitters that support an increase to the TAC also support an increase to the recreational allowance, there are varying views about the level to set the recreational allowance. NZRLIC supports 190 tonnes, Te Waka a Maui supports no greater than 200 tonnes, TASFISH and Bruce Reid support 200 tonnes, Greg Goodall supports 220 tonnes and NZSFC, Troy Dando and Lloyd Hanson support 250 tonnes.

MPI recognises that there are a range of options that could be appropriate. MPI maintains its preference for 250 tonnes which provides an equal share in the fishery between commercial and recreational which may better reflect respective values of the fishery and improve the overall value obtained from total catch.

It should also be noted that recreational fishers in the Marlborough Sounds have not reported the same level of increased catches as Golden Bay/Tasman Bay. This is anticipated to be a key matter for future discussions.

5.1.2.1.3 Other sources of fishing-related mortality

In the absence of more detailed information MPI has proposed setting an allocation for other sources of fishing-related mortality at 10% of the TACC. Option 1 and Option 2 therefore incorporate a 20 tonne and 25 tonne allowance respectively. No alternatives were provided to this approach. NZSFC supported obtaining better information through reporting of undersize commercial catch that is returned to the sea by law.

5.1.2.1.4 TACC

The 50 tonne increase to the TACC is intended to provide for greater levels of snapper catch within the mixed fishery in response to increased abundance.

The proposed TACC of 250 tonnes was supported by SIFMC who would like to see further increases in 2017 and 2018. FINZ supports the SIFMC submission.
A higher TACC of 300 tonnes was proposed by RLIC. This was also raised at the Te Waka a Maui Forum.

The majority of recreational fishing submitters did not support any increase to the TACC although some supported a smaller increase. NZSFC submitted that the commercial fishery could be better managed within the existing TACC. Several submitters commented on trawling and the need for increased restrictions.

MPI considers that there is an opportunity to provide for increased commercial value from SNA 7 and note that it will become increasingly difficult to avoid snapper in some areas as the fishery continues to rebuild. MPI believe it is reasonable for the commercial sector to also

share in the rebuild of the fishery. A 50 tonne increase would result in an additional income to fishers for this stock of $211,000 based on the 2016/17 port price of $4.22/kg.

5.2 RECREATIONAL CONTROLS

As best available information indicates a rapid increase in recreational catches it is recommended that the effectiveness of recreational controls within SNA 7 be considered in the short term under any option that you choose. MPI recommends that this would be best informed by new on-site survey information that is scheduled to become available in March 2017. The urgency to consider adjustments of recreational controls will be determined by the allowance chosen and the results of the survey. This work will be progressed with a multi-sector forum as part of ongoing discussions on the management of the SNA 7 fishery.

A number of submissions provided suggestions for improving recreational controls including reducing the bag limit, standardising rules between Marlborough Sounds and the rest of SNA 7, increasing the minimum legal size or limiting the use of recreational longlines. Seasonal closures were also suggested for both recreational and commercial fishing.

6 Conclusion

MPI's preferred option is Option 2 – increasing the TAC of SNA 7 to 545 tonnes, increasing the recreational allowance to 250 tonnes, increasing the customary Māori allowance to 20 tonnes, increasing the allowance for other sources of fishing-related mortality to 25 tonnes and, increasing the TACC to 250 tonnes.

Available information on the status of SNA 7 suggests that the stock is currently rebuilding and will continue to rebuild under the proposed TAC.

Increasing the TAC, allowances and TACC before the stock reaches its target recognises the changes that occur in the fishery with increased abundance and places greatest weight on the opportunity to provide for increased utilisation while ensuring sustainability rather than trying to impose constraints on catch for a faster rebuild.

A key uncertainty in information on SNA 7 is the level of recreational catch that is currently occurring. Option 2 chooses to set a significantly higher recreational allowance based on anecdotal and preliminary survey information that suggests that recreational catch is at least 250 tonnes. More detailed analysis from the complete on-site survey will help to verify the allowance and also assess the effectiveness of recreational controls regardless of how you choose to set the allowance.

A 250 tonne TACC is also proposed to allow for some increased commercial catch, which is intended to address the increasing pressures in the mixed fishery. The closer alignment between the recreational allowance and TACC is considered to better reflect the value that can be obtained from the recreational fishery when the stock is in a healthy state.

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 options recommended by MPI.

South Island Eels (LFE/SFE 11-16)

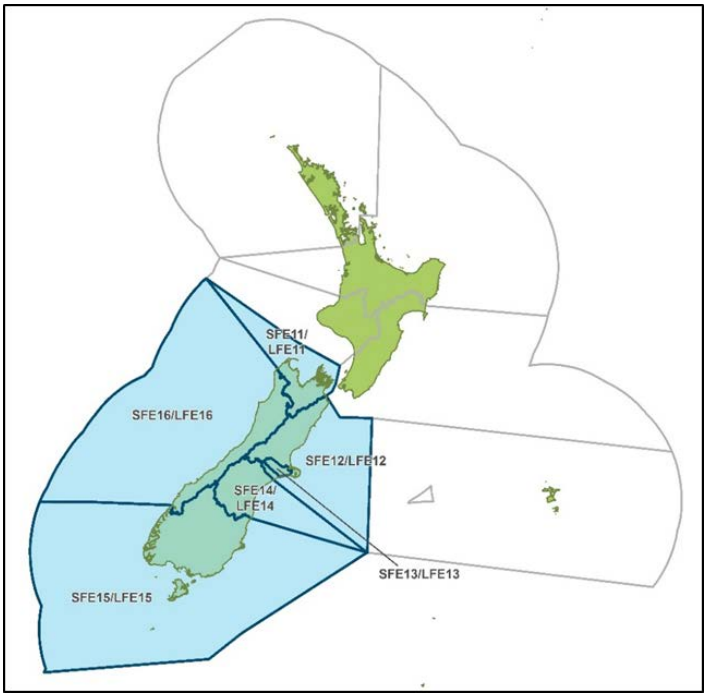


Figure 1: Quota management areas (QMAs) for South Island eels (SFE 11-16/LFE 11-16).

1 Executive Summary

Following your recent decision to separate South Island eel stocks, Total Allowable Catch (TAC), Total Allowable Commercial Catch (TACC), customary Māori and recreational allowances are now required to be set for all new shortfin and longfin eel stocks across South Island quota management areas (QMAs) (SFE 11-16 and LFE 11-16; Figure 1).

The Ministry for Primary Industries (MPI) has consulted on your behalf on catch limits and allowances. The proposals were informed by a scientific stock assessment for South Island eel stocks completed in 2015. This assessment was based on estimates of the relative abundance of longfin and shortfin eels in the fished areas of each QMA. The assessments produced abundance targets and sustainability limits for those stocks with reliable indices of relative abundance. SFE 13 is considered to be well above (double) the target[58] abundance. SFE and LFE 15 are well above the soft limit[59] and stable, while SFE and LFE 16 are well above the soft limit and showing an increasing trend in abundance. For stocks where there was insufficient catch and effort data to produce reliable trends of relative abundance (SFE and LFE 11, 12 and 14), MPI has commissioned other research, such as estimating the percentage of habitat fished, to inform its proposals.

MPI released the discussion document for consultation on 10 June 2016 for four weeks consultation. The document was published on MPI's external websites, and quota holders, and other interested persons/organisations were notified. MPI consulted on a range of catch limit options for each stock, all of which MPI considers will increase eel abundance of both species over time. Some options allow for greater utilisation with a reduced rate of rebuild while other

[58]Target: A biomass level that management actions are designed to achieve with at least at least 50% probability (refer Ministry of Fisheries, 2008, Harvest Strategy Standard for New Zealand Fisheries).
[59] Soft limit: A biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.

options allow for lower levels of utilisation with an increased rate of rebuild. The proposed catch limits take into account the differing levels of certainty in stock status and the data available.

One hundred fifty three submissions were received. Most submissions simply supported a ban on the commercial harvest of longfin eel, but had no view on options for shortfin eel. Submissions that supported commercial harvest favoured the highest level of utilisation for most longfin and shortfin stocks, and considered the proposed options, in combination with separate management, will result in a greater reduction in commercial catch than anticipated. Some submitted that the main processing plant for eels in the South Island may close, and that many fishers will be forced out of the industry. For the largest shortfin stock, SFE 13, a mix of submissions were received from commercial quota holders in support of each option (*status quo*, or 10% increase). Having considered all submissions, MPI's proposed options are outlined in Table 1 below.

Table 1: Proposed TAC options for South Island eel stocks showing MPI preferred options (shaded).

Quota Management Area	Species	Option	TAC (t)	Customary (20% TAC) (t)	Recreational (2% TAC) (t)	TACC (t)	Impact on catch[60]
11	Shortfin	Option 1	12.3	2.3	1	9	↓
		Option 2 (preferred)	24.87	4.87	1	19	—
	Longfin	Option 1 (preferred)	3	1	1	1	↓
		Option 2	12.31	2.31	1	9	↓
		Option 3	21.1	4.1	1	16	—
12	Shortfin	Option 1	9.79	1.79	1	7	↓
		Option 2 (preferred)	26.1	5.1	1	20	—
	Longfin	Option 1 (preferred)	3	1	1	1	↓
		Option 2	11.05	2.05	1	8	↓
		Option 3	29.8	5.8	1	23	—
13	Shortfin	Option 1	156.32	31.26	3.13	121.93	—
		Option 2 (preferred)	171.94	34.38	3.44	134.12	↑
	Longfin	Option 1 (preferred)	3	1	1	1	—
14	Shortfin	Option 1	8.53	1.53	1	6	↓
		Option 2 (preferred)	13.57	2.57	1	10	—
	Longfin	Option 1 (preferred)	3	1	1	1	↓
		Option 2	12.3	2.3	1	9	↓
		Option 3	28.6	5.6	1	22	—
15	Shortfin	Option 1	21.1	4.1	1	16	↓
		Option 2 (preferred)	37.42	7.42	1	29	—
	Longfin	Option 1	44.84	8.84	1	35	↓
		Option 1A (preferred)	66.54	13.27	1.27	52	↓
		Option 2	88.45	17.68	1.77	69	↓
		Option 3	114.1	22.82	2.28	89	—

[60] Expected impact on future catch, relative to recent catch and catch since QMS entry in 2000. An up arrow represents an increase when compared to recent catch, a down arrow equals a decrease when compared to recent catch and a '-' represents minimal change.

Quota Management Area	Species	Option	TAC (t)	Customary (20% TAC) (t)	Recreational (2% TAC) (t)	TACC (t)	Impact on catch[60]
16	Shortfin	Option 1	19.85	3.85	1	15	↓
		Option 2 (preferred)	38.69	7.69	1	30	—
	Longfin	Option 1A	26.13	5.13	1	20	↓
		Option 1 (preferred)	32.41	6.41	1	25	↓
		Option 2	43.72	8.72	1	34	—

This is the first time TACs have been set for the new, separated, LFE and SFE stocks. Therefore, the proposed TACs are not directly comparable with the previous, combined eel (ANG) TACs. Instead, MPI has assessed the expected impact of the proposed TACs in relation to recent catch levels.

For most shortfin stocks, MPI's preferred options limit future catch to around current levels. This approach most closely approximates the '*status quo*' under the new separated management regime and will maintain stock abundance trends at current trajectories for shortfin stocks where abundance is stable or increasing.

For most longfin stocks the preferred options reduce the catch of longfin eel below recent levels, and therefore promote longfin stock rebuild. For four of the six longfin stocks (LFE 11, 12, 13 and 14) the options proposed will effectively eliminate the targeting of longfin eel (a nominal TAC close to zero). This approach will result in an increase in longfin eel abundance over time[61] and takes into account that longfin eels are more vulnerable to fishing pressure than shortfin eels, and the need to be cautious where information is uncertain and set catch limits that will support an increase in longfin eel abundance.

For the remaining two longfin stocks (LFE 15 and 16), the proposed TACs allow continued utilisation of longfin eel at reduced levels. This takes into account that there are reliable trends in relative abundance showing these stocks are well above any sustainability limit and either stable (LFE 15) or increasing (LFE 16), and that a large percentage of suitable longfin eel habitat is commercially unfished in these areas (63% and 70% respectively for LFE 15 and 16). These areas are within the conservation estate, or they are inaccessible to fishers for other reasons, and act as refuges where eels can grow to maturity without commercial fishing pressure. In combination with regulatory measures that protect juvenile and migrating eels they further protect the longfin eel population.

The preferred TAC options will reduce the catch of longfin eels by up to 95% (e.g. in four QMAs where a TAC close to zero is proposed). As eel TACs are not fully caught every year (annual catch is variable depending on environmental conditions such as floods and droughts), the proposals may result in a greater reduction in commercial catch than anticipated in some QMAs.

A further stock assessment of South Island eel stocks will occur in 2018-19. MPI will review whether the new catch limits are achieving the Government's objectives for longfin and shortfin eels and, if necessary, recommend further adjustments to the catch limits at that time.

[61] Subject to environmental influences and mortality from non-fishing related activities (e.g. mechanical clearance of drainage channels, hydro-electric turbines and flood control pumping).

Under all options, MPI proposes to retain the current proportional allowances for commercial, recreational, and customary Māori fishing that were used when the fishery entered the QMS. Recreational allowances will be set at 2% of the TAC (with a minimum of 1 tonne), customary Māori allowances will be set at 20% of the TAC, and the TACC for each stock is proposed to be set at 78% of the TAC. This approach was supported during consultation.

All TACs, TACCs and allowances will be implemented for the 1 October 2016 fishing year, except for SFE and LFE 13 where the next fishing year commences on 1 February 2017.

2 Context

2.1 BACKGROUND

2.1.1 Biology

New Zealand has two main species of eel[62] , the native shortfin eel *Anguilla australis* (also found in South Australia, Tasmania and New Caledonia) and the endemic longfin eel *A. dieffenbachii*.

New Zealand freshwater eels are regarded as temperate species and have a unique life history. They live predominantly in freshwater and undertake a spawning migration to an oceanic spawning ground. They spawn once and then die. The majority of the life cycle is spent in freshwater or estuarine/coastal habitat. Spawning of New Zealand species is presumed to take place in the Southwest Pacific. Offspring undertake a long oceanic migration back to freshwater where they grow to maturity before migrating back to the oceanic spawning grounds.

The habitat of both species overlap, however, shortfins prefer lowland lakes and slow moving soft bottom rivers and streams and are predominant in coastal areas. Longfins prefer fast flowing stony rivers and are dominant in high country lakes and are more impacted by instream barriers such as dams, which prevent them reaching their preferred habitat and migrating back to sea to spawn.

Growth of eels is highly variable and dependent on food availability, water temperature and eel density. Eels, particularly longfins, are generally long-lived. The maximum recorded age is 106 years for longfins and 60 years for shortfins. Longfin eels take approximately 5 years longer to reach the minimum legal size (220 g). South Island shortfin eels take, on average, 13 years to reach the minimum legal size, compared with 18 years for longfins.

Migration appears to be dependent on attaining a certain length/weight combination and condition. The range in recorded age at migration for shortfin males is 5–22 years and 9–41 years for females. For longfin eels the range in recorded age at migration is 11–34 years for males, and 27–61 years for females.

These different biological characteristics mean longfin eels are more vulnerable to fishing pressure than shortfin eels.

[62] A third species of freshwater eel, the Australasian longfin (*Anguilla. reinhardtii*) was identified in the North Island in 1996. When caught it is included as part of the shortfin catch as this species has productivity characteristics closer to shortfins than longfins, and because the catch is not sufficient to justify its own separate stocks.

2.1.2 Fishery description

2.1.2.1 Commercial

Virtually all commercially caught eels (98%) are taken with fyke nets. Eel catches are greatly influenced by water temperature, flood events (increased catches) and drought conditions (reduced catches). Catches decline in winter months (May to September), particularly in the South Island, where fishing ceases. Most catch is exported to markets in Asia and Europe. In excess of 30 full time positions are involved in catching and processing eels in the South Island.

The South Island eel fishery was introduced into the Quota Management System (QMS) on 1 October 2000 with shortfin and longfin species combined into six stocks (codes ANG 11 to ANG 16). The Chatham and North Island eel fisheries were introduced into the QMS on 1 October 2003 and 1 October 2004 respectively using separate QMAs for shortfin and longfin eels.

You have recently decided to separate South Island eel stocks. Therefore, from 1 October this year the fishery will be managed as separate longfin (LFE) and shortfin (SFE) stocks (rather than as ANG). Commercial fishers have raised concerns regarding the implications of this change. In particular, some commercial fishers catch all of their Annual Catch Entitlement (ACE) and some do not (either because they do not have access to eel fishing grounds, fishing costs are high, or because of other reasons). ACE is not traded freely within this fishery, and fishers may be unwilling or unable to purchase additional ACE to cover their catch under the new separated regime.

The fishing year for all stocks extends from 1 October to 30 September except for ANG 13 (Te Waihora/Lake Ellesmere), which has a fishing year from 1 February to 31 January (since 2002). Currently, there are minimum (220 g) and maximum (4 kg) commercial size limits for both longfins and shortfins throughout New Zealand. Quota owners from both islands formally agreed in 1995–96 not to land migratory female longfin eels. Since about 2006 there has been a voluntary code of practice to return all longfin eels caught in Te Waihora/ Ellesmere.

Commercial catch data is available from 1965 and comes from different sources. Catch data prior to 1988 is for calendar years, whereas those since 1988 is for fishing years (Figure 2).

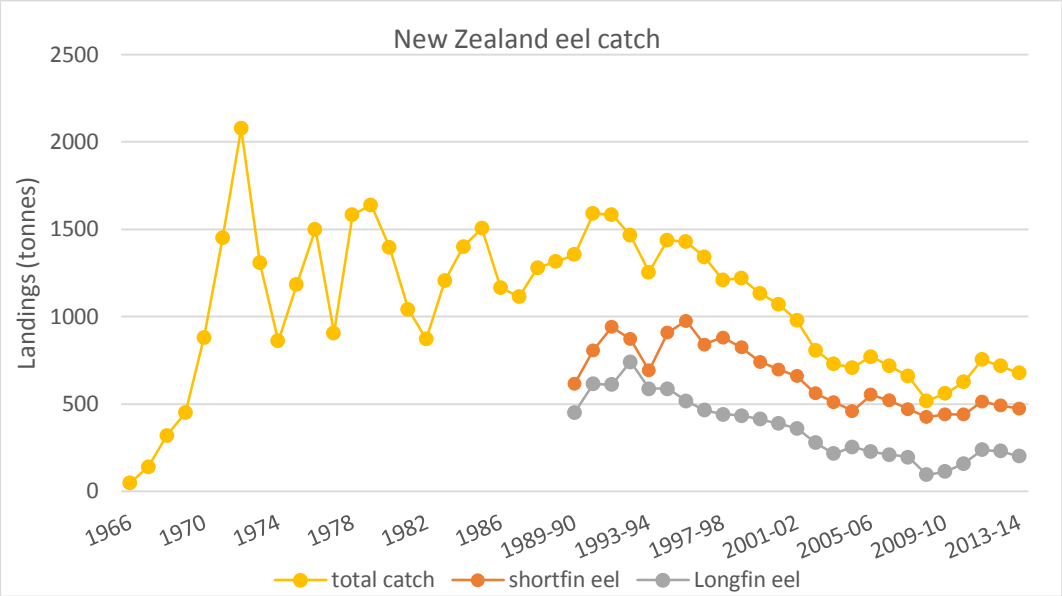


Figure 2: Total eel landings from 1965 to 2012–13, as well as separate shortfin and longfin landings from 1989–90 to 2012–13.

Commercial catch landings for South Island stocks have been reported separately for longfin and shortfin eels since QMS entry (Figure 3). Based on the average port price this catch equates to an approximate landed annual value to fishers of $501,000 for longfin and $647,000 for shortfin in the South Island.

Caution is needed when interpreting the above values because:

- anecdotal evidence suggest that eel fishers receive different prices for longfin and shortfin eels, however, the reported value is an average value covering both species;
- not all Licenced Fish Receivers provide information for the port price survey. MPI has not received sufficient results during the last three years to allow an update of the port pricing for eels; and
- the port price value is what the fisher receives, not what the eels are worth on the open market.

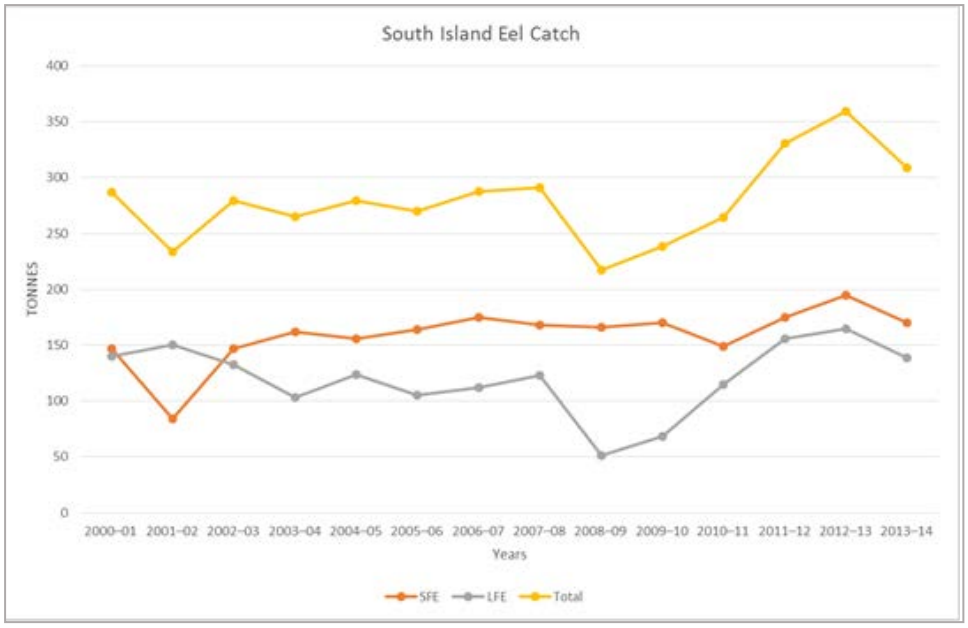


Figure 3: Total commercial landings (t) for South Island eel stocks (based on ECLR data).[63]

The species proportion of the landings varies by QMA. From analyses of landings to eel processing factories and estimated catch from eel catch landing returns (ECLRs), longfin are the dominant species in most areas of the South Island, except for discrete locations such as lakes Te Waihora / Ellesmere, Brunner, and the Waipori Lakes, where significant quantities of shortfin are landed.

Graphs showing catch landings by shortfin and by longfin species and TACCs since 2000–01 are presented for each QMA in the analysis of options sections of this report. Tables of this data are set out in the *Fisheries Assessment Plenary*. [64]

2.1.2.2 Recreational

In October 1994, a recreational individual daily bag limit of six eels was introduced throughout New Zealand. There is no quantitative information on the recreational harvest of freshwater eels, but it is considered to be low and likely to be less than the existing recreational allowance (refer Table 2). The recreational fishery for eels includes any eels taken by people fishing under the amateur fishing regulations[65] and includes any harvest by Māori non-commercial fishers not taken under customary provisions.

[63] Appendix 1 – Eel catch per QMA
[64] Fisheries Assessment Plenary, May 2015, Stock Assessments and Stocks Status Volume 1: Introductory Sections to Hoki. http://fs.fish.govt.nz/Page.aspx?pk=61&tk=212
[65] Fisheries (Amateur Fishing) Regulations 2013

Table 2: TACs, TACCs, and customary non-commercial and recreational allowances (t) for South Island eel stocks. Note as eels are a selective target fishery there is no allowance for other sources of fishing-related mortality.

	ANG 11 Nelson/ Marlborough	ANG 12 North Canterbury	ANG 13 Te Waihora - Lake Ellesmere	ANG 14 South Canterbury	ANG 15 Otago/Southland	ANG 16 West Coast
TAC	51.29	54.8	156.32	45	150.85	80.41
TACC	40	42.74	121.93	35.1	117.66	62.72
Customary Non-Commercial Allowance	10.258	10.96	31.26	9	30.17	16.082
Recreational Allowance	1.0258	1.096	3.13	0.9	3.017	1.608

2.1.2.3 Māori customary interests

Eels (tuna) are considered tāonga (treasured) by Māori and are traditionally an important food source. Māori developed effective methods of harvesting, and hold a good understanding of the habits and life history of eels. Māori retain strong traditional ties to eels and their harvest.

In the South Island, a number of areas have been set aside as non-commercial areas for customary (and recreational) eel fisheries. Additionally, there are seven mātaitai reserves covering freshwater where commercial fishing is prohibited, five of which are solely freshwater and two are freshwater and saltwater, that have been established to provide for customary use.

Customary non-commercial fishers prefer eels of a large size, i.e. over 750 mm and 1 kg. There is no complete assessment of the current or past customary non-commercial take for the South Island. However, there is information on customary non-commercial catches from authorisations issued under customary fisheries regulations. These regulations are in force across most of the South Island (not QMA11). The data collected over the last 17 years shows the majority of customary catch is from QMA12 (North Canterbury) and QMA13 (Te Waihora/Lake Ellesmere). The records also suggest that eel customary permit fulfilment (comparison of quantity authorised to that able to be caught under that authorisation) is of particular concern for QMA12 and QMA14.

When the South Island eel fishery was introduced into the QMS, an allowance was made for customary non-commercial harvest. It was set at 20% of the TAC for each QMA, currently equating to 107 tonnes (Table 2). Based on available information, current customary harvest is within this allowance.

2.1.2.4 Other sources of fishing-related mortality

Although there is no quantitative information on the level of fishing-related mortality associated with the eel fishery (i.e., how many eels die while in the fyke nets), it is not considered to be significant given that the fishing methods used are passive and catch eels in a live state.

Eels are subject to significant sources of mortality from non-fishing activities, although this has not been quantified. Non-fishing mortality occurs through the mechanical clearance of drainage channels, and damage by hydro-electric turbines and flood control pumping.

In addition, eel populations are likely to have been significantly reduced since European settlement from the 1840's by wetland drainage, and on-going habitat modification brought

about by dams, irrigation, channelisation of rivers and stream and the reduction in the littoral (stream edge) habitat.

New information estimates that 73% of suitable longfin eel habitat is not commercially fished in the South Island due to it being either inaccessible to fishers or within the conservation estate.[66] This large amount of unfished habitat acts as a refuge for longfin eels and means that over most of the South Island, longfin eels are able to grow to maturity without commercial fishing pressure.

Overall, MPI notes that fishing is unlikely to be the only driver of eel abundance in many parts of the South Island. Therefore, limiting catch of eels, on its own, may not result in a significant increase in eel abundance.

2.1.3 Management approach

LFE and SFE stocks will be listed on Schedule 3 of the Fisheries Act 1996 (the Act) from October this year, allowing the TAC to be set under section 14. Under section 14, if you are satisfied in respect of a Schedule 3 stock that the purpose of the Act would be better achieved by setting a TAC otherwise than in accordance with section 13(2), you may set a TAC for that stock that you considers appropriate to achieve the purpose of the Act.

The Draft National Fisheries Plan for Freshwater sets out the following objectives for eels:

- Use objective:
    - Secure social, economic and cultural benefits from each stock.
- Environment (stock sustainability) objectives:
    - Maintain adequate spawning biomass to provide for high levels of recruitment
    - Protect, maintain and enhance eel habitats.

2.2 RATIONALE FOR MANAGEMENT INTERVENTION

2.2.1 Previous review

Due to the recent separation of South Island eel stocks this is the first time that catch limits have been set for LFE and SFE across the South Island QMAs. Prior to your decisions on stock separation, catch limits for the combined ANG stocks have not been reviewed since they were first set in 2000. In comparison, North Island were introduced into the QMS in 2003 and the TACs were reviewed and subsequently reduced for all North Island QMAs in 2007.

2.2.2 Current status

In 2013 an independent scientific review by the panel of international experts was convened following the Parliamentary Commissioner for the Environment's (PCE) report on longfin eels. The panel concluded that while there was a trend of decline in New Zealand eel stocks from the early 1990s to the late 2000s, there has been a relatively stable, and in some cases increasing, abundance in recent years.

[66] Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished.* Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

Since then, MPI has undertaken stock assessments for South Island eel stocks in 2015[67]. These assessments were based on indices of relative abundance of longfin and shortfin eels from a catch per unit effort (CPUE) time series in the fished areas of each QMA. This is MPI's preferred assessment approach and was endorsed as the most reliable measure of eel abundance available by the panel of international experts.

The assessments produced a relative abundance target[68] and sustainability limits (hard[69] and soft limits[70]) for those stocks with reliable indices of relative abundance (SFE 13, 15 and 16, LFE 15 and 16). Generally, fish stocks should fluctuate near the target. If the stock falls below the soft limit a time constrained rebuild plan should be implemented to increase the stock back towards the target level. If the stock falls below the hard limit it should be considered for closure to allow the stock to rebuild. If a stock is above the target level it may be considered for a TAC increase. As a default approach for many stocks, the soft limit is twice the hard limit and the target is twice the soft limit. For stocks close to or below the soft limit that are not showing signs of improvement, action should be taken to increase the rate of rebuild.

In the case of SFE and LFE 16, the CPUE time series suggests abundance is well above the soft limit with an increasing trend. For SFE and LFE 15 the CPUE time series suggests abundance is above the soft limit and stable. The CPUE index for SFE 13 is significantly above the target level for the stock. For LFE 13 all quota holders have a voluntary moratorium in place and there is only nominal catch with no stock status information available.

As there is insufficient CPUE data to produce reliable trends of abundance for some stocks (SFE and LFE 11, 12), MPI has commissioned other assessments to help provide information on stock status. These include determining the percentage of eel habitat that is fished within each QMA, analysing catch trends in relation to the TACC, and monitoring trends in elver recruitment at key sites. Information provided by stakeholders including the PCE and tangata whenua (including data on their ability to fulfil customary permits) has also been considered in MPI's proposals for these QMAs.

Across all QMAs the different biological characteristics mean that longfin eels are more vulnerable to fishing pressure than shortfin eels. This has been a factor in MPI's proposed catch limits for the six new longfin and six new shortfin stocks.

The assessment information is discussed in more detail later in this paper as part of informing the specific management options for each stock.

3 Consultation

MPI consulted on your behalf on proposed catch limits for the new shortfin and longfin eel QMAs created as a result of your decision to separate management of the two species in the South Island (Table 1). MPI released the discussion document for consultation on 10 June 2016 for approximately four weeks consultation. The document was published on MPIs external websites, and quota holders, and other persons and organisations with an interest in and/or

[67] North Island eel stocks are scheduled for review in 2016.
[68] Target: A biomass level that management actions are designed to achieve with at least at least 50% probability (refer Ministry of Fisheries, 2008, Harvest Strategy Standard for New Zealand Fisheries).
[69] Hard limit: A biomass limit below which fisheries should be considered for closure.
[70] Soft limit: A biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.

affected by the proposals were notified of the consultation and directed to the consultation web page. The consultation period closed on Monday 11 July 2016.

Prior to the release of the consultation paper, MPI also undertook preliminary consultation on management options with the South Island Eel Industry Association, and provided for the input and participation of tangata whenua through Te Waka a Māui me ona Toka and Ngāi Tahu Mahinga Kai Hī Ika Kōmiti. MPI met with those forums several times over the past year to gain their input and expertise on the important tuna fishery.

During preliminary consultation South Island iwi supported lower TACs and TACCs when compared to historic levels for most South Island eel stocks, and requested nominal options (close to zero) for some longfin stocks. The options and analysis presented in the discussion document and this decision document reflect this input and include discussion of points raised in submissions received from Te Ohu Kai Moana Ltd, Te Rūnanga o Ngāi Tahu and Te Taumutu Runanga during formal consultation.

3.1 SUBMISSIONS RECEIVED

A total of 153 submissions were received regarding the proposals. Approximately 128 short submissions were received from concerned members of the public and environmental groups. Approximately 29 more detailed submissions (refer to Appendix II) were received from industry representatives, environmental groups and iwi as follows:

1) Dominic Preece Aotearoa Quota Brokers Ltd
2) Alan Riwaka – Te Ohu Kai Moana Ltd
3) Bruce Reay – Quota Holder
4) Clem Smith – Quota Holder
5) Stuart Cridge – Quota Holder
6) Ross Campbell – Quota Holder
7) Logan Bowis – Quota Holder
8) Don Bailey – Eel Fisherman
9) Garry Pullan (Pullan Enterprises Ltd) – Quota Holder
10) South Island Eel Industry Association– representing quota holders
11) Mossburn Enterprises Ltd – Eel Processor
12) Mike Pullan – Fisher
13) Bill Chisholm – Industry Representative
14) Rosemary Clucas – Public / Maori representative
15) Malcolm Wards – Quota Holder/ Iwi
16) Dave Herrick – Meridian
17) Amber McEwan – Manaaki Tuna
18) Ali Mitchell – Te Taumutu Runanga
19) Nigel Scott – Ngāi Tahu
20) Sophie Allen – Working Waters Trust
21) Matatapura Ellision - Kati Huirapa Runaka ki Puketeraki
22) Dr Mike Dickison - Whanganui Regional Museum
23) Stephanie Jo Bowman - The Biodiversity Group
24) Paul Hamilton - The Biodiversity Group
25) Marie Brown - Environmental Defence Society
26) Parliamentary Commissioner for the Environment
27) Sara Dowie – Member of Parliament for Invercargill

28) Emma Burns – Otago University
29) Ron Donaldson (Graham Lane) – Te Runga o Waihao

3.2 SUMMARY OF SUBMISSIONS

The 128 short submissions supported either the most conservative option for all longfin stocks, or a ban on the commercial harvest of longfin eels. Of the more detailed submissions approximately nine supported the highest commercial catch options in all QMAs, while a further 11 submissions had differing opinions depending on the species and/or QMA, or presented a neutral position (for example, Meridian Energy supported an increase longfin eel abundance, but didn't specify preferred options).

Submissions are briefly summarised below and further discussed in the Analysis of Management Options and Other Matters sections of this document.

3.2.1 Submissions supporting the commercial harvest of eels

The nine submissions in support of the commercial harvest of eels raised the following:

- concern regarding incorrect calculation of the TACC options in the discussion document;
- the proposed catch limits are unlikely to increase the abundance of longfin eels as habitat issues are more important, especially hydro-dams;
- CPUE has been stable or increasing in all QMAs (with the exception of LFE 15) since eels were brought into the QMS in 2000;
- in all areas where recruitment of juvenile eels can be accurately monitored, the information also shows stable or increasing trends since 2000;
- the information being gathered by the voluntary South Island Eel Industry Association data logger project is in jeopardy;
- "headroom" (the gap between the current TACC and the actual landings) doesn't pose a threat to sustainability as this is due to the setting aside ('shelving') of quota by Te Rūnanga o Ngāi Tahu and other quota holders. In addition the minimum ACE holding requirement means quota holders with less than 4 tonnes of ACE will be unable to fish;
- the only processing plant for eels in the South Island eels will close with the loss of at least of 20 jobs, many fishers will be forced out of the industry due to the cost of trading quota;
- all stocks should be set at the highest catch option, because catch will be constrained due to the minimum ACE holding requirement (quota holders with less than 4 tonnes of ACE are unable to fish); and
- the negative impacts felt by industry regarding the recent decision to separate South Island eel stocks will be exacerbated by any reduction in quota, with the potential to put eel fishers out of business.

Options suggested by submitters include increasing the TACC for SFE 13, facilitating a meeting of quota holders to determine whether there is potential for cooperative pooling of ACE for the benefit of the wider fishery, and discussion with Te Rūnanga o Ngāi Tahu regarding reviewing their policy of not fishing their 20% of eel ACE once the new, more conservative TAC regime is implemented.

3.2.2 Submissions supporting the most conservative options and/or a total ban on the commercial harvest of eels, particularly longfin

The 128 short submissions received from concerned members of the public and/ or environmental groups requesting a ban on the commercial harvest of the New Zealand's longfin eel raised the following:

- eels are considered taonga (treasured) by Maori and are a significant food source;
- they are endemic and/or native (depending on the species). Having a commercial harvest of the endemic longfin eel was compared to having a commercial harvest of the Kereru or Kiwi;
- they are considered 'At risk' and 'Declining' on the Department of Conservation Threat Classification Scheme;
- both species are slow growing, particularly the longfin and only breed once at the end of their life;
- removal of the apex predator has the potential to allow other species to become a pest;
- size limits are meaningless as eels breed only once at the end of their lives; and
- longfin eels are a single national population. There is no point protecting specific areas while continuing to harvest others.

The PCE submission noted there are three main pressures effecting the longfin eel population – fishing, loss of habitat, and barriers to their migration up and down stream. These pressures and the vulnerability of the species mean that decisions about the management of longfins must be made with caution. While fishing is not the only pressure effecting longfin eels, reducing catch is the only action with immediate potential to reverse the decline of the species.

The PCE also raised concerns that there is a 'hole' in the age structure of the longfin eel population with a lower number of eels in smaller age classes than larger size classes. This implies that the population is declining. In addition, the PCE considers that the Freshwater Fish Database suggest that the probability of finding longfin eels in their natural habitat has fallen from 70% to 45% in the last 30 years.

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 of the South Island shortfin and longfin eel fisheries while ensuring sustainability.

4.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

When making a decision concerning the TAC for a stock under section 14, you must have regard to interdependence of stocks, the biological characteristics (discussed earlier) and any environmental conditions affecting the stock.

Sections 9(a) and (b) also require you to take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained. There are few associated or dependent species relating to the take of eels. Eels are a targeted species using passive (live capture) fishing techniques.

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 the section 11 measures that are directly relevant to the South Island shortfin and longfin eel fisheries are discussed within this section.

c) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For these stocks the measures that apply currently are TACs, TACCs, and allowances for customary take, recreational take, and other sources of fishing-related mortality. Other standard management controls apply to the South Island shortfin and longfin eel fisheries, for example deemed values, recreational bag limits, and fishing method constraints. MPI has taken these controls into account in its assessment and advice to you on South Island eels.

d) 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 has consulted with the Department of Conservation (DOC) during the review of South Island eel catch limits and has taken into account any strategies under the Conservation Act 1987 relating to eels. MPI is not aware of any policy statements or plans that should be taken into account for the South Island shortfin and longfin eel stock discussed in this paper.

4.5 SECTION 12 – CONSULTATION

Section 12(1)(b) of the Act requires that you provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga before setting or varying a TAC. MPI has provided an opportunity for tangata whenua to provide input into this process through Te Waka a Māui me ona Toka and Ngāi Tahu Mahinga Kai Hī Ika Kōmiti.

4.6 SECTION 14 – SETTING THE TAC

LFE and SFE stocks will be listed on Schedule 3 of the Act from October this year, allowing the TAC to be set under section 14. Under section 14, if you are satisfied in respect of a Schedule 3 stock that the purpose of the Act would be better achieved by setting a TAC otherwise than in accordance with section 13(2) (where the TAC is set in relation to B_{msy}[71]),

[71] B_{msy} is defined as the biomass that can produce the maximum sustainable yield.

you may set a TAC for that stock that you consider appropriate to achieve the purpose of the Act. This is an appropriate approach given the life history/ spawning patterns (refer section 2.1.1) and biological characteristics of eels and has been used as a basis for determining advice on the TAC options for South Island eels in this paper. The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

4.7 SECTION 20 - SETTING AND VARIATION OF TOTAL ALLOWABLE COMMERCIAL CATCH

Under section 20 of the Act, you must set a TACC for each QMS stock. That TACC applies in each fishing year unless varied under section 20 or until an alteration of the QMA for that stock takes effect in accordance with sections 25 and 26.

4.8 SECTION 21 - SETTING OF NON-COMMERCIAL ALLOWANCES AND THE TACC

Section 21 states when setting a TACC you must make allowances for Māori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality.

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 discretion to make allowances for various sectors based on best available information.

Prior to the separation of South Island eel stocks the TAC was apportioned as follows:

- Customary Māori – 20% of the TAC
- Recreational – 2% of the TAC
- Commercial – 78% of the TAC.

When undertaking the separation of South Island eel stocks it was stated that the new shortfin and longfin stocks would be apportioned in the same manner. Input from tangata whenua and preliminary discussions with stakeholders suggested there was widespread support for this approach and it was put forward as the basis for consultation on both the separation of South Island eel stocks and TAC setting. Best available information suggests current recreational and customary Maori catches are within these allowances. Some submitters propose a moratorium on commercial fishing (0% allocation to commercial). As stated in the Discussion Document, MPI considers the best available information does not support a complete closure of the commercial longfin eel fishery, but notes that for some QMAs only nominal TACCs (1 t) are proposed.

4.9 SECTION 75 – DEEMED VALUE RATES

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

5 Analysis of Management Options

MPI's analysis of submissions and options for setting the TAC, TACC, and allowances for each SFE and LFE stock is detailed in section 5.2 and 5.3. However, a number of issues raised in submissions are applicable to both shortfin and longfin or multiple shortfin and longfin stocks. A summary of these and MPI's response is set out below.

5.1 ANALYSIS OF COMMENTS RELATING TO BOTH SPECIES

5.1.1 Incorrect calculation of TACC options

Chisholm Associates is concerned that MPI's TAC options were incorrectly calculated as they are based solely on the commercial catch with recreational and customary not being considered. The assumption was made that the highest/average historical commercial catch became the new TAC for the new option and that customary and recreational catch was subtracted from this, resulting in a 22% reduction in TACCs for all new SFE and LFE areas.

The assumption in the submission is incorrect. MPI has re-checked its methodology for calculating the TACs and confirms that they are correct. Therefore the apportionment of allowances and the TACC of 20%, 2% and 78% still applies.

5.1.2 Headroom in the TACC

Industry submitters consider there is little rationale to set catch limits to remove "headroom" between the TACC and actual landings (which would occur if the TAC is set on the basis of average or highest catch). They note that most iwi-held South Island eel quota is set aside ('shelved'), along with other quota which is privately shelved for various reasons. This is the reason for the 'headroom' and is not expected to change in the future.

MPI considers this 'headroom' remains a risk and needs to be taken into account. Some quota holders (e.g. Te Rūnanga o Ngāi Tahu) have voluntarily shelved quota to boost eel abundance. However, it is possible that this quota could be fished in the future increasing the harvest pressure on the eels. While shelving can be considered as a tool to increase rate of rebuild of a stock, under the Act you are required to set a TAC you consider is sustainable and cannot rely on voluntary means, such as shelving, to ensure sustainability.

5.1.3 Quota packages

Some submitters are concerned that the proposed catch limit changes will mean that existing fishers may end up with quota packages that don't reflect their historical catch. As a result of the decision to separately manage shortfin and longfin eels, they will be allocated both LFE and SFE quota when historically they may have only landed SFE. Consequently, they consider that many fishers may be forced out of the industry due to the cost and difficulty associated with trading quota.

MPI notes that all fishers have the ability to buy and sell quota/ACE. The transaction costs associated with trading quota apply to all species in the QMS. MPI acknowledges there is some uncertainty in terms of how the ACE and quota market will respond to the new separate species management for South Island eels.

5.1.4 Commercial catch limited by minimum ACE holding

Some industry submitters consider that commercial catch will be constrained well below the proposed TACCs because of the minimum 4 tonne ACE holding requirement, which means quota holders with less than 4 tonnes of ACE are unable to fish their quota.

MPI notes that the minimum holding has reduced from 4 tonnes to 2 tonnes for LFE and SFE stocks as part of the recent separation of South Island eel stocks. The minimum ACE holding was originally requested by industry and there are mixed views in the industry regarding its removal. MPI notes that fishers have the ability to trade ACE with others to obtain the minimum holding.

5.1.5 Economic impact of reduced quota

The South Island Eel Industry Association (SIEIA) is concerned about the economic impact of reduced commercial catch of eels. As a result of the factors outlined above, they are concerned the options, in combination with separate management, will result in a much greater reduction in commercial catch than anticipated. Some submit that the main processing plant for eels in the South Island eels will close, and that many fishers will be forced out of the industry.

MPI recognises that there may be an economic impact for some quota holders, however, subject to the section 8 of the Act you must set a TAC that, if fully caught, is sustainable.

MPI notes there is uncertainty regarding the actual level of commercial catch and economic impact as a result of the new catch limits and the separate management regime for longfin and shortfin eel. In terms of longfin eels, MPI expects that the options proposed will reduce commercial catch by up to 95% (for four of the QMAs, nominal TACCs close to zero are proposed). Future catch will also depend on how the ACE market responds to the new separate species management regime and the new TACCs, as well as on future demand for eels. [72]

MPI will continue to monitor all eel stocks and will readjust TACs (downwards or upwards) in the future if appropriate. The next stock assessment of South Island eel stocks will occur in 2018. MPI will review whether the new catch limits are achieving the Government's utilisation and sustainability objectives for longfin and shortfin eels and, if necessary, make further adjustments at that time.

5.1.6 Reduced information

Some submitters consider that the proposed changes to catch limits will mean that the information being gathered by the SIEIA data logger project will be significantly reduced due to decreased fishing activity.

MPI acknowledges that reduced fishing effort will mean a reduction in the data that comes from commercial reporting (i.e. through voluntary data logger programmes, or statutory reporting). MPI will continue to work collaboratively with industry and other sector groups to identify, gather and improve information used to monitor stock status.

[72] Most commercial eel catch is exported, and catch fluctuates year to year depending on world eel prices. As a result this approach is likely to result in an overall significant decrease in catch, which would likely fluctuate around a new, lower, long term average. Some commercial fishers catch all their ACE and some do not (either because they do not have access to eel fishing grounds, fishing costs are high, or because of other reasons). ACE does not trade freely within this fishery, and fishers may be unwilling or unable to purchase additional ACE to cover their reduced ACE.

5.1.7 Impact of harvest on reproductive potential

A number of submissions note that longfin and shortfin eel species are slow growing, particularly longfin, and only breed once at the end of their life. They note that any eel that is harvested has not had the chance to breed, making minimum size restrictions meaningless.

The biological characteristics of the two eel species has been an important consideration in MPI's proposed catch limit options. MPI also notes there are regulations in place that ensure a sufficient number of eels grow to maturity and maintain the reproductive potential of the population. For example, juvenile eels are protected by the requirement for escapement tubes on all commercial fyke nets, and a 220g minimum weight restriction for commercial eels. Size restrictions allow for the protection of both species as it allows the juvenile eels to safely navigate through the commercial fished locations to areas that aren't commercial fished e.g. small inaccessible tributaries and/ or DOC conservation land and again it allows for the safe passage of large migrating breeders to migrate to sea.

5.1.8 Removal of the apex predator

Some submitters consider that removal of the apex predator from an ecosystem will allow for other, potentially introduced species, to take over and become a future pest species.

All the options proposed in this paper aim to maintain or increase eel populations. MPI monitors eel abundance and will respond to stock abundance trends accordingly.

5.1.9 Each eel species is a single stock

The PCE has submitted that due to their migratory breeding habits each eel species within New Zealand is a single breeding stock and should be managed as such.

From a biological viewpoint, eels are believed to constitute a single stock, however, from a legislative viewpoint they are managed at a QMA level. This ensures the overall sustainability of the stock(s), if indeed some level of sub-stock structure is subsequently found to exist, and reduces the likelihood of localised depletion by spreading catch across all regions of New Zealand.

5.1.10 ACE pooling

Mossburn Enterprises Ltd requests MPI facilitate a meeting of quota holders to determine whether there is potential for cooperative pooling of ACE to facilitate its transfer between fishers for the benefit of the wider fishery.

MPI has contacted Mossburn Enterprises Ltd to discuss when such a meeting might occur.

5.1.11 Discussions with Te Rūnanga o Ngāi Tahu

Most eel quota held by Te Rūnanga o Ngāi Tahu (approximately 20% of quota shares) is currently not fished as a matter of Te Rūnanga o Ngāi Tahu policy to increase abundance of eels. Mossburn Enterprises Ltd requests MPI facilitate discussion with Te Rūnanga o Ngāi

Tahu regarding whether this policy could be lifted once the new, more conservative TAC regime is implemented.

MPI has contacted Mossburn Enterprises Ltd to discuss this issue with the submitter and provided the appropriate contacts within Te Rūnanga o Ngāi Tahu.

5.2 MANAGEMENT OPTIONS FOR SHORTFIN STOCKS (SFE 11-16)

For most shortfin stocks MPI's preferred approach is that TACs are set at a level that maintains future catch at around the same level as catches since the fishery entered the QMS in 2000. The TAC and TACC for these stocks is set at the highest annual commercial catch for shortfin eels reported in this QMA since the fishery entered the QMS in 2000. This approach most closely approximates the '*status quo*' under the new separated management regime. It is the most likely of the options to maintain stock biomass trends at current trajectories, which MPI considers to be an appropriate approach for shortfin stocks where abundance is either stable or increasing (SFE 15, 16).

While the trend in eel abundance for SFE 11, 12 and 14 cannot be reliably determined, these stocks appear to be lightly exploited with fishing being underway for some time and we have not seen any adverse impacts on catch trends, and shortfin eels are less biologically vulnerable than longfin eels. Therefore, the '*status quo*' is also an appropriate approach for these stocks.

MPI notes that, in practice, the commercial catch of shortfin eels will fluctuate around a new average below the proposed TACC due to yearly variations in environmental conditions that effect eels catches with the TACC only having potential to be fully caught during years with perfect environmental conditions.

Of the 153 submissions received, only 15 submissions related specifically to shortfin eels. Six of these were focused on SFE 13 and are discussed in section 5.2.3.

The remaining nine submissions requested the highest proposed options for all shortfin stocks. These submissions considered that increasing CPUE trends suggest there is no evidence to suggest that shortfin stocks cannot support such catch limits. Two submissions requested the lowest proposed catch limit options for all eel stocks, and four submissions requested a ban of the harvest of eels in general without specifying a species.

5.2.1 SFE 11 (Top of the South Island)

MPI proposes the following options for SFE 11 for the upcoming fishing year (Table 3).

Table 3: Proposed TACs, TACCs and allowances for SFE 11 (all values in tonnes, average and highest commercial catch since QMS entry are included for comparison).

	TAC	Customary (20% TAC)	Recreational (2% TAC)[73]	TACC	*Average catch*[74]	*Highest catch*
Option 1	12.3	2.3	1	9	*8.62*	*19.2*
Option 2 (preferred)	24.87	4.87	1	19		

[73] Rounded to 1 tonne where less.
[74] Commercial catch-only, since QMS entry for comparison.

There is insufficient CPUE data to produce reliable trends of relative abundance in relation to targets or limits for this stock. Therefore, MPI has commissioned other assessments (such as the percentage of eel habitat that is fished within the QMA) and analysed catch trends in relation to the TACC and the information provided by stakeholders and tangata whenua to inform its proposals for this stock.

Prior to the separation of the stocks the TAC for the ANG 11 stock (both species combined) was never caught (average catch since QMS entry has been 44% of the TACC) (Figure 3).

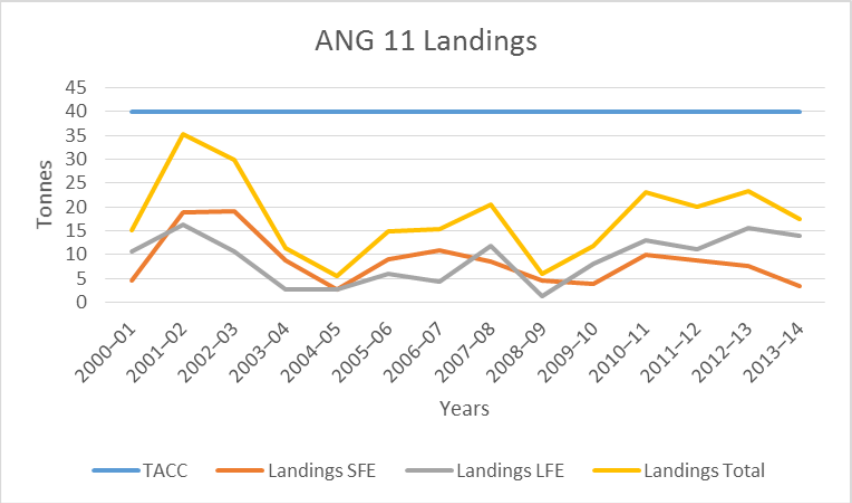


Figure 3: Commercial catch landings vs TACC for ANG 11 between 2000/01 and 2013/14

5.2.1.1 Option 1

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (8.62 t) rounded to the nearest whole tonne. This option would significantly reduce the total shortfin eel ACE and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average.

MPI considers this approach unnecessarily restricts utilisation of the shortfin resource in this QMA given that fishing of these stocks has been underway for some time and that we have not seen a trend of decline in catch, and that shortfin eels are less biologically vulnerable than longfin eels.

5.2.1.2 Option 2 (MPI Preferred)

Option 2 (preferred) proposes the TAC and TACC be set based on the highest annual commercial catch for shortfin eels reported in this QMA since the fishery entered the QMS in 2000 (19.2 tonnes) and rounded to the nearest whole tonne. This option is the most likely to maintain future catch at around the same level as catches since the fishery entered the QMS in 2000, but caps future commercial catch even where future prices and eel demand increase. MPI considers this approach better meets the purpose of the Act taking into account the factors described under Option 1, as it allows greater utilisation for a stock where there are no sustainability concerns.

This option is supported by tangata whenua for this area, who have stated they hold no sustainability concerns for shortfin species in this area and are able to collect eels sufficient for their customary purposes.

Three submissions relating to SFE 11 were received from Chisholm Associates, South Island Eel Industry Association, and Mossburn Enterprises Ltd, all supporting Option 2. They contend that CPUE for South Island shortfin eel has been increasing even after the highest catch has been taken. Furthermore, they note that shortfin eels are only taken during flood events; therefore shortfin eels will not be harvested in all years regardless of TAC.

Te Ohu Kaimoana submitted stating they have no sustainability concerns regarding SFE 11, and support Option 2.

5.2.2 SFE 12 (North Canterbury to Blenheim)

MPI proposes the following options for SFE 12 (Table 4).

Table 4: Proposed TACs, TACCs and allowances for SFE 12 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1	9.79	1.79	1	7	*6.78*	*19.9*
Option 2 (preferred)	26.1	5.1	1	20		

There is insufficient CPUE data to produce reliable trends of relative abundance in relation to targets or limits for this stock. Therefore, MPI has commissioned other assessments (such as the percentage of eel habitat that is fished within the QMA) and analysed catch trends in relation to the TACC and the information provided by stakeholders and tangata whenua to inform its proposals for this stock.

Prior to the separation of the stocks the TAC for the ANG 12 stock (both species combined) was never caught (average catch since QMS entry has been 35% of the TACC) (Figure 4).

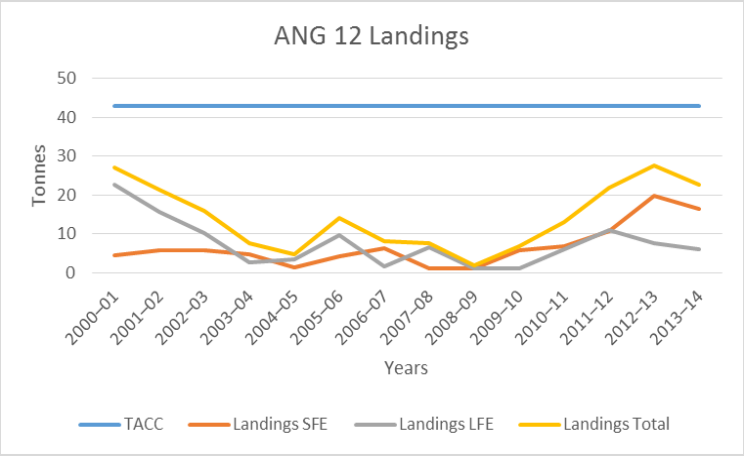


Figure 4: Commercial catch landings vs TACC for ANG 12 between 2000/01 and 2013/14

5.2.2.1 Option 1

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (6.78 t) and rounded to the nearest whole tonne. This option would significantly reduce the total shortfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average.

Te Rūnanga o Ngāi Tahu supports this option, submitting the TACC should be set at the average shortfin eel catch since 2000, minus an appropriate sustainability buffer given there is insufficient information to determine the status of this stock.

MPI considers this approach may unnecessarily restrict utilisation of the shortfin resource in this QMA given that fishing of these stocks has been underway for some time and that we have not seen a trend of decline in catch. Shortfin eels are also less biologically vulnerable than longfin eels.

5.2.2.2 Option 2

Option 2 proposes the TAC and TACC be set based on the highest annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (19.9 t) and rounded to the nearest whole tonne. This option is the most likely to maintain future catch at around the same level as catches since the fishery entered the QMS in 2000, but caps future commercial catch even where future prices and eel demand increase. MPI considers this approach better meets the purpose of the Act taking into account the factors described under Option 1, as it allows greater utilisation for a stock where there are no sustainability concerns.

Five submissions supporting this option were received from Chisholm Associates, South Island Eel Industry Association, Mossburn Enterprises Ltd, Pullan Enterprises, and Don Dailey. They contend that CPUE has been increasing even after the highest catch has been taken. Furthermore, shortfin eels are mainly taken during flood events, therefore they will not be targeted in all years, regardless of TAC.

Te Ohu Kaimoana submitted stating they have no sustainability concerns regarding SFE 12, and they therefore support Option 2.

5.2.3 SFE 13 (Lake Te Waihora / Lake Ellesmere)

MPI proposes the following options for SFE 13 (Table 5).

Table 5: Proposed TACs, TACCs and allowances for SFE 13 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1	156.32	31.26	3.13	121.93	*109.21*	*121.5*
Option 2 (preferred)	171.94	34.38	3.44	134.12		

The stock assessment for SFE 13 (a shortfin-only fishery) indicates the stock is currently around double the target level and very likely (> 90% probability) to stay above the soft limit,[75] therefore catches greater than the historical TAC could be considered (Figure 5). For this

[75] Fisheries Assessment Plenary, May 2015, Ministry of Primary Industries

reason the preferred option is to increase the TAC (Option 2) above the current catch (Option 1). However, MPI considers you can choose either option as they both allow for the sustainable utilisation of shortfin eels within this QMA, and notes there was no clear preference shown within the submissions received.

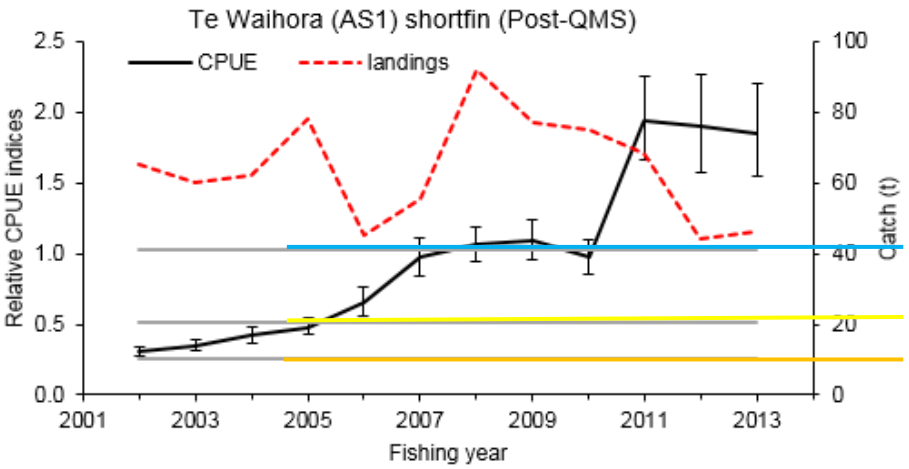


Figure 5: Te Waihora shortfin (ANG 13) CPUE analysis and landings since 2002. Blue line indicates the target; yellow line indicates the soft limit; orange line indicates the hard limit[76]

Option 1 proposes the TAC, TACC allowances are set at the same levels as they are for the current ANG 13 stock (which is shortfin only), while option 2 proposes a 10% increase in the TACC.

5.2.3.1 Option 1

Tangata whenua for this area consider the stock is not yet at a level that an increase should be considered (refer Option 2). Furthermore, some quota holders have indicated they do not support an increase at this time.

Three quota holders, one ACE fisher and two Iwi submitted to retain the at the current level highlighting the reduction in the proportion of male migratory eels compared with non-migratory eels in recent years as a reason to use precaution and not increase the TAC. When the TAC was originally set for QMA 13 it was done on the assumption at least half the TAC each year would be taken in February as small migrating males. Over the last 2 – 3 years the numbers of the migrators have declined, putting increased fishing pressure on the feeding population. Submitters supported the *status quo* until the annual catch of migrating eels has returned.

Te Taumutu Runanga and Te Rūnanga o Ngāi Tahu consider that because customary fishers have not fished their customary allowance quota (31.26 tonnes) for QMA 13 since 2001, this equates to an additional 500.16 tonnes (31.26 tonnes for 16 years) of eels remaining in the QMA 13. They believe that this has artificially increased the CPUE.

[76] SFE 13 is divided into two statistical areas AS1 (Lake Te Waihora) and AS2 (a male eel migrant area adjacent to the lake opening). Stock assessments are only carried out on AS1 because in AS2 male migrants are taken when aggregating and CPUE is not an appropriate measure of abundance. Furthermore, the abundance of breeding female eels (AS1) are considered more important in terms of overall future eel abundance.

MPI accepts that not fishing the customary allowance may have increased the abundance of eels and, therefore, the CPUE data. As this allocation has been voluntarily shelved it could be reinstated, adding to fishing pressure on SFE 13.

5.2.3.2 Option 2

Option 2 (preferred) proposes a TAC increase of 10% (approximately 12 t) higher than the current SFE 13 TAC. Customary and recreational allowances would be set at 20% and 2% of the new TAC, respectively. The remaining volume would provide an increase to the current SFE 13 TACC of approximately 12.19 tonnes.

MPI consider this represents a modest increase that reflects that the stock is well above target level. It would be monitored and adjusted again in the future depending on the results of future assessments of this stock.

There were four submissions from quota holders supporting this option. These submissions noted the CPUE has been almost double the target for the stock since 2011 (refer Figure 5 above) as a justification for increasing the TACC. Two submissions also stated that a 10% increase was not enough and should be 20%, but if implemented it should be reviewed again in 2018.

The South Island Eel Industry Associate and Mossburn Enterprises Limited did not indicate a preference for either option, but the South Island Eel Industry Association stated the proposed increase of 10% was very modest.

5.2.4 SFE 14 (South Canterbury)

MPI proposes the following options for SFE 14 (Table 6).

Table 6: Proposed TACs, TACCs and allowances for SFE 14 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1	8.53	1.53	1	6	*5.62*	*10.1*
Option 2 (preferred)	13.57	2.57	1	10		

There is insufficient CPUE data to produce reliable trends of relative abundance in relation to targets or limits for this stock. Therefore, MPI has commissioned other assessments (such as the percentage of eel habitat that is fished within the QMA) and analysed catch trends in relation to the TACC, and the information provided by stakeholders and tangata whenua to inform its proposals for this stock. The TAC for the ANG 14 stock (both species combined) has never been caught (average commercial catch since QMS entry has been 42% of the TACC; Figure 6).

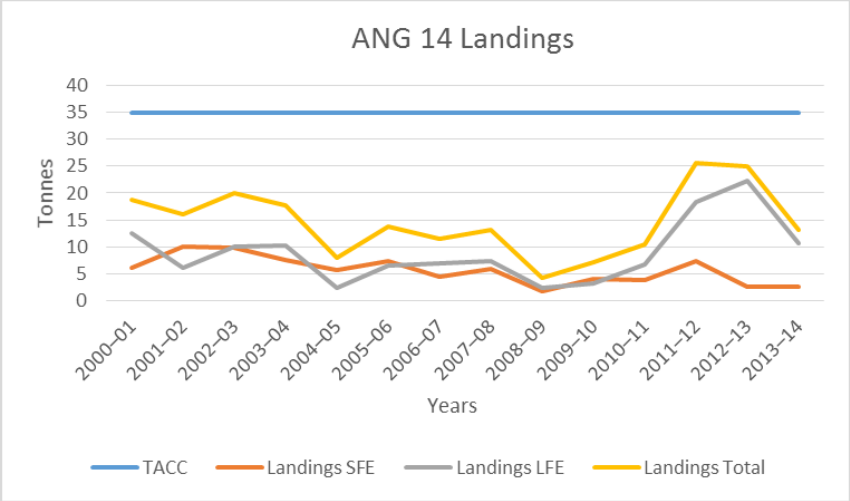


Figure 6: Commercial catch landings vs TACC for ANG 14 between 2000/01 and 2013/14

5.2.4.1 Option 1

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (5.62 t) and rounded to the nearest whole tonne.

Te Rūnanga o Ngāi Tahu supports this option, submitting the TACC should be set at the average SFE catch since 2000 minus an appropriate sustainability buffer given there is insufficient information to determine the status of this stock.

Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total shortfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. MPI considers this approach unnecessarily restricts utilisation of the shortfin resource in this QMA given that fishing of these stocks has been underway for some time, and that we have not seen a trend of decline in catch. Shortfin eels are also less biologically vulnerable than longfin eels.

5.2.4.2 Option 2

Option 2 (preferred) proposes the TAC and TACC be set based on the highest annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (10.1 t) and rounded to the nearest whole tonne (Figure 6). This option is the most likely to maintain future catch at around the same level as catches since the fishery entered the QMS in 2000, but caps future commercial catch even where future prices and eel demand increase. MPI considers this approach better meets the purpose of the Act taking into account the factors described under Option 1, as it allows greater utilisation for a stock where there are no sustainability concerns.

Five submissions relating to SFE 14 were received from Chisholm Associates, South Island Eel Industry Association, Mossburn Enterprises Ltd, Pullan Enterprises, and Don Dailey all supporting Option 2. They contend that CPUE has been increasing even after the highest catch has been taken. Furthermore, shortfin eels are mainly taken during flood events, therefore they will not be targeted in all years, regardless of TAC.

5.2.5 SFE 15 (Southland/ Otago)

MPI proposes the following options for SFE 15 (Table 7).

Table 7: Proposed TACs, TACCs and allowances for SFE 15 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1	21.1	4.1	1	16	*16.38*	*29.1*
Option 2 (preferred)	37.42	7.42	1	29		

The stock assessment suggests that the abundance of shortfin eels in the Otago part of SFE 15 is close to the soft limit at which MPI has a policy that action should be taken to improve stock status. MPI consider it is as likely as not (40 %– 60 % probability) to remain above the soft limit. The time series shows no consistent sign that shortfin eels in this area are moving towards a higher abundance (Figure 7). On the other hand, abundance of shortfin in the larger Southland part of SFE 15 is at least twice the soft limit, and is considered likely to remain above the soft limit with a stable or increasing trend. Overall, the SFE 15 stock is well above the soft limit and stable.

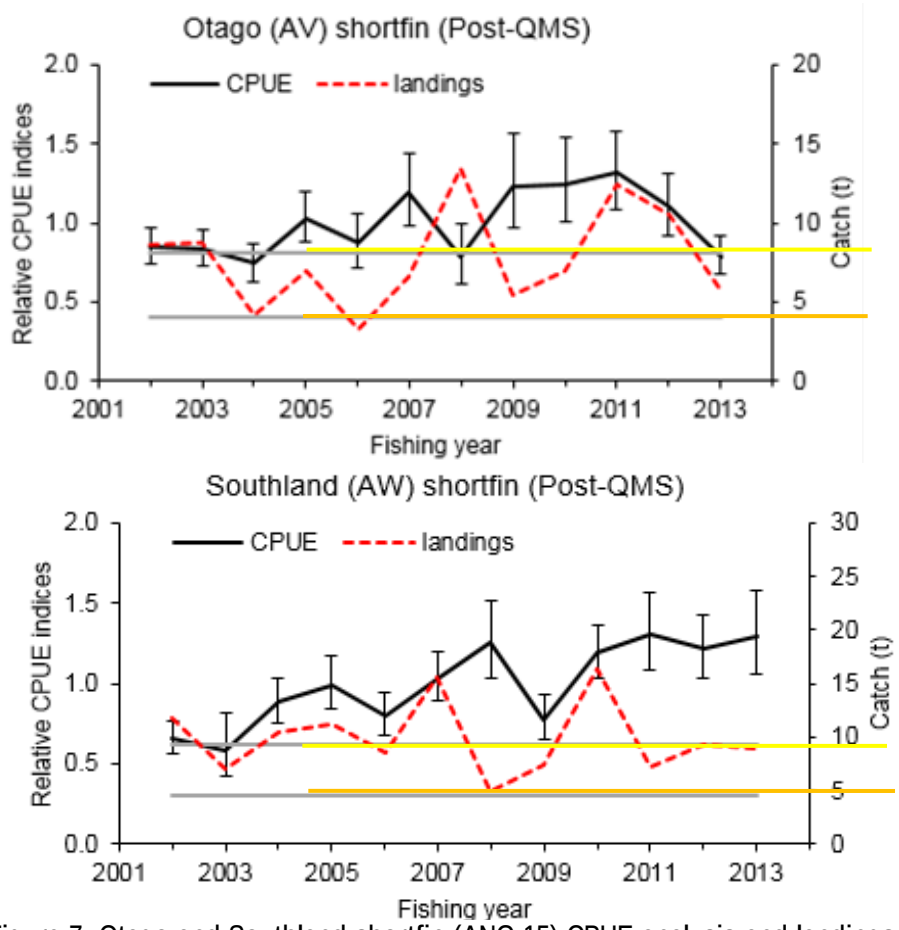


Figure 7: Otago and Southland shortfin (ANG 15) CPUE analysis and landings since 2002. Yellow lines indicate the soft limit; orange lines indicate the hard limit.

5.2.5.1 Option 1

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (16.38 t) and rounded to the nearest whole tonne.

Te Rūnanga o Ngāi Tahu supports this option, proposing the TACC be set at average SFE catch since 2000 minus an appropriate sustainability buffer given the status of the stock.

Setting the TAC and TACC at the level of average catch would significantly reduce the shortfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. This may help support an increase in abundance of shortfin in the Otago part of this QMA, but MPI considers this approach unnecessarily restricts utilisation of the shortfin resource in this QMA given that overall, the SFE 15 stock is likely to be above the soft limit and stable. The larger Southland part of SFE 15 is at least twice the soft limit, and is considered likely to remain above the soft limit with a stable or increasing trend.

5.2.5.2 Option 2 (MPI Preferred)

Option 2 (preferred) proposes the TAC and TACC be set based on the highest annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (29.10 t) and rounded to the nearest whole tonne. MPI notes that overall the shortfin stock is likely to be well above the soft limit and stable.

Five submissions relating to SFE 15 were received from the Chisholm Associates, South Island Eel Industry Association, Mossburn Enterprises Ltd, Pullan Enterprises, and Don Dailey all supporting Option 2. They contend that CPUE has been increasing even after the highest catch has been taken. Furthermore, shortfin eels are mainly taken during flood events, therefore it will not be targeted in all years, regardless of TAC.

5.2.6 SFE 16 (Westland)

MPI proposes the following options for SFE 16 (Table 8).

Table 8: Proposed TACs, TACCs and allowances for SFE 16 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1	19.85	3.85	1	15	*15.38*	*30.3*
Option 2 (preferred)	38.69	7.69	1	30		

The stock assessment suggests relative abundance of shortfin eels in ANG 16 is well above the soft limit, and is likely (> 60 % probability) to remain above the soft limit with an increasing trend (Figure 8).

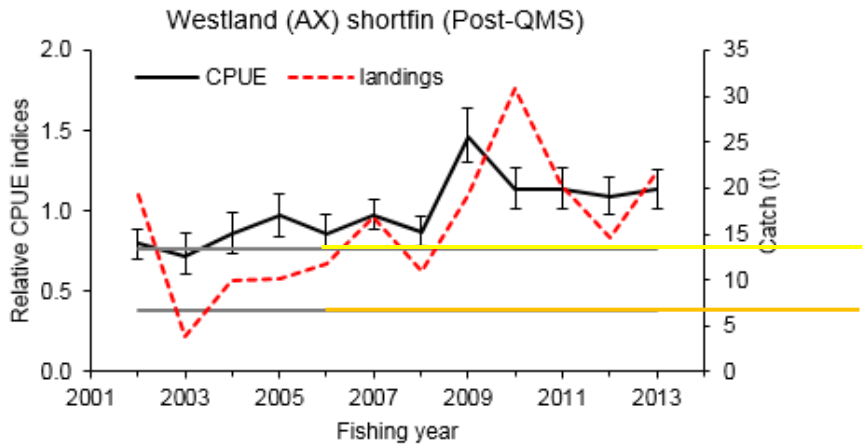


Figure 8: Westland shortfin (ANG 16) CPUE analysis and landings since 2002. Yellow lines indicate the soft limit; orange lines indicate the hard limit.

5.2.6.1 Option 1

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (15.38 t) and rounded to the nearest whole tonne. Setting the TAC and TACC at the level of average catch would significantly reduce the shortfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. Based on the stock assessment a reduction in catch is not required. MPI considers this approach unnecessarily constrains utilisation of the shortfin resource in this QMA.

5.2.6.2 Option 2 (MPI Preferred)

Option 2 (preferred) proposes the TAC and TACC for SFE 16 be set based on the highest annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (30.3 t) and rounded to the nearest whole tonne. Monitoring shows abundance of shortfin eels has increased in this QMA. Where ongoing monitoring shows a continued increase in abundance, MPI considers an increase in the TAC could be considered in the future.

Five submissions relating to SFE 16 were received from the Chisholm Associates, South Island Eel Industry Association, Mossburn Enterprises Ltd, Pullan Enterprises, and Don Dailey all supporting Option 2. They contend that CPUE has been increasing even after the highest catch has been taken. Furthermore shortfin eels are only taken during flood events, therefore will not be taken in all years regardless of TAC.

Te Rūnanga o Ngāi Tahu and Te Ohu Kaimoana support this option given the status of the stock.

5.3 MANAGEMENT OPTIONS FOR LONGFIN STOCKS (LFE 11-16)

128 submissions were received from concerned members of the public, environmental groups and Iwi representatives requesting a ban on the commercial harvest of longfin eel with a large proportion of them supporting the PCE's recommendation to ban the commercial harvest of longfin eels. These submissions consider commercial harvest of longfin eel should be halted as it is exacerbating the negative impacts already caused by anthropogenic causes such as habitat loss, reduced habitat connectivity and reduced water quality. They also stated that the

longfin eel should be protected because it is an endemic species, considered taonga by Maori and of cultural and environmental significance to all New Zealanders.

The PCE submission noted that given the multiple pressures and the vulnerability of longfin eel decisions about the management of longfins must be made with caution. And points to electric fishing data suggesting that there is a 'hole' in the age structure of the longfin eel population with a lower number of eels in smallest age class than larger size classes. In addition, the PCE considers that the Freshwater Fish Database suggest that the probability of finding longfin eels in their natural habitat has fallen from 70% to 45% in the last 30 years. Overall, the PCE is concerned that the population is declining and needs to be factored into your decision.

MPI agrees that decisions regarding longfin eels need to be made with caution, especially where information is uncertain. MPI has investigated all sources of data put forward by the PCE and notes that standardised CPUE was endorsed by the International Scientific Review Panel that was commissioned in 2013 to review the status of New Zealand eel stocks as the most reliable trend of abundance we have. All suggestions to improve standardised CPUE as an index of abundance have been incorporated in recent analyses. Therefore, MPI decisions on the management of longfin eels continue to be based largely on trends in standardised CPUE, but conclusions on stock status also take into account other information including trends in recruitment from dam sites, and the proportion of habitat in each QMA that is fished. This project has revealed that around two thirds of suitable longfin habitat in New Zealand is unfished commercially.

The data referred to in the PCE submissions has been assessed by the panel and/or MPI's science review process. In terms of the electric fishing data showing relatively low numbers of small longfin eels, investigations are ongoing in understanding the behavioural characteristics of such eels (which may make electric fishing relatively ineffective). In contrast to this data, MPI has been monitoring the number of elvers arriving at various dam sites around New Zealand since 1989. While the data show that recruitment varies substantially from one year to the next, there is no declining trend in longfin eel recruitment. The 2015-16 season was in fact the highest on record.

In terms of data suggesting a declining proportion of eels in electric fishing catches reported in the New Zealand Freshwater Fish data base, MPI has commissioned NIWA to undertake a comprehensive analysis of the data. It was shown that the decline in proportion of longfin eels was largely the result of the Gisborne Regional Council no longer collecting data. Streams around Gisborne have abundant longfin eel populations. Once the data is standardised to account for such variables, the trend in the proportion of catches with longfin eel was substantially flattened, showing a slight decline and then a slight increase. This methodology and approach were endorsed by the International Review Panel in 2013.

Nine submissions supported the commercial harvest of longfin eel and directly rejected the PCE's recommendation to ban commercial fishing of longfin eel. The submissions consider the original PCE report was based on 'faulty analysis of electro-fished longfin elver recruitment data, which has since been scientifically discredited'. They also consider that:

- where available CPUE data for longfin eels is stable or increasing for all South Island QMAs expect LFE 15;

- 73%[77] of longfin habitat is unfished (refuge) because it is inaccessible to commercial fishers or within conservation estate;
- recruitment has been increasing in recent years; and
- the negative impacts of the separation for South Island eel stocks will be exacerbated by a reduction in TAC.

MPI has taken all submissions into account in presenting its proposals for each South Island longfin eel stock, as outlined in the following sections. MPI's overall approach is to set catch limits that generally reduce future catch of longfin eel. MPI considers that reducing catch of longfin eels is an appropriate response for most longfin stocks and should, all other factors being equal, result in an increase in eel abundance over time.

This also takes into account the biology of this species and the legal considerations set out in this paper. Given the biology of the species and uncertainty in information, MPI has used caution, as specified by section 10 of the Act when developing the catch limit options outlined in this paper and the preferred options recommended. MPI agrees with the PCE that decisions regarding longfin eels need to be made with caution, especially where information is uncertain.

For LFE 13 a nominal (near zero) TAC is proposed as this is a shortfin-only fishery where commercial fishers have voluntarily agreed not to take longfin eels.

For LFE 11, 12 and 14, where there is insufficient CPUE data for a reliable index of abundance and where tangata whenua report significant concerns regarding their ability to meet customary needs (LFE 12 and 14 – only), MPI proposes you also set a nominal-only TAC (near zero).

This places weight on the uncertainty associated with the status of these stocks and the concerns of tangata whenua. It effectively eliminates targeting of longfin eels in these QMAs, and may require additional measures in the future, such as a recreational daily bag limit close to zero and rahui on customary catch (i.e. closures put in place by tangata kaitiaki) to constrain recreational and customary catch within the low allowances. It also takes into account that the area of unfished habitat in LFE 12 and 14 is lower (50% and 55% respectively) than in other QMAs.

For LFE 15, MPI's preferred option is new Option 1A, which sets the TAC at an intermediate level between Option 1 and Option 2. This option supports a rapid increase in abundance of this stock,[78] but still allows continued utilisation of this stock at a higher level than Option 1.

Stock assessment information suggests LFE 16 well above (around double) the soft limit and is showing an upwards trend. The majority (70%) of suitable eel habitat in this QMA is unfished. The option proposed for LFE 16 will reduce the longfin eel catch available to be taken commercially (the ACE). Setting the TAC at the level of average catch will constrain catch in all years when it would have otherwise have been above the long term average and will support an increase in eel abundance.

[77] Beentjes, M.P.; Sykes, J.; Crow, S. (2016). GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

[78] Subject to environmental influences and mortality from non-fishing related activities (e.g. mechanical clearance of drainage channels, hydro-electric turbines and flood control pumping).

Overall, MPI's preferred options will reduce the catch of longfin eels by up to 95%, depending on QMA (for four of the six longfin stocks, options are proposed that are close to zero). A comparison of current and future catches and catch limits is set out in Table 9.

Table 9: Total commercial catch reductions for LFE under preferred options (in tonnes)

	Total
Current TAC (ANG[79])	539
Current TACC (ANG)	420
Average LFE catch (since QMS)	119
2014-15 LFE catch	152
Proposed preferred LFE TACCs	81
Expected catch under proposed preferred TACCs[80]	20 to 60

There is uncertainty in these estimates as the new separate-species management regime is a significant change in terms of how the fishery operates, and quota holders and the ACE market will take time to adjust. In particular, commercial TACs are unlikely to be fully caught every year because annual catch fluctuates with environmental conditions, (particularly floods and droughts).

MPI will continue to monitor all longfin stocks and will recommend TACs be adjusted (downwards or upwards) in the future if appropriate. The next stock assessment of South Island eel stocks will occur in 2018-19. MPI will review whether the new catch limits are achieving the Government's objectives for longfin and shortfin eels at that time.

5.3.1 LFE 11 (Top of the South Island)

MPI proposes the following options for LFE 11 (Table 10).

Table 10: Proposed TACs, TACCs and allowances for LFE 11 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1 (preferred)	3	1	1	1		
Option 2	12.31	2.31	1	9	*9.2*	*16.4*
Option 3	21.1	4.10	1	16		

There is insufficient CPUE data to produce reliable trends of relative abundance in relation to targets or limits for this stock. Therefore, MPI has commissioned other assessments (such as the percentage of eel habitat that is fished within the QMA) and analysed catch trends in relation to the TACC and the information provided by stakeholders and tangata whenua to inform its proposals for this stock. The TAC for the ANG 11 stock (both species combined) has never been caught (average catch since QMS entry has been 44% of the TACC, Figure 9).

The assessment for this stock is based on limited information and the wide range of options that were presented for consultation reflected the uncertainty regarding its status. The options present a continuum between a TAC of close to zero and a TAC of 21 tonnes that MPI considers reflects a reasonable range for the stock given best available information on the species, the fishery and legal obligations. You are able to choose any of these options depending on the balance between sustainability and utilisation that you consider most appropriate.

[79] ANG TACCs for combined stocks of longfin and shortfin eels.
[80] Expected catch assumes 20-30% ACE will remain shelved and that catch fluctuates at new average between 50 and 100% of TACC.

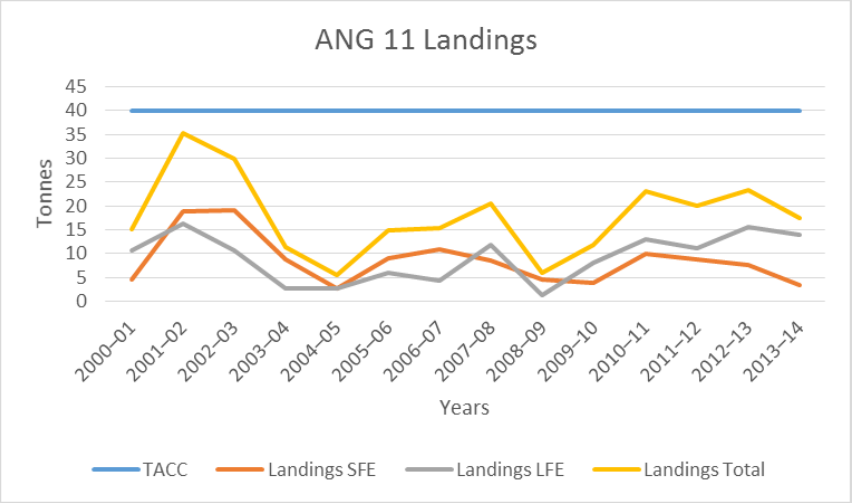


Figure 9: Commercial catch landings vs TACC for ANG 11 between 2000/01 and 2013/14

5.3.1.1 Option 1 (MPI Preferred)

Option 1 (preferred) proposes the TAC and TACC be set close to zero (nominal). It would protect all longfin spawning biomass in this QMA from commercial harvest.

This option allows no commercial utilisation of LFE 11 (a minimum two tonnes of ACE is required prior to commercial fishing), and may require additional measures such as a recreational daily bag limit close to zero and rahui on customary catch (if implemented by tangata whenua) to constrain recreational and customary catch within the low allowances (which are proportional to the TAC). This option will promote the fastest increase in abundance of the stock, however, it does not allow for use.

Overall, this option takes into account that there is limited information on this stock and the requirement to be more cautious under these circumstances and that longfin eels are more biologically vulnerable than shortfin eels.

128 submissions were received from concerned members of the public, environmental groups and Iwi representatives requesting a ban on the commercial harvest of longfin eel, stating the reasons summarised in section 2.2.2 above.

5.3.1.2 Option 2

Option 2 proposes the TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (9.2 t) and rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would reduce the total longfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of longfin eels, as catch would be constrained in all years when it would have otherwise have been above the long term average.

In practice, MPI expects that future catches under this option would fluctuate around a new, long term average that is lower than the historic average. MPI notes submissions point out that there are also a number of quota holders that choose not to fish their quota, and a number of other factors which are likely to further reduce future catch for this stock. The reduction in

catch will result in an increase in eel abundance over time but still allows for utilisation of the stock.

This option takes into account that fishing in this QMA has been underway for some time and we have not seen a decline in catch trends for longfin eel, that most (79%[81]) of suitable eel habitat in this QMA is unfished, and that tangata whenua have stated they hold no sustainability concerns for longfin eels in this area and are able to collect eels sufficient for their customary purposes (see below).

5.3.1.3 Option 3

Option 3 sets the TAC at a level that is likely to maintain future catch at around the same level as catches since the fishery entered the QMS in 2000. The TAC and TACC would cap catch at the highest annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (16.4 t), rounded to the nearest whole tonne. Future catches would be expected to fluctuate with market and environmental conditions at around the level of average catch since QMS entry.

This option takes into account that fishing in this QMA has been underway for some time and we have not seen a consistent decline in catch trends for longfin eel. This option is supported by tangata whenua for this area, who have stated they hold no sustainability concerns for either longfin or shortfin species in this area and are able to collect eels sufficient for their customary purposes. Te Ohu Kai Moana support this submission stating that iwi have noted there is no sustainability concerns with LFE 11. They also note that only 21% of LFE habitat is fished.

Three submissions from Chisholm Associates, South Island Eel Industry Association, and Mossburn Enterprises Ltd support Option 3. They contend that CPUE has been stable or increasing for all South Island longfin QMAs even after the highest catch has been taken. They also consider that catch will be held artificially below the TACC because of the minimum ACE holding requirement, which forces those with less than the minimum ACE to shelve their quota.

MPI considers this approach, however, does not address the limited information and other factors discussed under Option 2.

5.3.2 LFE 12 (North Canterbury to Blenheim)

MPI proposes the following options for LFE 12 (Table 11).

Table 11: Proposed TACs, TACCs and allowances for LFE 12 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1(preferred)	3	1	1	1		
Option 2)	11.05	2.05	1	8	*7.51*	*22.6*
Option 3	29.8	5.8	1	23		

There is insufficient CPUE data to produce reliable trends of relative abundance in relation to targets or limits for this stock. Therefore, MPI has commissioned other assessments (such as

[81] Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished.* Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

the percentage of eel habitat that is fished within the QMA) and analysed catch trends in relation to the TACC and the information provided by stakeholders and tangata whenua to inform its proposals for this stock. The TAC for the ANG 12 stock (both species combined) has never been caught (average catch since QMS entry has been 35% of the TACC) (Figure 10).

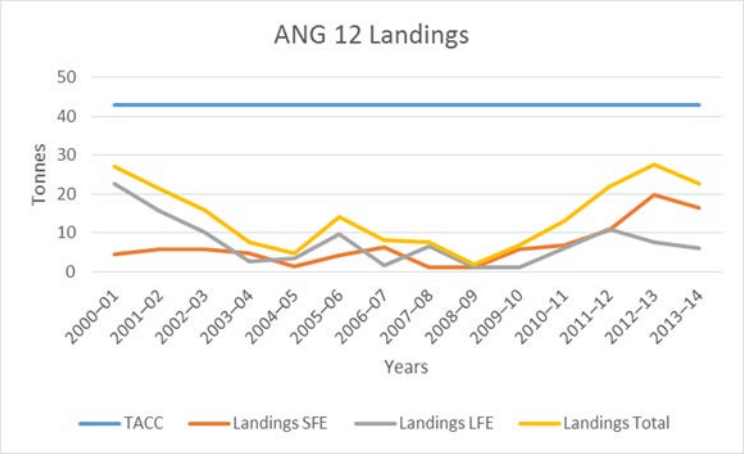


Figure 10: Commercial catch landings vs TACC for ANG 12 between 2000/01 and 2013/14

In contrast to LFE 11, tangata whenua are concerned about the sustainability of longfin eels in this QMA and state they are unable to collect longfin eels for customary purposes. This is supported by customary permit records which suggest that customary permit fulfilment (comparison of quantity authorised to that able to be caught under that authorisation) for eels is low in LFE 12.

The assessment for this stock is based on limited information and the wide range of options that were presented for consultation reflected the uncertainty regarding its status. The options present a continuum between a TAC of close to zero and a TAC of 29 tonnes that MPI considers reflects a reasonable range for the stock given best available information on the species, and the fishery and legal obligations. You are able to choose any of these options depending on the balance between sustainability and utilisation that you consider most appropriate.

In particular, MPI notes that you may consider a TAC for this stock that reduces catch but still allows continued utilisation (Option 2), or that you set a nominal-only TAC (Option 1). MPI prefers Option 1 as it places weight on the uncertainty associated with the status of this stock and the concerns of tangata whenua.

5.3.2.1 Option 1 (MPI Preferred)

Option 1 (preferred) proposes the TAC and TACC be set close to zero (nominal) and addresses the concerns of tangata whenua regarding this stock. It would protect all longfin spawning biomass from commercial harvest in this QMA and result in an increase in abundance.

This option allows no commercial utilisation of LFE 12 (a minimum two tonnes of ACE is required prior to commercial fishing), and may require additional measures such as a recreational daily bag limit close to zero and rahui on customary catch to constrain recreational and customary catch within the low allowances (which are proportional to the TAC). Although this option will promote the fastest increase in abundance of the stock, it does not allow for use.

Overall, this option takes into account that there is limited information on this stock and the requirement to be more cautious under these circumstances and that longfin eels are more biologically vulnerable than shortfin eels. MPI also notes that a higher percentage of habitat is fished in this QMA than in others (50%[82]) and information suggesting that tangata whenua are unable to catch longfin eels for customary purposes.

128 submissions were received from concerned members of the public, environmental groups and Iwi representatives requesting a ban on the commercial harvest of longfin eel, stating the reasons summarised in section 2.2.2 above.

Te Rūnanga o Ngāi Tahu supports this option of a nominal TAC for LFE 12.

5.3.2.2 Option 2

Option 2 proposes the TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (7.51 t) and rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of longfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average.

In practice, MPI expects that future catches under this option would fluctuate around a new, long term average that is significantly lower that the historic average. MPI notes submissions point out that there are also a number of quota holders that choose not to fish their quota, and a number of other factors which are likely to further reduce future catch for this stock. The reduction in catch will result in an increase in eel abundance over time but still allows for utilisation of the stock. While it takes into account that not all suitable eel habitat (50%[83]) in this QMA is fished, MPI notes this a higher percentage of habitat that in other QMAs such as LFE 11.

Te Ohu Kaimoana supports this option and notes only 50% of longfin habitat is commercially fished.

5.3.2.3 Option 3

Option 3 most closely approximates the *status quo* under the separated management regime. It sets the TAC at a level that is likely to maintain future catch at around the same level as catches since the fishery entered the QMS in 2000. The TAC and TACC would be set based on the highest annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (22.6 t) and rounded to the nearest whole tonne.

Five submissions from Chisholm Associates, South Island Eel Industry Association, Mossburn Enterprises Ltd, Pullan Enterprises and Don Bailey were received all supporting Option 3. They contend that CPUE has been stable or increasing for all South Island longfin QMAs even after the highest catch has been taken. They consider catch will be held artificially below the TACC because of the minimum ACE holding requirement, which forces those with less than the minimum ACE to shelve their quota.

[82] Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished.* Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.
[83] Ibid.

MPI considers this approach does not take into account that there is limited information on this stock and the requirement to be more cautious under these circumstances, that longfin eels are more biologically vulnerable than shortfin eels, and that catches higher than the average catch since QMS entry may not ensure sustainability of the species as required under section 8 of the Act.

5.3.3 LFE 13 (Lake Te Waihora / Lake Ellesmere)

MPI proposes the following for LFE 13 (Table 12).

Table 12: Proposed TAC, TACC and allowances for LFE 13 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1 (preferred)	3	1	1	1	*1.11*	*2.1*

For LFE 13 a nominal (near zero) TAC is proposed to be set as this is a shortfin-only fishery where commercial fishers have voluntarily agreed not to take longfin eels.

This TAC provides for a nominal TACC, customary and recreational allowance of 1 tonne to account for any potential harvest of longfin in this area. It will allow for the continuation of some recreational and cultural take of longfin eels, but effectively closes the commercial fishery as a minimum two tonnes of ACE is required prior to commercial fishing.

All submissions received support this approach (and/or no commercial catch) for LFE 13.

5.3.4 LFE 14 (South Canterbury)

MPI proposes the following options for LFE 14 (Table 13).

Table 13: Proposed TACs, TACCs and allowances for LFE 14 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1 (preferred)	3	1	1	1		
Option 2	12.3	2.3	1	9	*8.96*	*22.30*
Option 3	28.6	5.6	1	22		

There is insufficient CPUE data to produce reliable trends of relative abundance in relation to targets or limits for this stock. Therefore, MPI has commissioned other assessments (such as the percentage of eel habitat that is fished within the QMA) and analysed catch trends in relation to the TACC and the information provided by stakeholders and tangata whenua to inform its proposals for this stock. The TAC for the ANG 14 stock (both species combined) has never been caught (average commercial catch since QMS entry has been 42%) (Figure 11).

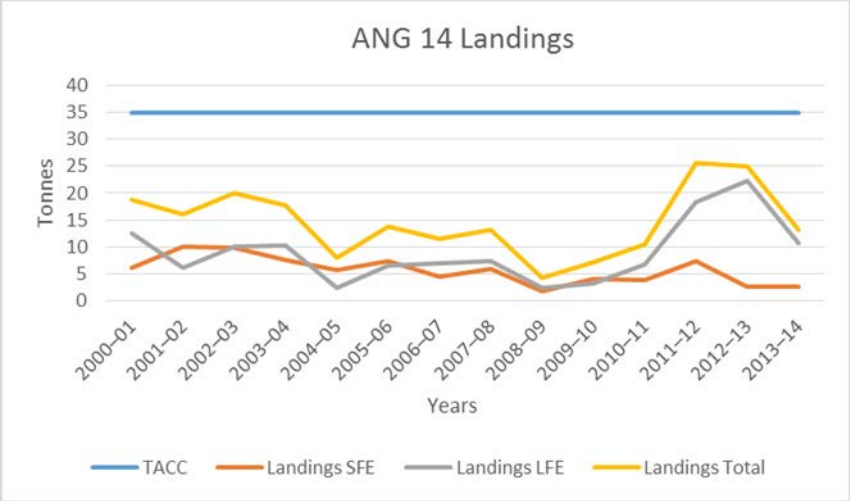


Figure 11: Commercial catch landings vs TACC for ANG 14 between 2000/01 and 2013/14

Tangata whenua are concerned about the sustainability of longfin eels in this QMA and state they are unable to collect longfin eels for customary purposes. This is supported by customary permit records which suggest that customary permit fulfilment (comparison of quantity authorised to that able to be caught under that authorisation) for eels is low in LFE 14.

The assessment for this stock is based on limited information and the wide range of options that were presented for consultation reflected the uncertainty regarding its status. The options present a continuum between a TAC of close to zero and a TAC of 29 tonnes that MPI considers reflects a reasonable range for the stock given best available information on the species, the fishery and legal obligations. You are able to choose any of these options depending on the balance between sustainability and utilisation that you consider most appropriate.

In particular, MPI notes that you may consider a TAC for this stock that reduces catch but still allows continued utilisation (Option 2), or that you set a nominal-only TAC (Option 1). MPI's prefers Option 1 as it places weight on the uncertainty associated with the status of this stock and the concerns of tangata whenua.

5.3.4.1 Option 1 (MPI Preferred)

Option 1 (preferred) proposes the TACC be set close to zero (nominal) and addresses the concerns of tangata whenua regarding this stock. It would protect all longfin spawning biomass in this QMA and result in an increase in abundance. This option, however, allows no commercial utilisation of LFE 14 (a minimum two tonnes of ACE is required prior to commercial fishing) and may require additional measures such as a daily bag limit close to zero and rahui on customary catch to constrain recreational and customary catch within the low allowances (which are proportional to the TAC). Although this option will promote the fastest increase in abundance of the stock, it does not allow for any use.

Overall, this option takes into account that there is limited information on this stock and the requirement to be more cautious under these circumstances and that longfin eels are more biologically vulnerable than shortfin eels. MPI also notes that a higher percentage of habitat is

fished in this QMA than in others (55%[84]) and information suggesting that tangata whenua are unable to catch longfin eels for customary purposes.

128 submissions were received from concerned members of the public, environmental groups and Iwi representatives requesting a ban on the commercial harvest of longfin eel, stating the reasons summarised in section 2.2.2 above.

Te Rūnanga o Ngāi Tahu support this nominal TAC option for LFE 14.

5.3.4.2 Option 2

Option 2 proposes the TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (8.96 t) and rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of longfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average.

In practice, MPI expects that future catches under this option would fluctuate around a new, long term average that is significantly lower that the historic average. MPI notes submissions point out that there are also a number of quota holders that choose not to fish their quota, and a number of other factors which are likely to further reduce future catch for this stock. The reduction in catch will result in an increase in eel abundance over time but still allows for utilisation of the stock. It takes into account that most (55%[85]) of the suitable eel habitat in this QMA is unfished, however MPI notes this is a higher percentage than other QMAs such as LFE 11.

5.3.4.3 Option 3

Option 3 most closely approximates the *status quo* under the separated management regime. It sets the TAC at a level that is likely to maintain future catch at around the same level as catches since the fishery entered the QMS in 2000. The TAC and TACC would be set based on the highest annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (22.3 t) and rounded to the nearest whole tonne.

Five submissions from Chisholm Associates, South Island Eel Industry Association, Mossburn Enterprises Ltd, Pullan Enterprises and Don Bailey were received all supporting Option 3. They contend that CPUE has been stable or increasing for all South Island longfin QMAs even after the highest catch has been taken. They consider catch will be held artificially below the TACC because of the minimum ACE holding requirement, which forces those with less than the minimum ACE to shelve their quota.

MPI considers this approach does not take into account that there is limited information on this stock and the requirement to be more cautious under these circumstances, that longfin eels are more biologically vulnerable than shortfin eels, and that catches higher than the average catch since QMS entry may not ensure sustainability of the species as required under section 8 of the Fisheries Act.

[84] Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished.* Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.
[85] Ibid.

5.3.5 LFE 15 (Southland/ Otago)

MPI proposes the following options for LFE 15 (Table 14).

Table 14: Proposed TACs, TACCs and allowances for LFE 15 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1	44.84	8.84	1	35	*68.57*	*88.60*
Option 1A (preferred)	66.54	13.27	1.27	52		
Option 2	88.45	17.68	1.77	69		
Option 3	114.1	22.82	2.28	89		

A new Option 1A is included, set at an intermediate level between Option 1 and Option 2. With this addition, the options present a continuum between a TAC of 44.23 tonnes and a TAC of 114.1 tonnes that MPI considers reflects a reasonable range for the stock given best available information on the species, and the fishery and legal obligations. You are able to choose any of these options depending on the balance between sustainability and utilisation that you consider most appropriate.

The stock assessment suggests that longfin eels in the Otago part of ANG 15 are above (> 60% probability) the soft limit at which MPI has a policy that action should be taken to improve stock status and stable (Figure 12). For the Southland area, the abundance of longfin eels is above the soft limit and also likely (> 60% probability) to remain above the soft limit and stable. Overall the abundance of longfin eels in ANG 15 is above the soft limit and stable.

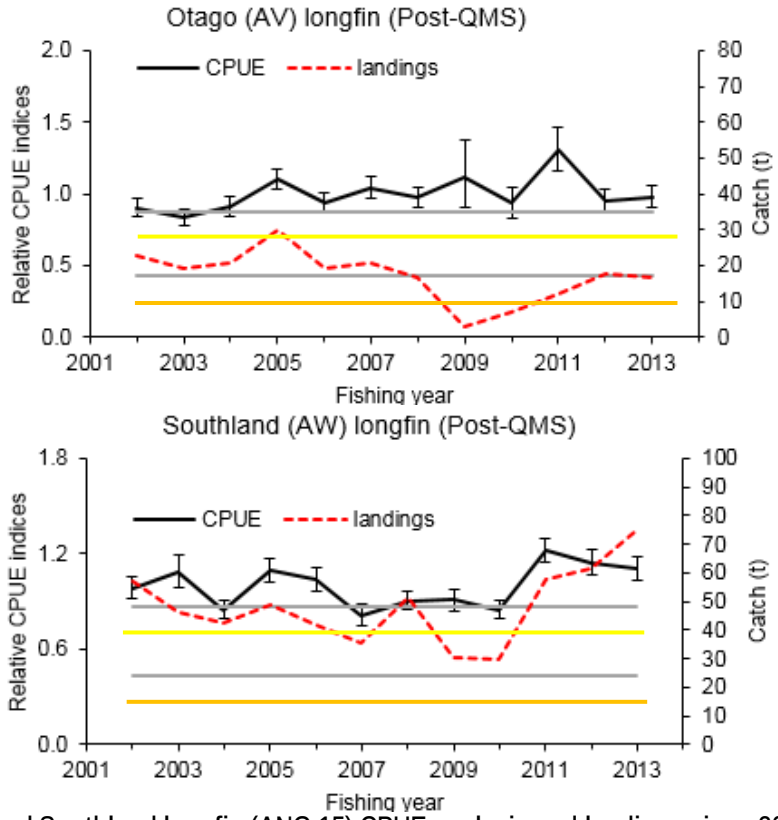


Figure 12: Otago and Southland longfin (ANG 15) CPUE analysis and landings since 2002. Yellow lines indicate the soft limit; orange lines indicate the hard limit.

One hundred twenty eight submissions were received from members of the public, environmental groups and Iwi representatives requesting a total ban on the commercial harvest of the New Zealand's longfin eel (summarised in section 2.2.2). None of the options proposed in the discussion document provide for a ban on commercial harvest in this QMA. MPI considers that best available information supports the ability to harvest this stock, albeit at a lower level than currently, while still ensuring an increase in eel numbers.

5.3.5.1 Option 1

Option 1 proposes the TAC and TACC be set based on half the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000.

This option would promote the fastest increase in abundance of this stock, but would result in a significant reduction in utilisation. QMA 15 is the largest of the South Island fisheries. Under this option future catches would fluctuate around a new, lower, long term average that may be as low as a quarter of the historic average. The eel industry and others are concerned that the main processing plant for eels in the South Island (which is situated in this QMA) may close due to insufficient product volume, and that many fishers will be forced out of the industry. If so, then this will further reduce future catch for this stock.

Te Rūnanga o Ngāi Tahu support this Option 1 for QMA 15 given the status of the stock.

*5.3.5.2 Option 1A (*new, MPI Preferred*)*

Option 1A proposes a TAC and TACC set at an intermediate level between Option 1 and Option 2. Compared to Option 1 it allows a greater level of utilisation, noting submissions from industry and others regarding the economic impact of a significant catch reduction in this QMA.

This option would support a rapid increase in abundance of this stock, but at a potentially slower rate than Option 1. As for Option 2, this option takes into account that (63%[86]) of suitable eel habitat in this QMA is unfished and that the stock, is above the soft limit, but not showing an upward trend.

MPI notes submissions point out that there are some quota holders that choose not to fish their quota, and a number of other factors which are likely to further reduce future catch for this stock. Given that the actual level of catch reduction is uncertain and will depend on such factors, MPI will continue to monitor these stocks and readjust TACs (upwards or downwards) in the future if appropriate.

5.3.5.3 Option 2

Option 2 proposes the TAC and TACC be set based on the mean annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000, and rounded to the nearest whole tonne. This approach will reduce the catch of longfin eels, but not as significantly as Options 1 and 1A.

Under this option catch will be capped in all years when it would have otherwise have been above the long term average (e.g. if applied retrospectively, this approach would have capped catch in around half of the years since QMS entry). In practice, future catches are expected to

[86] Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished.* Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

fluctuate around a new, lower, long term average that is between the historic mean and a lower point.

This option allows for utilisation at a higher level than Options 1 and 1A, and takes into account that (63%[87]) of suitable eel habitat in this QMA is unfished. The reduction in catch under this option will result in an increase in eel abundance, but at a slower rate than Options 1 and 1A.

5.3.5.4 Option 3

Option 3 most closely approximates the *status quo* under the separated management regime. It sets the TAC at a level that is likely to maintain future catch at around the same level as catches since the fishery entered the QMS in 2000. The TAC and TACC would be set based on the highest annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (88.6 t) and rounded to the nearest whole tonne.

Five submissions from Chisholm Associates, South Island Eel Industry Association, Mossburn Enterprises Ltd, Pullan Enterprises and Don Bailey all supported Option 3. They contend that CPUE has been stable or increasing for all South Island longfin QMAs even after the highest catch has been taken. They consider the catch will be held artificially below this TAC because of the minimum ACE holding requirement, which forces those with less than the minimum ACE to shelve their left over quota.

Three submitters consider that CPUE has reduced slightly in the last two years in ANG 15 due to lower longfin eel prices. The price no longer warrants travelling more widely to target longfin eels, meaning the area fished has reduced.

This option takes into account that, overall, the longfin eel stock is likely to be well above the soft limit. It does not, however, address that longfin eels are more biologically vulnerable than shortfin eels and that the stock does not appear to be increasing.

5.3.6 LFE 16 (Westland)

MPI proposes the following options for LFE 16 (Table 15).

Table 15: Proposed TACs, TACCs and allowances for LFE 16 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC	*Average catch*	*Highest catch*
Option 1A	26.13	5.13	1	20		
Option 1 (preferred)	32.41	6.41	1	25	*24.88*	*34.40*
Option 2	43.72	8.72	1	34		

The stock assessment suggests the relative abundance of longfins in ANG 16 is above the soft limit and is likely (>60% probability) to remain above, with an increasing trend of abundance (Figure 13).

[87] Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished.* Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

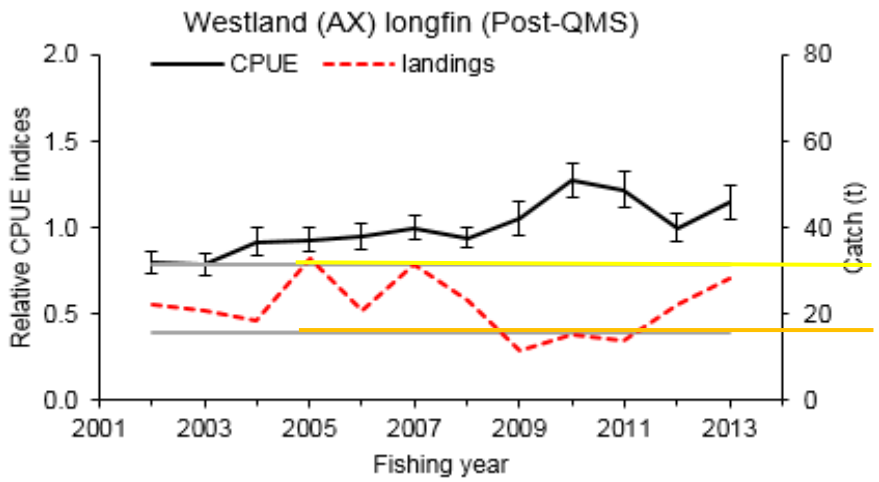


Figure 13: Westland longfin (ANG 16) CPUE analysis and landings since 2002. Yellow lines indicate the soft limit; orange lines indicate the hard limit.

One hundred twenty eight submissions were received from members of the public, environmental groups and Iwi representatives requesting a total ban on the commercial harvest of the New Zealand's longfin eel (summarised in section 2.2.2). None of the options proposed in the Discussion Document provide for a total ban on commercial harvest. MPI considers that best available information supports the ability to harvest this stock and still ensure an increase in eel numbers.

5.3.6.1 Option 1A (New)

Option 1A (*new*) sets a TAC that would significantly reduce the catch for longfin eels. Inclusion of this option provides you with a wider range of options for this stock given best available information on the species, the fishery and legal obligations. It takes into account the large number of submissions favouring a cautious approach to the setting of longfin eel TACs. You are able to choose any of these options depending on the balance between sustainability and utilisation that you consider most appropriate.

This option would promote the fastest increase in abundance of this stock, but would result in a significant reduction in utilisation. Under the MPI preferred options, this and LFE 15 are the only QMAs where more than nominal utilisation could occur. MPI notes the eel industry and others are concerned that the main processing plant for eels in the South Island may close, and that many fishers will be forced out of the industry.

5.3.6.2 Option 1 (MPI Preferred)

Option 1 (preferred) proposes the TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (24.88 t) and rounded to the nearest whole tonne. Setting the TAC and TACC at the level of average catch would reduce the longfin eel ACE available as catch would be constrained in all years when it would have otherwise been above the long term average.

This option constrains utilisation of the longfin resource in this QMA to a greater extent than Option 2, however, it will support a faster increase in longfin eel abundance than Option 2.

5.3.6.3 Option 2

Option 2 most closely approximates the *status quo* under the separated management regime. The TAC and TACC would be set based on the highest annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (34.4 t), and rounded to the nearest whole tonne.

While this option supports an increase in longfin eel abundance, it allows for greater utilisation than Option 1. It takes into account that monitoring shows abundance of longfin eels has increased in this QMA, and that most (70%[88]) suitable eel habitat is unfished in this QMA.

Six submissions support Option 2, from Chisholm Associates, South Island Eel Industry Association, Mossburn Enterprises Ltd, Pullan Enterprises and Don Bailey. They contend that CPUE has been stable or increasing for all South Island longfin QMAs even after the highest catch has been taken. They consider catches will be held artificially below the TAC because of the minimum ACE holding requirement, which forces those with less than the minimum ACE to shelve their left over quota.

Te Rūnanga o Ngāi Tahu supports Option 2 for LFE 16. Te Ohu Kaimoana also support this option noting that the CPUE time series for LFE 16 suggests LFE abundance is above the soft limit and is increasing and also that commercial fishing is constrained to 30% of longfin eel habitat.

6 Other Matters Raised

6.1 SEPARATION OF SOUTH ISLAND EELS

Numerous submissions raised concerns regarding the impact on the commercial industry (e.g. quota holder, ACE fishers and eel processors) of your recent decision to separate South Island Eel stocks. Submitters felt that:

- quota holders may end up with quota packages that don't reflect their historical catch e.g. they will be allocated both LFE and SFE quota when historically they may have only landed SFE
- the negative impacts felt by the industry regarding the recent decision to separate South Island eel stocks will be exacerbated by any reduction in quota, with the potential to put some eel fishers out of business.

MPI notes that quota is tradable and ACE is able to be purchased, so all fishers have the ability to buy and sell quota/ACE to balance their new quota packages. The costs associated with trading quota are inherent in the QMS and apply to all QMS species.

MPI considers these issues to be largely out of scope because the decision to separate the South Island eel stocks has been completed. The issues relating to TAC setting have been incorporated in this paper.

[88] Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished.* Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

6.2 NON FISHING IMPACTS ON EELS

Meridian Energy supports the overall approach adopted in the Discussion Document for setting TACs for longfin and shortfin eels that support/ promote an increase in longfin abundance. They note 'the reference in the Discussion Document to non-commercial fishing effects on eel abundance, including the impact of hydro-electric turbines'. Meridian has a specific eel mitigation and management obligations under its Resource Management Act resource consents, which are complimented by voluntary initiatives. Specifically, Meridian carries out trap and transfer programmes (upstream for elver and downstream for migrants) in both the Waitaki and Manapouri power schemes, working closely with Te Rūnanga o Ngāi Tahu in delivering these initiatives.

6.3 ENHANCED FISHERY IN SOUTH ISLAND HYDRO LAKES

One submitter suggests the possibility of a 'put and take fishery' in South Island hydro lakes, whereby commercial fishers transfer juvenile eels up stream into the Hydro dams with the intention of harvesting in future years.

MPI will discuss this proposal further with the submitter.

7 Conclusion

MPI considers that all options presented in this paper satisfy the purpose of the Act in that they provide for utilisation of the South Island shortfin and longfin eel fisheries while ensuring sustainability. MPI's preferred options provide the best balance of continued utilisation of the shortfin eel while at the same providing increased protection of the more vulnerable longfin eel.

For most shortfin stocks, MPI's preferred options limit catch to current levels (most closely approximates the '*status quo*' under the new separated longfin/ shortfin regime). This approach aims to maintain abundance trends at current trajectories for shortfin stocks where abundance is stable or increasing.

For longfin stocks, all options significantly reduce the catch of longfin eels. In conclusion, MPI's preferred options:

1. effectively prohibit the targeting of longfin eel in four of the six South Island stocks (LFE 11, 12, 13 and 14);
2. reduce the potential longfin eel catch (i.e. the TAC) from 539 tonnes (the TAC for the combined ANG stocks) to 153 tonnes (the TAC for LFE stocks); and
3. reduce the actual catch of longfin eels by up to 95% (compared to catch in 2014-15/ average catch since QMS entry) depending on the QMA.

MPI notes that the new separate-species management regime is a significant change in terms of how the fishery operates. The eel industry and others are concerned that the main processing plant for eels in the South Island may close and that fishers may be forced out of the industry as a result of the changes to management of the fishery.

MPI's preferred options take into account that longfin eels are more vulnerable to fishing pressure than shortfin eels and the need to be cautious where information is uncertain. They will result in an increase in longfin eel abundance over time[89].

The next stock assessment of South Island eel stocks will occur in 2018-19. MPI proposes to review the effectiveness of these options in achieving the Government's objectives for longfin and shortfin eels and, if necessary, make further adjustments to the catch limits at that time.

All TACs, TACCs and allowances will be implemented for the 1 October 2016 fishing year, except for SFE and LFE 13 where the next fishing year commences on 1 February 2017.

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 any option recommended by MPI.

[89] Subject to environmental influences and mortality from non-fishing related activities (e.g. mechanical clearance of drainage channels, hydro-electric turbines and flood control pumping).

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 2016.

MPI has identified 19 stocks for deemed value rate review and 12 deemed value rates for new stocks to be managed under the Quota Management System (QMS). Proposals for these deemed value rates were developed based on statutory requirements, the Guidelines[90], and key information. This work has been undertaken either because:

- the TAC for the relevant stock is being reviewed in 2016, which may have consequential implications for deemed value rates;
- the relevant stock is new and has yet to have a deemed value rate set; and
- the TACC has been overcaught for a period.

MPI has analysed relevant information for barracouta (BAR 5), all stocks of bluenose (BNS 1, 2, 3, 7 and 8), jack mackerel (JMA 3), john dory (JDO 7), paua (PAU 7), scampi (SCI 2), snapper (SNA 7) and squid (SQU 1J) that are subject to TAC reviews in 2016. However, no criteria apart from the TAC review is triggered and no change to the deemed value rates set for these stocks are recommended.

New deemed value rates are recommended for separate stocks of South Island freshwater eels by species. MPI recommends deemed value rates for longfin eel be set higher than for shortfin eel to reflect the species' greater vulnerability.

Increases are proposed for the interim and the annual deemed value rates for stocks that report persistent over-catches. Stocks include rubyfish (all stocks), oreos (OEO 4), silver warehou and (SWA 3). Increasing interim and annual deemed value rates will provide a stronger incentive for fishers to balance catch with ACE.

The other recommendations concern stocks that have been overfished, but in recent year(s) only. The recommended approach concerning these stocks is to increase interim deemed value rates from 50% to 90%. Hence increasing the interim deemed value, but not raising the annual deemed value, is a first response to over-catch. It works by signalling more explicitly the advantage of more regular catch balancing throughout the year to fishers.

The proposals have been assessed in terms of the relevant statutory requirements, the best available information, and tangata whenua and stakeholder input.

2 Purpose

Deemed values rates are prescribed by Gazette Notice under section 75 of the Fisheries Act 1996. Commercial fishers who do not balance catch with annual catch entitlement (ACE) monthly are invoiced for deemed value payments. The deemed value regime is intended to

[90] The Guidelines are explained in Section 5.2 'Deemed Value Guidelines' of this document (see Appendix 1 for the full Guidelines)

constrain commercial catch to respective catch limits by encouraging fishers to balance their catch with ACE, while not discouraging them from landing and accurately reporting catch.

3 The Deemed Value Framework

3.1 OUTLINE

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.

On the first day of the fishing year, all quota owners for a given stock are allocated ACE on the basis of 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 rate. 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.

3.2 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) says that the annual deemed value rate must be greater than the interim deemed value rate.

Section 75(4) allows you to set 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) says you must 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 or varying any deemed value rates, you must consult with stakeholders and tangata whenua that have an interest in the stock, as required by section 75A.

3.3 DEEMED VALUE GUIDELINES

In order to aid the application of the statutory criteria discussed above, a set of Deemed Value Guidelines has been developed. These Guidelines are attached in Appendix I of this document and are summarised as follows:

- 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 landed or 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; and
- differential deemed value rates must generally be set.

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.

3.4 IDENTIFYING STOCKS FOR DEEMED VALUE REVIEW

Before determining which stocks' deemed value rates are to be reviewed, MPI:

- invited stakeholders to nominate stocks for deemed value rate reviews, in the context of discussions as part of the annual fisheries planning process;
- considered stocks where total allowable catch reviews were being undertaken for 1 October 2016;
- assessed October stocks against the Performance Measures outlined in the Guidelines for the deemed value framework.
    - Catch in excess of the TACC.
    - The percentage of catch for each stock for which catch is not balanced with 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, and;
- for stocks identified above considered whether interim deemed value rates were consistent with the Guidelines (90% of annual deemed value rate and how deemed value rates relate to ACE and Landing Price).

Table 1 sets out the prioritised stocks and their assessment against the Performance Measures listed above.

Table 1: Assessment of fish stocks prioritised for review (DV = deemed value)

Stock	Rationale for review
RBY3	- RBY3 subject to sustainability review in 2016 - 432% caught in 2014/15 - Ratio of DV to QV is 0.309
RBY all other stocks	- To address inconsistency between deemed value rates set for ruby fish stocks
LFE 11-16	- New QMS stocks for longfin eel (previously managed within South Island freshwater eel stocks) - Subject to sustainability review in 2016
SFE 11-16	- New QMS stocks for shortfin eel (previously managed within South Island freshwater eel stocks) - Subject to sustainability review in 2016
BCO 3	- 103% caught in 2014/15 - Ratio of DV to QV is 0.004
FRO 4	- 230% caught in 2014/15 - Ratio of DV to QV is 0.415
GLM 9	- 106% caught in 2014/15 - Ratio DV to QV is 0.011
JMA 7	- 102% caught in 2014/15 - Ratio DV to QV is 0.006
KAH 8	- 107% caught in 2014/15 - Ratio of DV to QV is 0.024
LIN 7	- 108% caught in 2014/15 - Ratio of DV to QV is 0.011
OEO 4	- 101% caught in 2014/15 - Ratio of DV to QV is 0.002
RIB 7	- 120% caught in 2014/15 - Ratio of DV to QV is 0.141
SWA 3	- 114% caught in 2014/15 - Ratio of DV to QV is 0.063
TAR 2	- 105% caught in 2014/15 - Ratio of DV to QV is 0.009

4 Consultation

MPI has consulted on the proposed changes, following its standard consultation process.

Initial proposals consulted on are outlined in Table 2 below.

Table 2: Current and proposed deemed value rates for October stocks

		Current				Proposed			
Species	Stock	Interim $	Annual $	Annual at maximum excess $	Differential	Interim	Annual $	Annual at maximum excess $	Differential
Rubyfish	RBY 1	0.14	0.28	0.56	Standard	0.25	0.28	0.56	Standard
	RBY 2,5,6,9	0.11	0.21	0.21	Not set	0.25	0.28	0.56	Standard
	RBY 3	0.10	0.19	0.19	Not set	0.25	0.28	0.56	Standard
	RBY 4,8	0.21	0.42	0.84	Standard	0.25	0.28	0.56	Standard
Long-finned freshwater eel	LFE11-16	Not set	Not set	Not set	Not set	9.00	10.00	20.00	Standard
Short-finned freshwater eel	SFE11-16	Not set	Not set	Not set	Not set	7.20	8.00	16.00	Standard
Blue cod	BCO 3	2.50	3.75	7.50	Special	3.38	3.75	7.50	Special
Frostfish	FRO 4	0.12	0.24	0.24	Do not apply	0.22	0.24	0.24	Do not apply
Green-lipped mussel	GLM 9	3.00	6.00	12.00	Standard	5.40	6.00	12.00	Standard
Jack mackerels	JMA 7	0.08	0.15	0.30	Standard	0.14	0.15	0.30	Standard
Kahawai	KAH 8	0.31	0.61	1.22	Standard	0.55	0.61	1.22	Standard
Ling	LIN 7	1.20	2.38	6.00	Special	2.14	2.38	6.00	Special
Oreo	OEO 4	0.39	0.78	1.56	Standard	0.81	0.90	1.80	Standard
Ribaldo	RIB 7	0.40	0.80	2.50	Special	0.72	0.80	2.50	Special
Silver warehou	SWA 3	0.50	1.22	3.00	Special	1.57	1.74	3.00	Special
Tarakihi	TAR 2	1.38	2.75	5.75	Special	2.48	2.75	5.75	Special

4.1 SUBMISSIONS RECEIVED

MPI received 8 submissions relating to the recommended changes. Submissions were received from:

a) Fisheries Inshore NZ (FINZ)
b) Iwi Collective Partnership (in support of submissions and comments by the Deepwater Group Ltd)
c) LegaSea (Deemed values, JDO 7)
d) Moana NZ
e) Sealord
f) Southern Inshore Fisheries (SIF)
g) Tasman and Sounds Recreational Fisher's Association (TASFISH)
h) The Deepwater Group Ltd (DWG)

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 II.
Other issues raised in the submissions centre around the deemed value framework and the process of review undertaken. Though not within the scope of this deemed value review for individual stocks, these views are summarised below for your information, and MPI responses are provided.

A recurrent issue raised by **DWG, Sealord and SIF** is that adjustments to the deemed values should not be used as a fisheries management measure in lieu of a correctly set TACC. **Sealord** notes reduced TACCs for OEO4 has caused unnecessary bycatch management problems since in their view the current state of the fishery does not match the assessment. In fisheries where the available ACE is not aligned with the stock abundance, as a consequence of the TACC being set too low, then **DWG** submit that the TACC must be reset to align with the level of sustainable catch, prior to any review or resetting of deemed value levels being contemplated.

The setting of deemed value rates is a separate process from setting TACCs. Therefore 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. Our view 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 MPI reviews TACCs, prioritising stocks based on available information and stakeholder input. These views were taken into account with the identification of JDO 7, SNA 7 and RBY 3 in 2015 as candidate stocks for catch limit reviews in 2016. Regardless of the outcome of these reviews, 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 either the current or recommended TACCs to ensure sustainability.

SIF refers to the MPI Deemed Value Guidelines and submits it holds no record of these Guidelines being consulted on externally by MPI.

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, formally 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 5.2 'Deemed Value Guidelines'.

SIF advocates for setting deemed value rates on a regional basis that reflects the landed price index within the region, rather than an average index that can be influenced by the North Island or export prices. SIF proposes to work with MPI to review the deemed value regime including the development of regional deemed value rates.

Engagement with Commercial Stakeholder Entities and Organisations is now mainly through the fisheries planning process for inshore, deepwater, and highly migratory species fisheries. MPI has received feedback from the industry on the effectiveness of these discussions, but acknowledges work is required to improve reviews of deemed value rates in the future. In particular we need solutions to the lack of acceptance of the Deemed Value Guidelines by

Industry despite consultation in 2011 and the use of these Guidelines thereafter from 2012 for developing final advice.

DWG submits that the general practice is to set the annual deemed value rates at 90% of the landed price and requests MPI use for this purpose 2016/17 landed prices rather than those for 2015/16.

MPI acknowledges that the 2016/17 landed (port) prices have recently been agreed to with Industry in anticipation of setting cost recovery levies. While MPI agrees to use the 2016/17 landed prices as best available information in this Advice Paper, doing so has no implication for recommendations since the landed price is not used explicitly as suggested by DWG for setting deemed value rates.

FINZ submits support for deemed value rates reviews for RBY 3, LFE, SFE, BCO 3, LIN 7, SWA 3 and TAR 2 since these have frequent over-catch or are new stocks. However, it considers deemed value rate reviews of FRO 4, GLM 9, JMA 7, KAH 8, OEO 4 and RIB 7 are unnecessary since over-catch has occurred in the 2014/15 season only and no fisheries management issues give rise to the need for adjustments. Instead of diverting Fisheries Management staff resources into tinkering with deemed value rates **FINZ** would prefer sustainability measure reviews for more than three inshore stocks.

MPI notes that careful consideration of the relevant policy in 2007-11 resulted in the adoption of the current Guidelines which clarifies how stocks are chosen for deemed value rate adjustments. 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. Hence, 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 incremental improvements to their fishing behaviour.

MPI notes FINZ supports reviewing the deemed value rates of most of the stocks that MPI proposed. Views differ only for the stocks where over-catch occurred in the 2014/15 season. Industry submit as unnecessary any review of these stocks.

As mentioned, MPI prefers making frequent, small changes, including as a first response changes to the interim deemed value rates. To do otherwise risks waiting for major problems to arise and then make very large changes that can have significant impacts on industry.

MPI has designed an administrative system to support deemed value settings that is proactive and anticipates and addresses problems in accordance with transparent guidelines. This is an efficient means of maintaining the catch balancing system that is key to the credibility of the QMS.

LegaSea submits that deemed values are an ineffective tool to regulate commercial catch, but may influence what is landed. **TASFISH** is concerned that commercial over-catch impacts on stock abundance and denies the recreational sector access to their share. It states fundamental changes to the QMS are necessary to address the issue but submits support for deemed value rates in the short-term at a minimum of three times the landed price.

In contrast **Moana NZ** submits their view that strict reporting mechanisms, frequent audits, human and electronic observation, at sea searches and inspections, deemed value and harsh penalties are all used, with a high degree of efficacy, to constrain the commercial catch to the TACC.

The deemed value system relies on finely balanced economic incentives for fishers to keep catch within available ACE. MPI accepts that maintaining an effective balance of incentives is difficult but agrees with the Moana submission that the efficacy of the deemed value system in constraining catch to ACE is enhanced by a wide range of additional measures.

MPI acknowledges the detrimental impact of higher levels of over-catch on sustainability and on the long-term value of the resource. Hence an escalated schedule of deemed value rates is triggered as the percentage by which catch exceeds ACE increases. The standard differential rate rises to a maximum of about two times the landed price for most stocks and is greater for some high value single species fisheries. Hence the scale of deemed value rates suggested by TASFISH applies to some high risk stocks.

5 Management Options

5.1 ANALYSIS OF OPTIONS

MPI recommends that you approve changes to deemed value rates for selected stocks as outlined in Table 2. These options are the same as those consulted on and are discussed below.

5.2 STOCKS TO BE CONSIDERED IN CONJUNCTION WITH CURRENT TACC DECISIONS

MPI has analysed relevant information for barracouta (BAR 5), all stocks of bluenose (BNS 1, 2, 3, 7 and 8), jack mackerel (JMA 3), john dory (JDO 7), paua (PAU 7), scampi (SCI 2), snapper (SNA 7) and squid (SQU 1J) that are subject to TAC reviews in 2016. However, no criteria apart from the TAC review is triggered and no change to the deemed value rates set for these stocks are recommended.

LegaSea was concerned that JDO 7 deemed value rates were not reviewed given that the landed (port) price is $6.22 and the annual deemed value rate is $5.25. It submits at this annual deemed value rate there is an incentive for commercial fishers to land John dory in excess of their ACE.

MPI notes that the submission disregards the impact on landing over-catch of differential annual deemed value rates. For JDO 7 an escalated schedule of annual deemed value rates is triggered as the percentage by which catch exceeds ACE increases. The differential annual deemed value rate increases to a maximum of $10.00 at 140% over-catch. No incentive is created by landing John dory without ACE by making a deemed value payment of $10 while receiving the landed price of $6.22.

5.2.1 Rubyfish (All stocks)

In the RBY 3 quota management area, rubyfish is taken as a bycatch species of target fisheries such as redbait by the fishing methods of bottom and mid-water trawl. Landings exceeded the TACC in 2014/15.

A review of the deemed value rates was put forward to accompany your review of the TACC for Rubyfish (RBY 3). Fishery information and TACC recommendations for this stock are outlined in Part B of this paper.

5.2.1.1 Submissions

FINZ submits support to review deemed value rates for RBY 3 since frequent over-catch is reported for this fish stock. DWG and SIF submit no support for the proposal to increase deemed value rates for RBY 3. Only should the TACC be increased and the new TACC consistently exceeded would DWG support a review of deemed values.

5.2.1.2 MPI Response

MPI acknowledges the support to review this stock from FINZ. MPI agrees with the submission that there has been recent over-catch of a TACC that has been set on a nominal basis.

MPI reiterates the appropriateness of the TACC is not a relevant consideration when setting deemed value rates.

5.2.1.3 Recommendation

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. The interim deemed value rate for RBY 3 is currently set at 50% of the annual rate. The Guidelines suggest that higher interim deemed value rates may be more appropriate for this stock since they state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that interim deemed value rate for RBY 3 be adjusted as recommended in the shaded part of Table 2. The recommended increased interim deemed value rate ($0.25) is above the ACE price ($0.21). 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.

MPI recommends also that annual deemed value rates for RBY 3 be adjusted as outlined in the shaded part of Table 2. The recommended annual deemed value rate of $0.28 for RBY 3 is above the ACE price ($0.21) and below the landed price ($0.30). This recommendation is consistent with the Guideline that deemed value rates must generally be set above the ACE price and below the landed price.

MPI noted in the Discussion Document that there is considerable inconsistency between the deemed value rates for rubyfish stocks (see also **Review of Management Controls for the Rubyfish 3 Fishery (RBY 3)** and Table 2).

MPI recommends standardising deemed value rates for all rubyfish stocks as outlined in the shaded part of Table 2. The rationale is the same as outlined for RBY 3 and if adopted makes consistent deemed value rates for all stocks of rubyfish. It addresses also the issue of adjacent Quota Management Areas (QMAs) for the same species that 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. MPI considers this approach is consistent with Principle 3 of the Guidelines that states deemed value rates must avoid creating incentives to misreport.

These recommendations are the same deemed value rates proposed in the **Review of Deemed Value Rates for Selected Stocks in 2016 - MPI Discussion Paper No: 2016/17** (hereafter the discussion paper)

5.2.2 Freshwater eels (South Island longfin eel – LFE 11-16) and South Island shortfin eel – SFE 11-16)

The setting of new deemed value rates has been put forward to accompany your decision to separate the South Island eel stocks into shortfin and longfin stocks for the 2016/17 fishing year. Interim deemed value rate of $5.00 and an annual deemed value rate of $10.00 applies to the combined South Island freshwater eel stocks (ANG 11-16) until deemed value rates for the new stocks are gazetted.

MPI draws your attention to the recommendation in Part B of this paper to set TACCs for South Island SFE and LFE stocks. If approved, the deemed value regime will be an important measure to constrain fishers to the available ACE from October 2016.

Virtually all freshwater eels are caught with fyke nets.

5.2.2.1 Submissions

No submissions were received.

5.2.2.2 Recommendation

MPI recommends that deemed value rates for SFE 11-16 and LFE 11-16 be set as outlined in the shaded part of Table 2.

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. The Guidelines suggest that higher interim deemed value rates may be more appropriate for this stock since they state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

It is recommended that deemed value rates for longfin eel be set higher than for shortfin eel to reflect the greater vulnerability of the species. The recommended annual deemed value rate of $8 for SFE and $10 for LFE is well above the ACE price ($2.00) and about twice the landed price ($4.96). This is based on the Guideline that deemed value rates for high value single species fisheries must generally be set at twice the landed price. This is also consistent with the approach taken for the North Island stocks (SFE 20-23).

In addition, it is recommended standard differential rates are set.

5.3 STOCKS TO BE CONSIDERED DUE TO OVER-CATCH

Ten stocks, BCO 3, FRO 4, GLM 9, JMA 7, KAH 8, LIN 7, OEO 4, RIB 7, SWA 3 and TAR 2 were identified for review given over-catch in 2014/15 and in some instances high deemed

value payments compared to quota value. The fisheries that the stocks are taken in vary, and are described further below.

5.3.1 Blue cod (BCO 3)

Blue cod is caught by cod pots and lines and mainly as a target species. Catch is usually constant at about the level of the TACC, although the TACC was exceeded in 2014/15.

MPI proposed in its discussion document to increase the proportion of the annual deemed value rate at which interim deemed value rates are set from 50% to 90% but retain the other annual deemed value rates across the board.

5.3.1.1 Submissions

FINZ supports a review of deemed value rates for BCO 3 since frequent over-catch is reported for this fish stock. SIF do not agree that the level of over-catch or ratio of over-catch to deemed value paid in 2014/15 are sufficient to trigger a review of the interim deemed value

6.3.1.2 MPI Response

MPI acknowledges the support from FINZ to review this stock. In response to SIF, Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate and MPI has a policy of aligning stocks with this when overfishing occurs. In terms of level of over-catch to trigger a management response, fishers should better be able to control catch in a target fishery and over-catch has a greater impact on sustainability and on the long-term value of the resource in a shared fishery such as blue cod.

5.3.1.2 Recommendation

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. The interim deemed value rate for BCO 3 is currently set at 50% of the annual rate. The Guidelines suggest that higher interim deemed value rates may be more appropriate for this stock since they state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that interim deemed value rate for BCO 3 be adjusted as recommended in shaded part of Table 2. The recommended increased interim deemed value rate ($3.38) is above the ACE price ($2.72). 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.

We are not proposing any change to the annual deemed value rate for BCO 3.

5.3.2 Frostfish (FRO 4)

Frostfish is primarily taken as a bycatch species of barracouta and to a lesser extent jack mackerel target trawl fisheries in this stock area. FRO 4 catch exceeded the TACC in 2014/15 for the first time since the TACC was increased to its current level nine years ago.

Consistent with the Guidelines, MPI proposed in the consultation document to increase the proportion of the annual deemed value rate at which interim deemed value rates are set from 50% to 90% and to retain all other deemed value rates across the board.

5.3.2.1 Submissions

FINZ does not support the review of deemed value rates for FRO 4 since over-catch is reported infrequently for this fish stock.

5.3.2.2 MPI Response

Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate and MPI has a policy of aligning stocks with this guideline when overfishing occurs. This is because MPI prefers making frequent, small changes, including as a first response changes to the interim deemed value rates. To do otherwise risks waiting for major problems to arise and then make very large changes which can have significant impacts on industry.

5.3.2.3 Recommendation

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. The interim deemed value rate for FRO 4 is currently set at 50% of the annual rates for frostfish stocks, but higher interim deemed value rates may be more appropriate for this stock since the Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that the interim deemed value rate for FRO 4 be adjusted as recommended in the shaded part of Table 2. The recommended increased interim deemed value rate ($0.22) is well above the ACE price ($0.07). 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.

We are not proposing any change to the annual deemed value rate for FRO 4.

5.3.3 Green-lipped mussel (GLM 9)

Commercial harvesting occurs primarily on spat and is a target fishery. Catch has been variable but recently increased to exceed the TACC with payments of deemed values as a result.

Consistent with the Guidelines, MPI proposed in the discussion document to increase the proportion of the annual deemed value rate at which interim deemed value rates are set from 50% to 90% and to retain all other annual deemed value rates across the board.

5.3.3.1 Submissions

FINZ does not support the review of deemed value rates for GLM 9 since over-catch is reported infrequently for this fish stock.

5.3.3.2 MPI Response

Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate and MPI has a policy of aligning stocks with this guideline when overfishing occurs. MPI prefers making frequent, small changes, including as a first response changes to the interim deemed value rates. To do otherwise risks waiting for major problems to arise and then make very large changes which can have significant impacts on industry.

5.3.3.3 Recommendation

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. The interim deemed value rate for GLM 9 is currently set at 50% of the annual rates for green-lipped mussel stocks, but higher interim deemed value rates may be more appropriate for this stock since the Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that the interim deemed value rate for GLM 9 be adjusted as recommended in the shaded part of Table 2. The recommended rate ($5.40) is above the ACE price ($4.65). 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.

We are not proposing any change to the annual deemed value rate for GLM 9.

5.3.4 Jack mackerel (JMA 7)

JMA 7 is taken primarily by target fishing by mid-water trawlers. Catch has been at about the level of the TACC every year since 2003/04.

5.3.4.1 Submissions

FINZ does not support the review of deemed value rates for JMA 7 since over-catch is reported infrequently for this fish stock. DWG advises that JMA 7 quota owners do not support MPI's proposal as it amounts to tinkering.

5.3.4.2 MPI Response

Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate and MPI has a policy of aligning stocks with this guideline when overfishing occurs. MPI prefers making frequent, small changes, including as a first response changes to the interim deemed value rates. To do otherwise risks waiting for major problems to arise and then make very large changes which can have significant impacts on industry.

5.3.4.3 Recommendation

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. The interim deemed value rate for JMA 7 is currently set at 50% of the annual rates for jack mackerel stocks, but higher interim deemed value rates may be more appropriate for this stock since the Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that interim deemed value rate for JMA 7 be adjusted as recommended in shaded part of Table 2. The recommended rate ($0.14) is slightly below the level of ACE price ($0.15). This increase addresses the risk that if the interim deemed value rate is well 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.

We are not proposing any change to the annual deemed value rate for JMA 7.

5.3.5 Kahawai (KAH 8)

Kahawai is primarily taken as a bycatch species by bottom trawl. Catch is usually constant well within the level of the TACC, although the TACC was exceeded in 2014/15.

5.3.5.1 Submissions

FINZ does not support the review of deemed value rates for KAH 8 since over-catch is reported infrequently for this fish stock.

5.3.5.2 MPI Response

Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate and MPI has a policy of aligning stocks with this guideline when overfishing occurs. MPI prefers making frequent, small changes, including as a first response changes to the interim deemed value rates. To do otherwise risks waiting for major problems to arise and then make very large changes which can have significant impacts on industry.

5.3.5.3 Recommendation

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. The interim deemed value rate for KAH 8 is currently set at 50% of the annual rates for kahawai stocks, but higher interim deemed value rates may be more appropriate for this stock since the Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that the interim deemed value rate for KAH 8 be adjusted as recommended in the shaded part of Table 2. The recommended rate ($0.55) is above the level of ACE price ($0.27). This increase addresses the risk that if the interim deemed value rate is well 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.

We are not proposing any change to the annual deemed value rate for KAH 8.

5.3.6 Ling (LIN 7)

Ling is 40% taken as a target of bottom longline fishing and 60% as a trawl bycatch of hoki/hake. The TACC has regularly been exceeded including the 2014/15 fishing year.

5.3.6.1 Submissions

FINZ supports a review of deemed value rates for LIN 7 since frequent over-catch is reported for this fish stock. DWG advises that LIN 7 quota owners do not support MPI's proposal but do support a review of the TACC, and possibly deemed value rates, should the TACC be consistently exceeded.

5.3.6.2 MPI Response

MPI acknowledges the support from FINZ to review this stock. With respect to DWG's comments, the next stock assessment for LIN 7 is scheduled for the 2016/17 financial year. Should the assessment be accepted, a TACC review may be undertaken prior to the 2017/18 fishing year. However, MPI reiterates the appropriateness of the TACC is not a relevant consideration when setting deemed value rates.

5.3.6.3 Recommendation

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. The interim deemed value rate for LIN 7 is currently set at 50% of the annual rates for ling stocks, but higher interim deemed value rates may be more appropriate for this stock since the Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that interim deemed value rate for LIN 7 be adjusted as recommended in the shaded part of Table 2. The recommended rate ($2.14) is slightly below the level of ACE price ($2.30). This increase addresses the risk that if the interim deemed value rate is well 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.

We are not proposing any change to the annual deemed value rate for LIN 7.

5.3.7 Oreo (OEO 4)

Oreos are an assemblage of four species managed as one stock on the Chatham Rise (OEO 4). Most catch is targeted with smaller amounts taken as bycatch in fisheries such as orange roughy. Landings are consistently at about the level of the TACC but exceeded the TACC in 2014/15. The TACC for this stock was reduced from 7,000 tonnes in 2014/15 to 3,000 tonnes in 2015/16.

5.3.7.1 Submissions

FINZ does not support the review of deemed value rates for OEO 4 since over-catch is reported infrequently for this fish stock. Sealord does not support the proposal to increase deemed value rates for OEO 4. They submit that oreos are low value species and that they do not believe there is a sustainability issue with smooth oreo in OEO 4 that requires an increased deemed value rate.

DWG advises that OEO 4 quota owners do not support MPI's proposal to increase deemed value rates for OEO 4. Further, they submit that since the current landed price is $0.68/kg, the annual deemed value rate should be $0.61/kg (90% of the landed price) rather than the $0.90 proposed by MPI.

5.3.7.2 MPI Response

Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate and MPI has a policy of aligning stocks with this guideline when overfishing occurs. MPI prefers making frequent, small changes, including as a first response changes to the interim deemed value rates. To do otherwise risks waiting for major problems to arise and then make very large changes which can have significant impacts on industry.

MPI acknowledges the agreed 2016/17 landed price for OEO 4 but notes there is no guideline that states annual deemed value should be set at 90% of the landed price.

5.3.7.3 Recommendation

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. The interim deemed value rate for OEO 4 is currently set at 50% of the annual rates for oreo stocks, but higher interim deemed value rates may be more appropriate for this stock since the Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that interim deemed value rate for OEO 4 be adjusted as recommended in the shaded part of Table 2. The recommended rate ($0.81) is above the level of ACE price ($0.44). This increase addresses the risk that if the interim deemed value rate does not exceed the ACE, then fishers have an incentive to delay acquiring ACE (important for orange roughy fishing that occurs late in the season). 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.

MPI recommends also that deemed value rates for OEO 4 be adjusted as outlined in the shaded part of Table 2. The recommended annual deemed value rate of $0.87 for OEO 4 is above the ACE price ($0.44) and also the 2016/17 landed price ($0.68). However, oreo landed prices are calculated by averaging prices for black and smooth oreo, with smooth oreo typically having a higher price than black oreo. This methodology does not take into consideration that smooth oreo is the dominant species taken in OEO 4. MPI considers that the proposed increase to the OEO 4 deemed value rates better reflects the landed price of smooth oreo (about $0.90). This recommendation is consistent with the Guideline that deemed value rates must generally be set above the ACE price and below the landed price.

The modest increase to the annual deemed value will improve incentives for fishers to retain OEO 4 ACE for orange roughy fishing (that occurs late in the season). As a consequence the deemed value rates under the standard differential rate schedule will increase to the maximum of $1.74 (i.e. twice the annual rate of $0.87).

5.3.8 Ribaldo (RIB 7)

RIB 7 is primarily taken as a bycatch species of the hake trawl and ling bottom longline fisheries. 2014/15 was the first year that landings of RIB 7 have exceeded the TACC since 2008/09.

5.3.8.1 Submissions

FINZ does not support the review of deemed value rates for RIB 7 since over-catch is reported infrequently for this fish stock.

5.3.8.2 MPI Response

Guidelines state that interim deemed value rates must generally be set at 90% of the annual deemed value rate and MPI has a policy of aligning stocks with this guideline when overfishing occurs. MPI prefers making frequent, small changes, including as a first response changes to the interim deemed value rates. To do otherwise risks waiting for major problems to arise and then make very large changes which can have significant impacts on industry.

5.3.8.3 Recommendation

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. The interim deemed value rate for RIB 7 is currently set at 50% of the annual rate. The Guidelines suggest that higher interim deemed value rates may be more appropriate for this stock since they state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that interim deemed value rate for RIB 7 be adjusted as recommended in the shaded part of Table 2. The recommended rate ($0.72) is well above the level of ACE price ($0.25). 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.

We are not proposing any change to the annual deemed value rate for RIB 7.

5.3.9 Silver warehou (SWA 3)

Silver warehou is taken as a target species by trawl but also taken as a trawl bycatch of barracouta, hoki and squid. Landings fluctuate about the level of the TACC and exceeded the TACC in 2014/15.

5.3.9.1 Submissions

FINZ supports a review of deemed value rates for SWA 3 since frequent over-catch is reported for this fish stock. DWG advises that SWA 3 quota owners do not support the proposal to increase deemed value rates for SWA 3 and that the rates should actually be decreased to $0.57/kg (90% of landed price). DWG also notes that any changes to the deemed value rates for this stock should be deferred until completion of the stock assessment that is scheduled for the 2016/17 financial year.

5.3.9.2 MPI Response

MPI acknowledges the support from FINZ to review this stock. With respect to DWG's comments, MPI refers to earlier statements that 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.

MPI does not believe that reducing the deemed value rates for this stock will improve the overall incentive for fishers to ensure catch does not exceed available ACE.

5.3.9.3 Recommendation

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. The interim deemed value rate for SWA 3 is currently set at 50% of the annual rate. The Guidelines suggest that higher interim deemed value rates may be more appropriate for this stock since they state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that interim deemed value rate for SWA 3 be adjusted as recommended in shaded part of Table 2. The recommended increased interim deemed value rate ($1.57) is above the ACE price ($0.34). 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.

MPI recommends that the annual deemed value rate for SWA 3 be adjusted as recommended in shaded part of Table 2. The recommended rate ($1.74) is well above the level of ACE price ($0.34) and the port price for SWA 3 ($0.63) but less than the export value ($2.15) for this species (an important driver of the fishery since most catch is exported). The rationale for the modest increase to the annual deemed value rates recommended is to improve incentives for fisher to retain SWA 3 ACE for bycatch. These are the same annual deemed value rates proposed in the Discussion Paper and are based on the Guideline that deemed value rates must generally be set above the ACE price and below the landed price but may be higher for bycatch species than for target species.

5.3.10 Tarakihi (TAR 2)

Tarakihi is taken as both a target and a trawl bycatch species. Tarakihi catches are usually constrained at about the level of the TACC and exceeded the TACC in 2014/15.

5.3.10.1 Submissions

FINZ supports a review of deemed value rates for TAR 2 since frequent over-catch is reported for this fish stock.

5.3.10.2 MPI Response

MPI acknowledges the support from FINZ to review this stock.

5.3.10.3 Recommendation

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. The interim deemed value rate for TAR 2 is currently set at 50% of the annual rate. The Guidelines suggest that higher interim deemed value rates may be more appropriate for this stock since they state that interim deemed value rates must generally be set at 90% of the annual deemed value rate.

MPI recommends that interim deemed value rate for TAR 2 be adjusted as recommended in shaded part of Table 2. The recommended increased interim deemed value rate ($2.43) is above the ACE price ($1.44). 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.

We are not recommending any change to the annual deemed value rate for TAR 2.

APPENDIX I: DEEMED VALUE GUIDELINES

1 Summary

1.1 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.

1.1.1 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.

1.1.2 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.

1.1.3 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.

1.1.4 Principle 3

Deemed value rates must avoid creating incentives to misreport.

1.1.5 Principle 4

Deemed value rates for constraining bycatch species may be higher.

1.1.6 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.

1.1.7 Principle 6

Deemed value rates for Chatham Island landings may be lower.

1.1.8 Principle 7

Interim deemed value rates must generally be set at 90% of the annual deemed value rate.

1.1.9 Principle 8

Differential deemed value rates must generally be set:

- Standard differential deemed value rate schedule for most stocks

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

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%

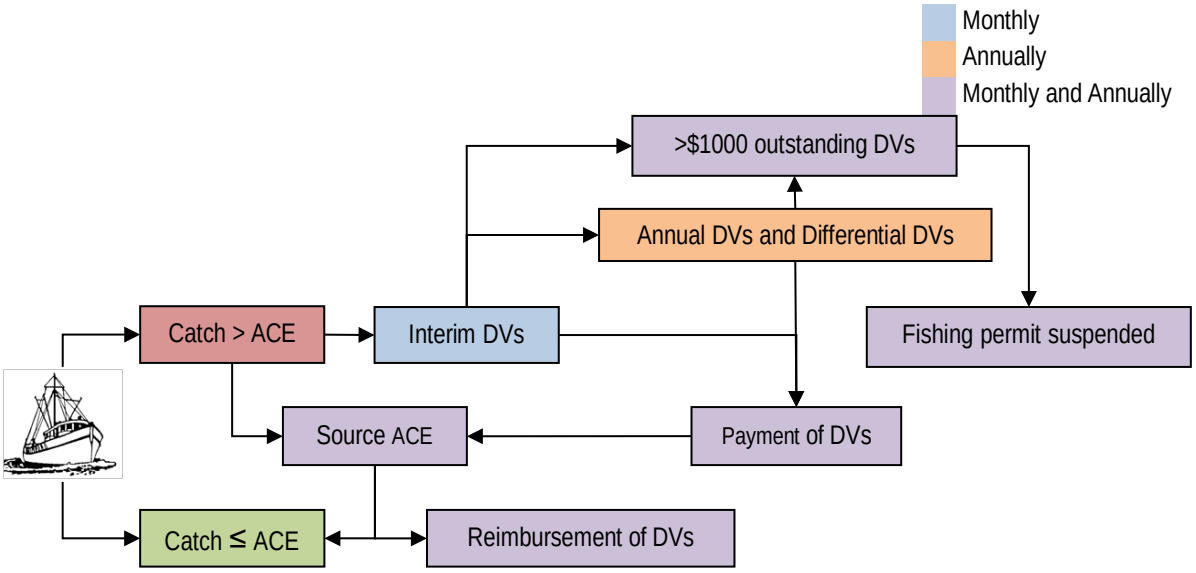
- Stringent differential deemed value rate schedules for highly vulnerable stocks or rebuilding stocks.

2 Introduction

2.1 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.[91]



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.

[91] 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 you on setting deemed value rates.

2.2 THE LEGAL CONTEXT

Section 75 of the Fisheries Act 1996 (the Act), provides the statutory framework for setting deemed values. That section requires you to set deemed value rates for QMS stocks and sets out the matters you must consider when doing so.

Within the statutory framework, you have 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 you on deemed value rates. The *Guidelines* do not bind the Minister. 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*.

Under section 75(2)(a), you must consider whether deemed value rates are set at levels that provide an incentive to balance catch with ACE. Once you have considered the issues that arise as mandatory considerations, she/he may also consider the discretionary criteria under section 75(2)(b):

- 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.

2.3 GOAL AND MEASURES OF PERFORMANCE

2.3.1 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*.[92]

2.3.2 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

[92] 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.

2.4 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 you 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.

2.4.1 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 you on a case-by-case basis.

2.4.2 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 you on a case-by-case basis.

2.4.3 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 (FMA 10), deemed value rates should be set at the highest annual deemed value rate applicable in the Auckland and Central Fishery Management Areas (FMA 1 or FMA 2) 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.

2.4.4 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.

2.4.5 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.

2.4.6 Principle 6: Deemed value rates for Chatham Island landings may be lower

Under section 75(5), you 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.

2.4.7 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.

2.4.8 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 you to set differential deemed value rates according to the following schedules:

2.4.8.1 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 %

2.4.8.2 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.

2.4.8.3 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.